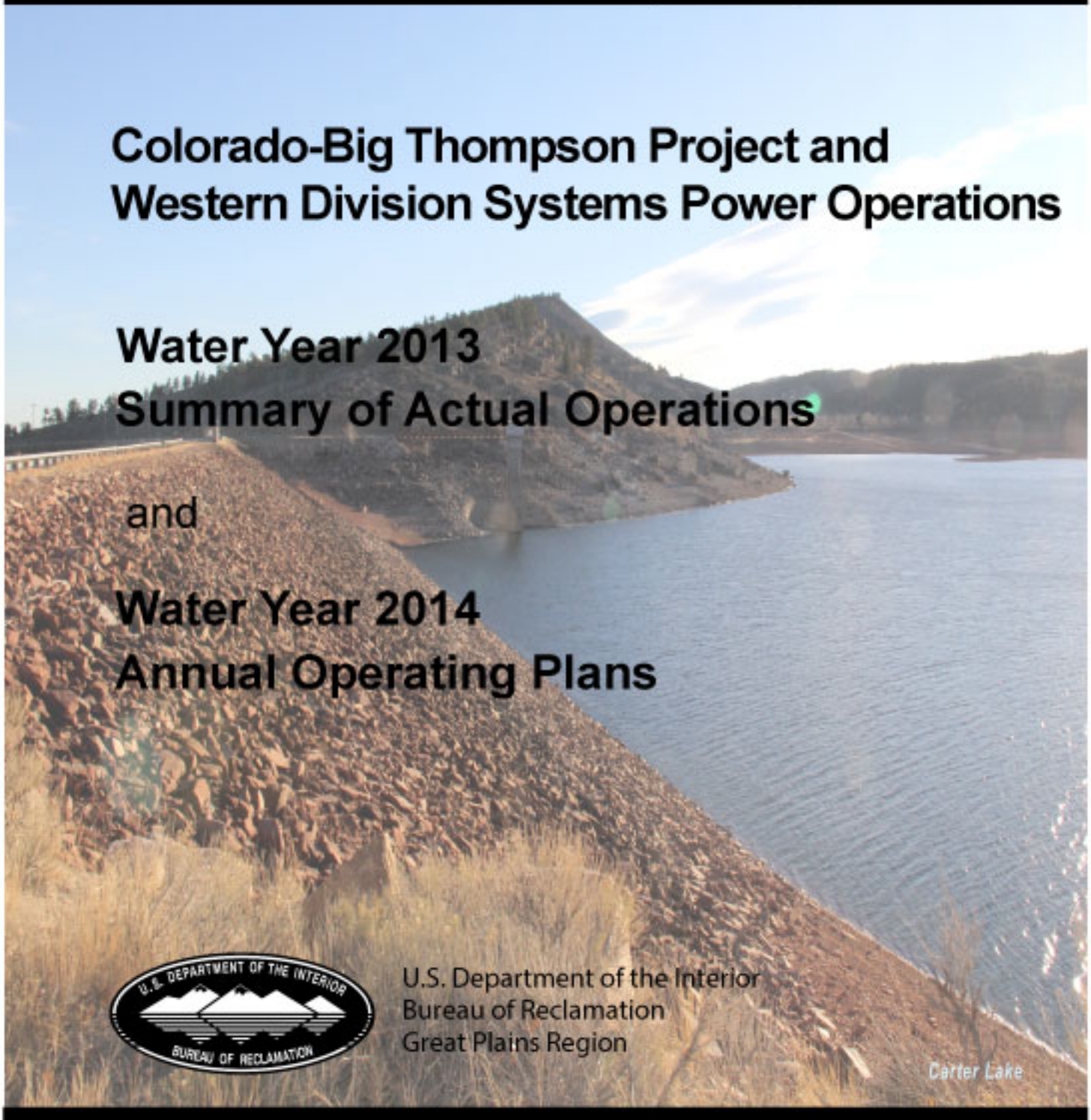
# RECLAMATION

*Managing Water in the West*

Annual Operating Plans



## Colorado-Big Thompson Project and Western Division Systems Power Operations

## Water Year 2013 Summary of Actual Operations

and

## Water Year 2014 Annual Operating Plans

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region

Carter Lake

This report is the 62nd Annual Report for the Colorado-Big Thompson Project. Its purpose is to inform interested parties of the coordinated operation of the project. The report has two main parts: one which describes the actual operation of the project during Water Year (WY) 2013 and the other which presents the plan of operation for WY 2014.

This report meets the requirement of 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 Annual Operating Plan.

**COLORADO-BIG THOMPSON PROJECT**
**ANNUAL OPERATING PLANS**

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## 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 transmountain water diversion system through which multiple benefits are provided.

The C-BT spreads over approximately 250 miles in the state of Colorado. It stores, regulates, and diverts water from the Colorado River west of the Rocky Mountains, providing supplemental water for irrigation of 720,000 acres of land east of the Rocky Mountains. It also provides water for municipal use, industrial use, hydroelectric power, and water-oriented recreation. Additionally, it provides storage of replacement water to the west slope for agricultural, recreation, and environmental uses including supplemental fish flow. This replacement water ensures that senior water rights on the west slope are not impacted by diversions to the east slope.

Major features of the C-BT include; dams, dikes, reservoirs, powerplants, pumping plants, pipelines, tunnels, transmission lines, substations, and other associated structures (Table 1, Exhibits 1 and 2).

Historically, the C-BT has diverted approximately 230,000 acre-feet (AF) of water annually (310,000 AF 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 (NCWCD) 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 markets the electric power produced at the six powerplants.

The western portion of the C-BT consists of a series of reservoirs forming a runoff collection system. This system captures runoff from the high mountains and stores, regulates, and conveys the water to Adams Tunnel for delivery to the east slope, passing under the Continental Divide.

Another C-BT west slope feature is Green Mountain Reservoir, a repayment facility used to regulate flows in the Colorado River. Pursuant to authorities in Senate Document 80, (which authorized the C-BT), the 1984 Green Mountain Operating Policy and the agreements in the September 1996 Stipulation and Agreement of the Orchard Mesa Check Case settlement (Case No. 91CW247, Colorado Water Div. 5), the content of the Historic Users Pool (HUP) in Green Mountain Reservoir is evaluated during the summer to determine the availability of water surplus for the needs of historic beneficiaries. If it is determined that surplus water is available, it may be delivered based upon need, first to the federal Grand Valley Powerplant, and then to other uses based on a priority system or on specific agreements.

Irrigation systems on the Colorado River, above the Blue River confluence, were improved to enable continued use of existing rights. Releases are made from Lake Granby to maintain the fishery in the Colorado River.

The C-BT's principal Colorado River storage facilities on the west slope are Lake Granby, Grand Lake, and Shadow Mountain Reservoir. Willow Creek Reservoir located on Willow Creek, a tributary to the Colorado River below Lake Granby, is also a principal C-BT west slope facility. Willow Creek Pumping Plant lifts the water 175 feet. It then flows by gravity via the Willow Creek Feeder Canal to Lake Granby.

Completed in 1953, Willow Creek Reservoir has a total storage capacity of 10,600 AF. The uncontrolled spillway, located at the left abutment, has a maximum flow capacity of 3,200 cubic feet per second (cfs). The Willow Creek Feeder Canal begins at the left abutment and has a capacity of 400 cfs. The canal is used to transfer water to Granby Reservoir. Excess inflow of water into the reservoir is transferred by the Willow Creek Feeder Canal and pumped to Lake Granby for storage.

Granby Reservoir is located on the upper Colorado River, and was completed in 1950. 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 AF. Flows through the spillway are controlled by two radial gates with a total release capacity of 11,500 cfs.

Granby Pumping Plant lifts the water 99 feet from Lake Granby to Granby Pump Canal. The canal conveys the water 1.8 miles to Shadow Mountain Lake, which also intercepts flows from the North Fork of the Colorado River. Shadow Mountain Lake connects with Grand Lake to make a single body of water, from which diversions flow into Adams Tunnel to be conveyed to the eastern slope. The Granby Pumping Plant has three units with a combined installed capacity of 1,200 cfs.

Emerging from Adams Tunnel into the East Portal Reservoir, the water flows across Aspen Creek Valley in a siphon and then under Rams Horn Mountain through a tunnel. At this point, it enters a steel penstock and falls 205 feet to Mary's Lake Powerplant. This powerplant is located on the west shore of Mary's Lake. The water is conveyed between Mary's Lake and Estes Powerplant, through Prospect Mountain Conduit and Prospect Mountain Tunnel.

Lake Estes is located on the Big Thompson River, and is formed by Olympus Dam, completed in 1949. It serves as an afterbay for the Estes Powerplant.. The storage in Lake Estes and the forebay storage in Mary's Lake enable the Estes Powerplant to meet daily variations in energy demand. Lake Estes has a total capacity of 3,100 AF. It captures the discharge of Estes Powerplant, and inflow coming from the Big Thompson River. It also regulates river flow below the dam, and releases water to the Foothills Power System via Olympus Tunnel (550 cfs capacity). The Estes Powerplant has three hydroelectric units with a total capacity of 45 megawatts. The combined flow capacity for the three units is 1,300cfs. The spillway, located

on the right abutment, has five radial gates with a total discharge capacity of 21,200 cfs. The center gate has been automated, and is operated remotely from the Casper Control Center (CCC). During the winter months, C-BT water is diverted through Adams and Olympus Tunnels and routed through the Foothills Power System to terminal storage at Carter and Horsetooth Reservoirs. This entire operation is controlled remotely from the CCC.

Water from Lake Estes and the Big Thompson River is conveyed by Olympus Siphon and Tunnel, and Pole Hill Tunnel and Canal, to a penstock through which the water drops 815 feet to Pole Hill Powerplant. The flow is then routed through Pole Hill Powerplant afterbay, Rattlesnake Tunnel, Pinewood Lake, Bald Mountain Pressure Tunnel, and eventually dropped 1,055 feet through two penstocks to Flatiron Powerplant. This powerplant discharges into Flatiron Reservoir, which regulates the water for release to the foothills storage and distribution system. The afterbay storage in Flatiron Reservoir and the forebay storage in Pinewood Lake enable Flatiron Powerplant to regulate power releases to meet daily power loads.

Flatiron Reservoir pump/turbine lifts water as much as 297 feet, and delivers it through Carter Lake Reservoir Pressure Conduit and Tunnel to Carter Lake Reservoir. When the flow is reversed, the unit acts as a turbine-generator and produces electricity, discharging back into Flatiron Reservoir.

The Saint Vrain Supply Canal delivers water from Carter Lake Reservoir to the Little Thompson River, St. Vrain Creek, and Boulder Creek Supply Canal. The latter delivers water to Boulder Creek and Boulder Reservoir. The South Platte Supply Canal, diverting from Boulder Creek, delivers water to the South Platte River.

The Charles Hansen Feeder Canal (CHFC) transports water from Flatiron Reservoir to the Big Thompson River and Horsetooth Reservoir. The canal crosses the Big Thompson River in a siphon above the river and canyon highway. Water from the Big Thompson River can be diverted into the canal by Dille Diversion Dam one mile up the canyon mouth and used for power generation at Big Thompson Powerplant.

C-BT water deliveries and water diverted from the Big Thompson River for power generation purposes, are dropped through a chute from the feeder canal ahead of the siphon crossing, or are passed through the Big Thompson Powerplant to convert the available head to electricity.

Horsetooth Reservoir is located west of Fort Collins and is formed by Horsetooth Dam at the north end; Soldier, Dixon, and Spring Canyon Dams on the east; and Satanka Dike. An outlet at Soldier Canyon Dam supplies water to the city of Fort Collins, three rural water districts, Colorado State University, and the Dixon Feeder Canal for irrigation. The principal outlet from Horsetooth Reservoir is through Horsetooth Dam into the Charles Hansen Supply Canal. This canal delivers water to a chute discharging into the Cache La Poudre River and to a siphon crossing the river to supply the Windsor Reservoir and Canal Company. A turnout from the Supply Canal supplies the city of Greeley municipal water works. Water delivered to the river

replaces, by exchange, water diverted upstream to the North Poudre Supply Canal, which conveys it to the North Poudre Irrigation Company System.

## SUMMARY OF OPERATIONS FOR WATER YEAR 2013

### Review of Water Year 2013 Most-Probable Plan

The C-BT Most-Probable Annual Operating Plan (AOP 2013) for October 2013 was developed considering the effects of historical average runoff values, the expected demands and depletions of the NCWCD and Denver Water, pool levels recorded at the end of Water Year (WY) 2012, other average values, special operations, such as previously planned system outages and maintenance schedules, and an assumed NCWCD quota of 70 percent.

The AOP 2013 assumed diversions through the Adams Tunnel totaling 289,000 AF during WY 2013. Most of that water was planned to be diverted between January - May 2013, leaving sufficient capacity within the system to convey Big Thompson River skim water used for power generation, and possibly Big Thompson River priority water during the late spring and early summer months.

The skim operation, according to the AOP 2013, could convey a total estimated volume of 25,300 AF of water. The skim volume, combined with an estimated 62,800 AF of C-BT water to be delivered through the trifurcation at the Big Thompson River canyon mouth, could potentially keep the Big Thompson Powerplant generating power from May - September.

The Green Mountain Reservoir operational plan was developed considering the effects of upstream operations at Dillon Reservoir, forecasted depletions provided by Denver Water, average runoff values, anticipated system outages and planned special operations. Green Mountain Reservoir began the WY 2013 with an initial content of 76,700 AF. That content was expected to drop to 58,500 AF by late March, before rebounding and reaching a full pool by early July. According to the plan, the reservoir would physically fill in WY 2013 assuming a volume of inflow after depletions totaling 228,300 AF and depletions from Denver Water totaling 142,300 AF. The plan did not account for the Coordinated Reservoir Operations (CROS) in the spring, or the Grand Lake Water Clarity Initiative in July 2013.

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 Pumping Plant, and consequently the reservoir levels at Granby Reservoir.

Granby Reservoir began the year with 333,600 AF in storage. Based on the diversion plans for the Adams Tunnel presented in the AOP 2013 the reservoir content was expected to drop to 185,000 AF by the end of April before rising to reach 326,400 AF by the end of July. Under the AOP 2013 Granby Reservoir was expected to finish the year with a storage content of 291,300 AF, significantly lower than its maximum capacity. The Farr Plant pumping volume to Shadow Mountain was expected to total 211,500 AF for the entire WY, with the bulk of the

pumping operation taking place between December and late April. Windy Gap pumping to Granby Reservoir was planned to total 15,000 AF during WY 2013. Meanwhile, pumping from Willow Creek to Granby was planned to total 46,200 AF, from May - June.

Carter Reservoir began the year with 54,638 AF of water in storage. Based on the AOP 2013 pumping to Carter Reservoir was to resume in late December, and continue through late May. Another pumping operation was planned for September, in preparation for the Carter Reservoir outlet works refurbishing project scheduled for the middle of October 2013. A total of 106,300 AF of water were planned to be pumped to Carter Reservoir during WY 2014. The AOP 2013 also assumed 3,000 AF of water stored at Carter Lake, which could be used for power generation at Flatiron Powerplant Unit 3 during November 2012 to satisfy water demands along the CHFC while the Pole Hill Canal joints were being sealed from November - December 2012. Deliveries of water from Carter Reservoir were expected to total 105,600 AF; 94,200 AF of that C-BT water; and 11,400 AF from the Windy Gap Project. The boat ramps were expected to stay operational during the entire WY, based on those projections.

After a severely dry summer in 2012 Horsetooth Reservoir began WY 2013 with only 56,600 AF of water in storage, 68.5 percent of the 30-year average. According to the AOP 2013 inflow to Horsetooth Reservoir was expected to total 149,000 AF by the end of September 2013, while the reservoir content was expected to rise from 56,600 AF to 146,000 AF by June 2013. Deliveries of water were anticipated to total 113,900 AF for the entire WY 2013, with 107,000 AF coming from the C-BT Project, and 6,900 AF from the Windy Gap Project. The boat ramps were also expected to stay in the water during the entire WY, based on the AOP 2013 projections.

Three versions of the Annual Operating Plan were developed in October 2012; the Maximum-Reasonable Plan, Most-Probable Plan, and Minimum-Reasonable Plan. Only the Most-Probable Plan was considered in this report.

## Weather Conditions and their Impact on C-BT Operations

The fall and winter seasons were relatively dry in Colorado, keeping the snowpack below average for the entire season. Weather did not have a significant effect on C-BT operations during the fall and winter seasons.

The snowpack over the northern mountains of Colorado remained lower than the average from March - April. Table 1 provides a view of the snowpack condition on April 1 at some of the watersheds within the C-BT system. Based on the snowpack condition, the runoff forecast for April 1 was also below-average for most locations within the C-BT region. Table 2 provides the runoff forecasts for several C-BT facilities.

**Table 1. Snow-Water Content for April 1, 2013**

| Watershed | Snow-Water Content | | |
|---|---|---|---|
| | 2013 (In.) | Avg. (In.) | % of Avg. |
| Green Mtn. Res | 10.9 | 14.0 | 78 |
| Willow C | 8.4 | 9.3 | 90 |
| Lake. Granby | 8.5 | 11.6 | 73 |
| Lake. Estes | 6.0 | 9.8 | 61 |

**Table 2. Runoff Forecast for Several Locations within the C-BT Area**

| **Forecast of Apr-Jul Volume (KAF)** | | | | | | |
|---|---|---|---|---|---|---|
| | Chance of Exceeding | | | | | |
| **Forecast Point** | **95% Reasonable Min 1/** | **75%** | **50% Most Probable** | **25%** | **5% Reasonable Max 1/** | **Most Probable % Avg** |
| Green Mtn. Res | 152 | 178 | 197 | 215 | 242 | 72 |
| Willow Crk. Res | 23 | 30 | 36 | 41 | 49 | 75 |
| Lake Granby | 82 | 103 | 118 | 134 | 155 | 60 |
| Big Thompson River Above Lake Estes | 32 | 42 | 48 | 55 | 65 | 69 |
| Big Thompson R. at Canyon Mouth | 27 | 47 | 61 | 75 | 96 | 66 |

1/ The probability is estimated to be 9 chances in 10 that the actual volume will fall between the reasonable minimum and reasonable maximum.

The CROS for WY 2013 was cancelled early in the spring because of the unusually low runoff projections. The CROS is an important component of the C-BT operations. CROS can be described as an initiative supported by reservoir operators over the west slope, in an effort to augment Colorado River flows at the 15-Mile reach near Grand Junction, Colorado. The goal of the operation is to pass inflow during the peak of the runoff for the Colorado River to benefit endangered species of fish along that section of the river. CROS is voluntary and is planned in a

way that it does not affect water supply, or hinder filling reservoirs. During low runoff years, CROS is cancelled to aid in refilling depleted reservoirs.

By April 2013 a series of storms in Northern Colorado increased the snowpack totals to almost average levels at many locations. The snow produced by these storms over the foothills and eastern plains alleviated the persistent drought that had affected the region since fall 2011. The late spring storms and the cooler temperatures extended the peak of the snow season at many locations during 2013. After April 2013 temperatures in Northern Colorado did not begin to warm up again until the middle of May 2013. The colder weather also kept the snowpack higher than previously expected for the month of May.

The runoff season began in late April, fed mainly by the low elevation snowpack left by the spring snow storms. The Big Thompson River experienced a surge in runoff as early as April 26, 2013. The Big Thompson River produced 15,000 AF more than projected for the runoff season. Other watersheds also experienced similar increases in runoff, however the Blue River did not benefit as much as the Upper Colorado River and the Big Thompson River.

NCWCD declared a quota of 60 percent in April 2013 and that quota was held for the remainder of the WY. The quota assumed for the AOP 2013 was 70 percent. The 10 percent reduction in the quota represented 31,000 AF decrease in water diversions from the west slope. Therefore, adjustments to water diversions from the west slope had to be incorporated into the May version of the Annual Operating Plan for the C-BT.

The Grand Lake Water Clarity Initiative planned for WY 2013 was announced in June and was included in the June version of the C-BT Annual Operating Plan. The plan for WY 2013 resulted in a no-pumping operation for the Farr Pumping Plant which ended on September 3, 2013. The new plan incorporated minimum diversions through the Adams Tunnel for the months of July - August 2013.

The heavy snowfall pattern experienced during the spring over the east slope and the eastern plains affected water demands significantly during the summer months. After the spring storms ended in the middle of May. The weather turned dry, and the temperatures rose rapidly. Demands for C-BT water were low in May - July. The flows in the Big Thompson River were adequate to satisfy the water demands.

By August 2013 the weather turned extremely dry and hot. As the runoff diminished, the demands for C-BT water began to increase. The NCWCD quota was kept at 60 percent. The demands for C-BT water were concentrated from July - September 2013. The result was high deliveries of C-BT water during that period, from both Carter and Horsetooth reservoirs, as well as through the trifurcation at the Big Thompson River canyon mouth. Skim operations in the spring and these large deliveries kept the Big Thompson Powerplant generating power from May - September 2013.

During the Grand Lake Water Clarity Initiative, water from Carter Reservoir was used to supply the C-BT allotees along the Big Thompson River and the CHFC. Flatiron Unit 3 was operated intermittently as a generator from August - September 2013. This operation conveyed water from Carter Reservoir into Flatiron Reservoir to feed the CHFC. Almost 7,500 AF of water from Carter Lake were used during the Grand Lake Water Clarity Initiative to satisfy demands for C-BT water on the east slope. The Grand Lake Water Clarity Initiative required more than twice the volume than was initially projected in the AOP 2013.

The monsoon season was strong during the summer of WY 2013. It started earlier than usual, and ended later than usual. Its impact on C-BT operations was not very significant until September 2013.

**Maintenance and Outages Impact on C-BT Operations**

Fall maintenance during WY 2013 had a significant effect on operations, water diversions, and power generation, especially in November 2012. Maintenance and other repair projects were taking place at multiple facilities within the C-BT. Water diversions from the west slope were suspended on November 5, 2012. Lake Estes was drained to allow inspections and other work to take place at the Estes Powerplant. The work at the Estes Powerplant only took a few days, but the City of Estes Park took advantage of the low reservoir level to dredge the bottom of the reservoir. To allow the completion of these two projects, the reservoir level was kept low from November - December 2012.

The WY 2013 drawdown of Lake Estes was achieved by releasing the water in storage into the Big Thompson River canyon. Water released to the Big Thompson River was recaptured at the Dille Tunnel diversion dam, and redirected to Horsetooth Reservoir. Under normal circumstances, the water from Olympus Dam would have been conveyed via the Olympus Tunnel to maximize power generation. During the WY 2013 drawdown of Lake Estes, the Olympus Tunnel was not available to drain the reservoir. The Olympus Tunnel entered a clearance period shortly after November 5, 2012, to allow sealing of the Pole Hill Canal box-culvert joints. The Lake Estes drawdown and the Pole Hill Canal work began almost simultaneously. The Olympus Tunnel remained dry from November 5 - December 12, 2012, to complete the sealing of the Pole Hill Canal box-culvert joins.

Lake Estes remained drained until December 3, 2012, when water began to flow once again through the Adams Tunnel and into the reservoir. Flows through the Adams Tunnel were initially low to allow Lake Estes to rise slowly, protecting the Estes Powerplant turbines, and the coffer dam in front of the plant. The slow pace also allowed the completion of the annual maintenance for Mary's and Pole Hill powerplants. The reservoir reached its operational pool at elevation 7469.50 feet on December 10, 2012. By December 12, 2012 the Adams Tunnel and Olympus Tunnel were once again conveying 550 cfs.

There were no water diversions from the west slope between November 5 - December 3, 2012. Water stored at Pinewood Reservoir was used to continue delivering C-BT water to allotees along the CHFC during the maintenance season. Water from Carter Lake was not needed during that period. It was the first time in several years that Flatiron Unit 3 was not used as a generator during the fall maintenance period. The water stored at Pinewood was sufficient to satisfy the demands for C-BT water.

Pumping to Carter Lake began December 13, 2012 and continued until late February 2013. By late February 2013 an 18-day interruption took place to conduct testing at Flatiron Powerplant Unit 3 and to complete other pending work. The pumping operation resumed on March 12 - May 3, 2013. A third pumping operation began on June 27, 2013 in preparation for the Grand Lake Water Clarity Initiative operation scheduled from July - September 2013 and for the gate refurbishing work at the Carter Reservoir outlet works, planned for October - November 2013. A fourth pumping operation was attempted after the flooding event had occurred in September 2013 but was abandoned when diversions of water from Grand Lake were suspended. Pumping for the year finally ended on September 16, 2013.

The flow of water into Horsetooth Reservoir was maintained during the entire WY. Water flows were relatively high during October 2012. By early November 2012 the flows in the CHFC had been reduced to minimum conditions. Once the fall maintenance season ended for C-BT facilities by December 2012, the flows to Horsetooth Reservoir were increased. The CHFC 550 Section maintained flows between 100 - 200 cfs during January - February 2012 while pumping to Carter Reservoir was taking place. During February 2013, when testing and repair work of Flatiron Unit 3 began, the flows reached almost 500 cfs .

March 27 - April 19, 2013, the CHFC 930 Section underwent its annual maintenance. Water for the CHFC 550 section had to be bypassed around the Southern Power Arm of the system using the Big Thompson River as a conveyance. The Dille Tunnel diversion dam near the mouth of the Big Thompson River Canyon recaptured the water. Only minimum flows were bypassed to limit any power generation losses. The water recaptured by the Dille Tunnel diversion structure was sent to Horsetooth Reservoir via the CHFC 550 Section. Flows averaged between 40 - 50 cfs during the three weeks of maintenance work at the CHFC 930 Section. Once the maintenance of the CHFC 930 Section was completed higher flows to Horsetooth resumed.

**Impact of the Grand Lake Water Clarity Initiative on C-BT Operations**

The Grand Lake Water Clarity Initiative had a significant effect on C-BT operations, including east slope water conveyance and power generation.

Several factors contributed to successful C-BT operations during the Grand Lake Water Clarity Initiative. First, the water diversions from the west slope began relatively early in the WY, and continued almost uninterrupted until late July. The long water diversion season allowed reservoir storage at Carter and Horsetooth to be sufficient to satisfy demands for C-BT water,

despite the low flows through the Adams Tunnel from July - September 2013. Also, the 60 percent quota decreed by NCWCD in the spring was not increased during the summer. This kept demands for C-BT water relatively low during the peak demand period. Finally, the wet spring on the east slope and the eastern plains also helped to keep demands relatively low during May - July 2013.

Carter Reservoir supplied most of the C-BT water used to satisfy demands along the CHFC and the Big Thompson River during the Grand Lake Water Clarity Initiative. Therefore, Carter Lake level dropped more than the Horsetooth reservoir level. Nevertheless, recreation at Carter and Horsetooth reservoirs was very successful during WY 2013. The boat ramps remained in the water the entire summer and until the end of September.

**Drought Impact on C-BT Operations**

The drought affecting Colorado since 2011, had a more profound effect on C-BT operations in the Colorado River Basin than along the east slope. Adequate water supply combined with the low quota declared by NCWCD kept the demands for C-BT water on the east slope low during WY 2013. On the west slope the dry conditions created concerns among water managers. The dry conditions during the early spring caused the cancellation of the CROS, and forced the HUP season into an early start. Green Mountain Reservoir did not have a physical fill during WY 2013 for the second year in a row, although it did achieve a "paper fill". As projected in the AOP 2013 Granby Reservoir did not achieve a physical fill during WY 2013.

**Flooding Impact on C-BT Operations**

During September 2013 a series of storms from the Gulf of Mexico carried large amounts of moisture to Northeastern Colorado. Typical precipitation averages for mountain areas draining into Estes Park are two inches or less during the month of September. Annually, the region might see as much as 16 inches. Records show 12 inches of rain or more at various locations within the Big Thompson River watershed. From September 9-16, rain fell in record amounts, elevating the region from drought status to above average seasonal precipitation. Soils became saturated resulting in the highest runoff in more than 75 years of operating history.

On September 12, shortly before midnight, inflows to Lake Estes peaked between 4,600-5,300 cfs. As a result, outflow from Lake Estes through Olympus Dam to the Big Thompson Canyon reached an estimated 5,283 cfs. This set a new inflow/outflow record for Olympus Dam.

Reclamation maintained controlled releases from Olympus Dam to the Big Thompson Canyon throughout the rain and flood event. In concordance with Reclamation Directive and Standards, Eastern Colorado Area Office (ECAO) personnel followed the Emergency Action Plan and the Standing Operating Procedures for Lake Estes and Olympus Dam. Staff also maximized use of the east slope C-BT system as conditions allowed. The southern power arm from Pole Hill Powerplant to Flatiron Reservoir captured and stored runoff, which otherwise would have contributed to Little Thompson River and Cottonwood Creek flooding.

All C-BT dams performed well during the flooding and remained safe. However, the following east slope facilities were affected: East Portal, Lake Estes, Pole Hill Afterbay, Little Hells Diversion Dam, Dille Diversion Tunnel, Big Thompson Siphon, and the Big Thompson Power Plant.

The worst impacts were to facilities at the mouth of the Big Thompson Canyon. Over 11 feet of sediment were deposited by the flood across the canyon mouth. Sediment buried the tail race at the Big Thompson Powerplant and the trunk of a tree was driven part way through the plant's upstream side. Pinewood and Flatiron reservoirs received a large influx of sediment and debris. The storm also caused sedimentation at Lake Estes, especially along the Fish Creek arm of the reservoir.

Several stream gages used in east slope C-BT operations were affected including the *Big Thompson River above Lake Estes,* the *Big Thompson River below Lake Estes,* the *North Fork of the Big Thompson River at Drake,* and the *Big Thompson River at the Canyon Mouth.* Some steam gages were washed away; others were damaged. The *North Fork of the Big Thompson River at Drake* gage and the defunct *Fish Creek near Lake Estes* gage were buried in several feet of sediment. Other stream stations were overwhelmed by high flows and their measurements were lost. The *Dille Tunnel* gage was inundated and its data lost. The *Wind River* and *Wind River Bypass* gages were also severely affected but survived the event.

The east slope of the C-BT remained partially operational throughout the rain and flood event. Diversion from the west slope to the east slope via the Adams Tunnel was shut down on the morning of September 12. Deliveries were made from local runoff September 16-26 and from Flatiron and Pinewood storage September 26 - October 3. From October 4 - December water deliveries were made from Carter Lake via Flatiron Unit 3. Reclamation was able to generate hydropower during all of these deliveries.

On September 16, ECAO activated a Damage Assessment and Recovery Team to inspect and evaluate damaged facilities. Crews from the Provo Area Office, Mount Elbert Powerplant, and the Pueblo Field Office assisted C-BT Operations and Maintenance staff in returning affected facilities to service. The Town of Estes Park led recovery efforts around the shores of Lake Estes. Fill material for reconstruction of Fish Creek Road was dredged from the Lake Estes inlet where the Big Thompson River enters the small reservoir. Dredged material was used to restore public facilities and access to utility services.

Long-term work for the Dille Diversion and the Big Thompson Powerplant is being scheduled as specific needs continue to evolve. On December 12, 2013 short-term repairs were completed and the C-BT Project resumed regular operations.

Reports provided by the Natural Resources Conservation Service on December 19, 2013 demonstrate peak flows during the flood were measured in the North Fork of the Big Thompson Canyon near Drake, Colorado at 18,400 cfs. Flood outflows are estimated in the same report to have peaked at the mouth of the canyon between 28,000- 32,000 cfs. Other indirect

measurement estimates continue to be developed by the State of Colorado, USGS and Reclamation's Technical Service Center.

**Comparison Between the Planned and Actual C-BT Operations for WY 2013**

The AOP 2013 assumed diversions through the Adams Tunnel totaling 288,900 AF based on a 70 percent quota. This did not include a Grand Lake Water Clarity Initiative operation, but considered factors such as an average snowpack and runoff, and a regular maintenance schedule. The quota for the WY 2013 was actually set at 60 percent. The Grand Lake Water Clarity Initiative curtailed diversions of water from the west significantly for over six weeks in the summer. The September 2013 flood forced a shutdown of the Adams Tunnel until the end of the WY. Those factors affected the final volume of diversions from the west slope. Towards the end of September 2013 the total diversion volume through the Adams Tunnel for the WY 2013 had reached 237,730 AF, approximately 51,170 AF less than projected. Figure 1 shows a comparison between the cumulative volume of diversions from the west slope, as they were projected in the AOP 2013, and the actual volume.

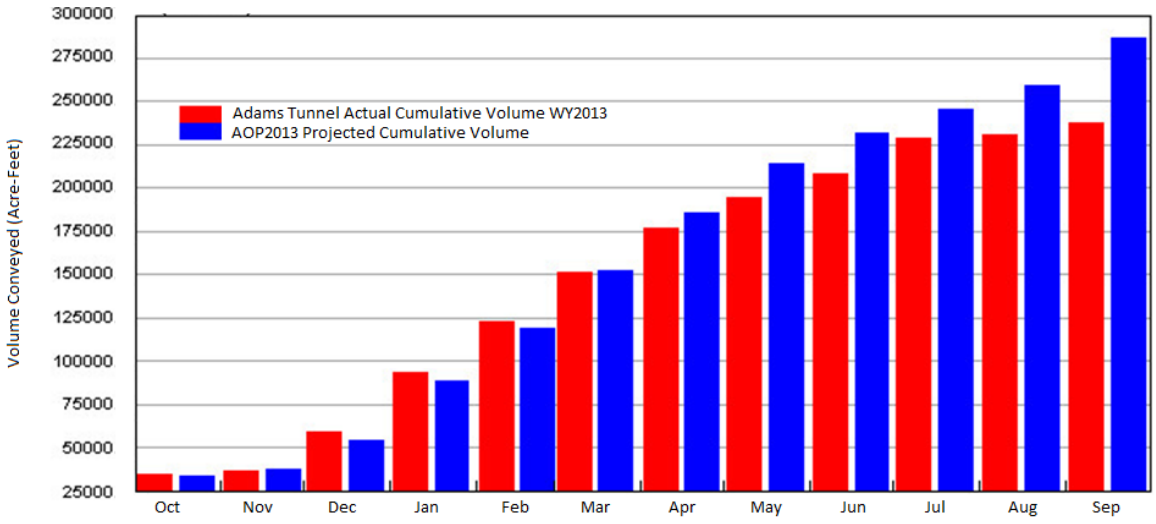



**Figure 1.** Adams Tunnel Cumulative Monthly Diversions; Planned and Actual.

Despite the lower diversion through the Adams Tunnel, all the water delivery targets and goals for the C-BT were met. The expected deliveries for C-BT water for WY 2013 totaled 242,700 AF, which included 223,800 AF of C-BT water, and 18,900 AF of Windy Gap Project water. According to NCWCD, the WY 2013 C-BT deliveries totaled 195,528 AF in WY 2013, approximately 47,200 AF less than projected. The total volume delivered included 169,071AF of C-BT water; 19,349AF of Windy Gap water; and 7,108 AF of carriage contract water. The C-BT water delivered included 55,120 AF of carryover C-BT water from WY 2012. The lower volume is attributed mainly to the low quota and reduced demands resulting from the wet spring and early fall seasons.

The AOP 2013 projected combined storage content for Granby, Horsetooth and Carter reservoir towards the end of September 2013 was 426,400 AF, 53 percent of the total capacity. The 30-year end of September average content for those three reservoirs is 556,290 AF, 69.2 percent of the total capacity. The end-of-water-year combined storage was 515,453 AF; 93 percent of average and 89,053 AF higher than projected. The higher volume can be attributed to the low quota and reduced demands resulting from the wet conditions in the late spring and early fall. Figures 2, 3, and 4 compare the planned AOP 2013 end-of-the-month storage to actual storage for Granby, Carter, and Horsetooth Reservoirs.

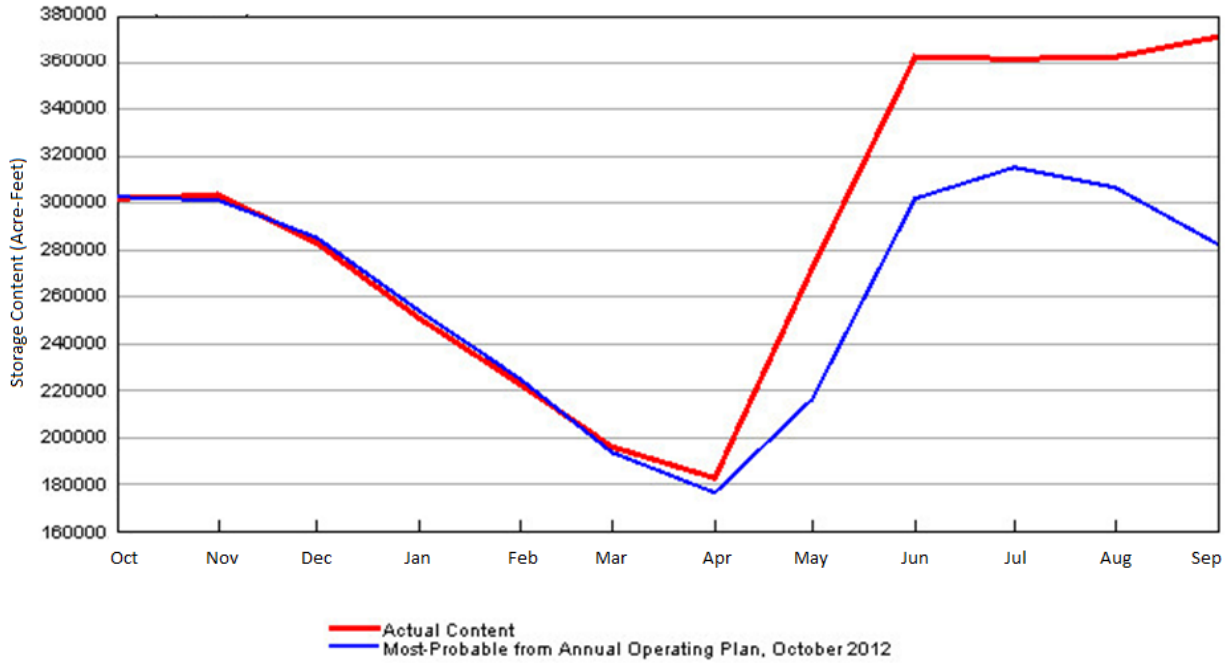



**Figure 2:** Granby Reservoir End-of-the-Month Storage Contents; AOP 2013 and Actual.

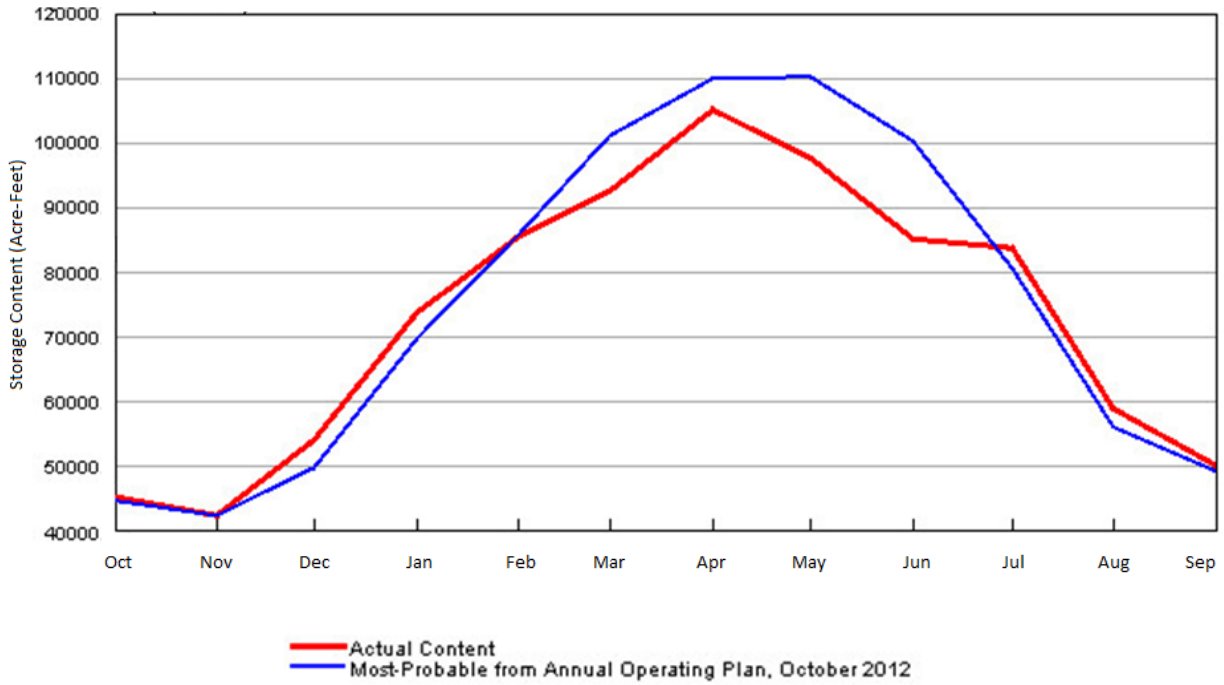



**Figure 3:** Carter Reservoir End-of-the-Month Storage Contents; AOP 2013 and Actual.

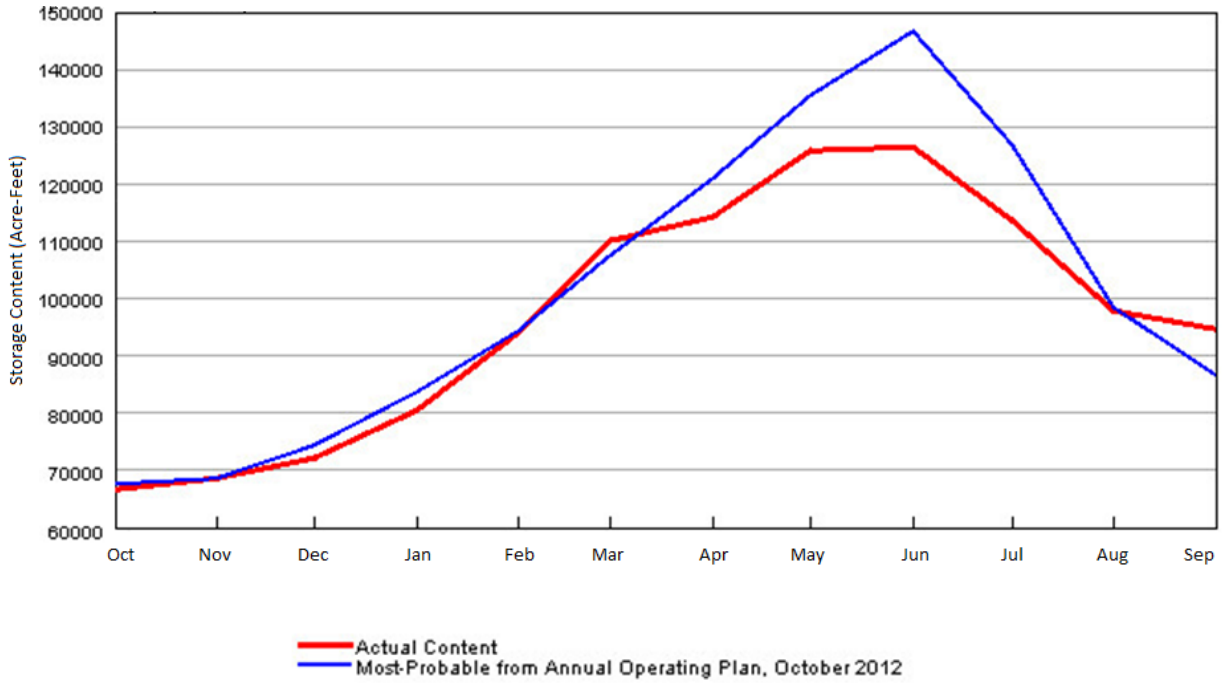



**Figure 4:** Horsetooth Reservoir End-of-the-Month Storage Contents; AOP 2013 and Actual.

The C-BT powerplants produced a total of 599.1 gigawatt-hours of electricity during WY 2013. The average cumulative gross power generation for a WY is 599.4 gigawatt-hours. The

AOP 2013 contained projections showing a cumulative gross generation of 614.4 gigawatt-hours. Lower quota for the WY reduced the volume of water needed for deliveries to the east slope, reducing the diversions from the west. These numbers do not include the 1.7 gigawatts of power generated by Flatiron Unit 3 during WY 2013.

The Olympus Tunnel skimmed a total of 37,493 AF during WY 2013. The skimmed water was used to generate power at Pole Hill, Flatiron, and the Big Thompson powerplants. An estimated total of 64,000 megawatts were generated by this operation. The Dille Tunnel skim operation diverted a total of 5,415 AF of water during WY 2013. This volume of water was used to generate power at the Big Thompson Powerplant near the Big Thompson River canyon mouth. It is estimated that this operation produced an additional 860 megawatts of power. Figure 5 presents the cumulative volumes of water passed through the Olympus Tunnel during WY 2013, planned and actual.

Despite the difficult conditions, facility outages and maintenance schedules, special operations and the September flood, the C-BT met all its goals and commitments during WY 2013.

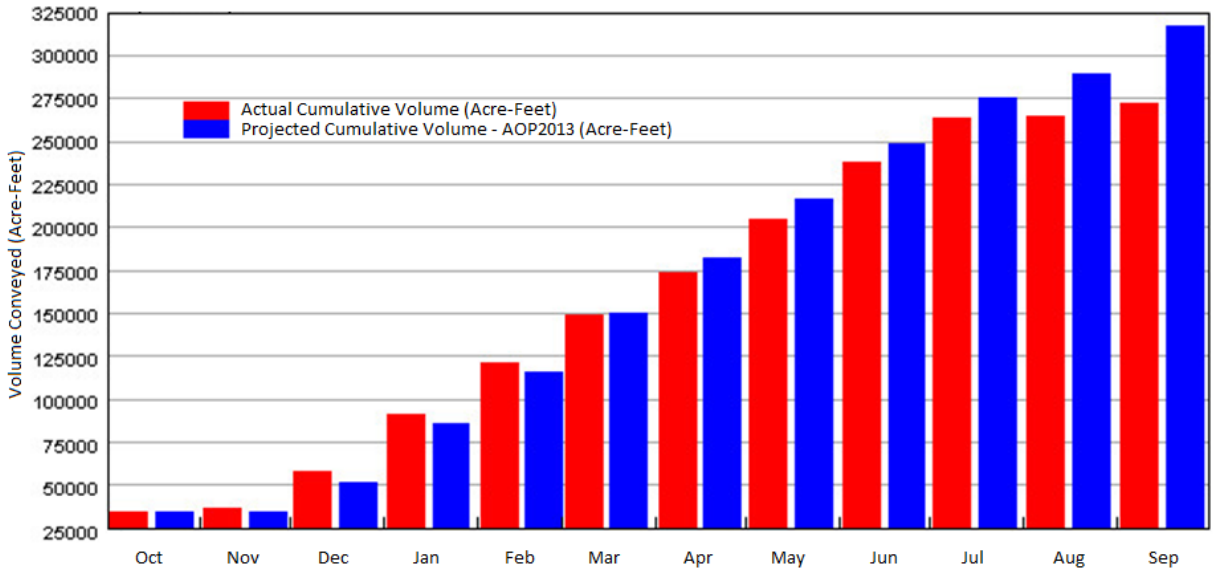



**Figure 5:** Olympus Tunnel Cumulative Monthly Diversions AOP 2013 and Actual

## WY 2013 OPERATIONS BY FACILITY

### Green Mountain Reservoir

The Green Mountain Reservoir contributing watershed experienced well-below average snowfall, with the snowpack being just 78 percent of average on April 1, 2013. 140 percent of average precipitation during April 2013 brought the basin's snowpack to near normal levels by May 1, 2013. Figure 6 shows the storage content for the reservoir during WY 2013 compared to

the 30-year average. Figure 7 shows the basin snow-water equivalent for WY 2013 compared to the 30-year average. The April 1, 2013 undepleted inflow forecast for Green Mountain Reservoir was 197,000 AF for the April - July period. The actual undepleted inflow was 211,000 AF. Despite the inflow volume, the reservoir fell short of achieving a physical fill by approximately 10,000 AF. This resulted from upstream depletions of over 120,000 AF and reservoir releases to meet senior downstream water right calls. The runoff for the Blue River began in late April 2013. The inflow to Green Mountain Reservoir reached its peak on June 12 with a daily average flow of 1,262 cfs.

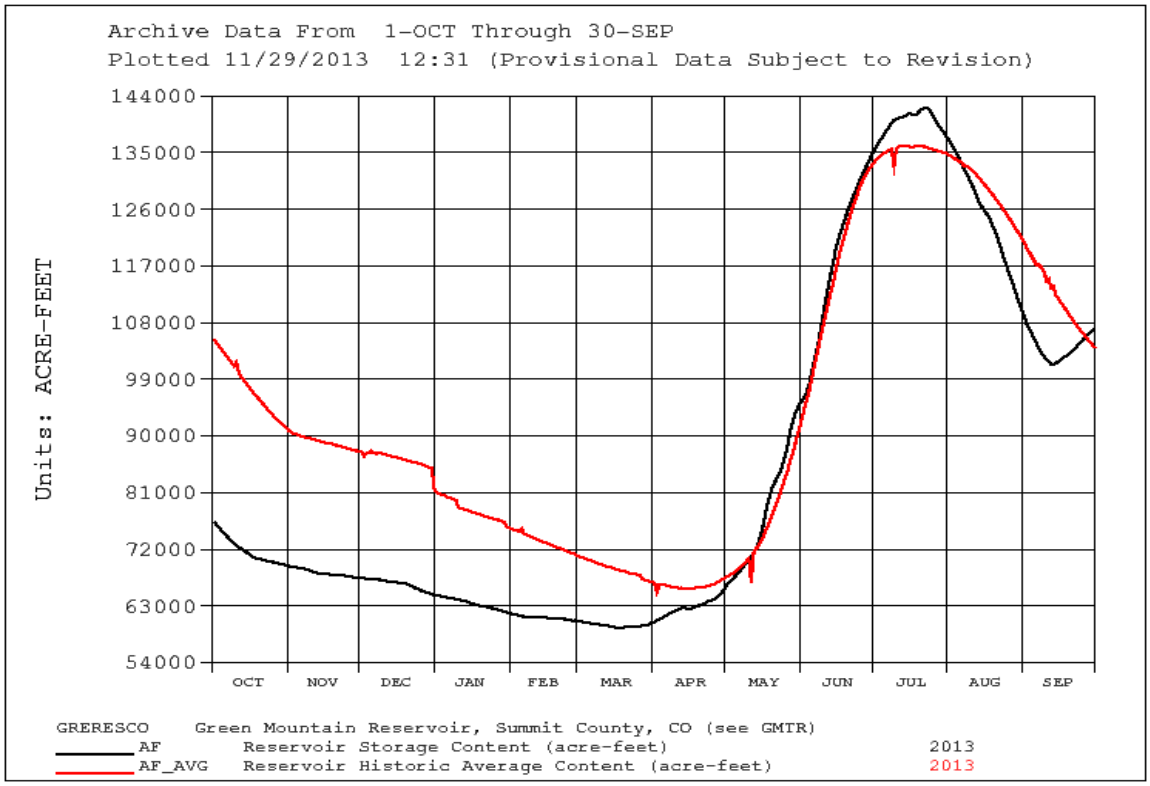



**Figure 6:** Comparison Between Green Mountain Reservoir Content in WY 2013 and the Average Historical Content.

Considering the very low snowpack and resultant low runoff projections, start-of-fill for 2013 was declared as April 1, 2013. On that date the reservoir held 60,358 AF in storage, well below its historic 65,000 AF start-of-fill target. Pursuant to the State Engineers Office's Interim Policy, "Administration of Green Mountain Reservoir for 2013", dated May 1, 2013, Green Mountain Reservoir achieved a "paper fill" on June 7, 2013. By that date, out-of-priority depletions by Denver Water and Colorado Springs Utilities totaled 49,035 AF. A provision of the interim policy allows Green Mountain Reservoir to continue storing its inflow under a 1955 exchange right after "paper filling" to reduce the amount of water owed by the Cities. Under this provision, Green Mountain Reservoir stored an additional 40,544 AF between June 7 - July 23,

reducing the amount owed by the Cities to 8,491 AF. This water was repaid by the Cities in the form of a direct release from Dillon Reservoir and substitution releases from Williams Fork Reservoir and Wolford Mountain Reservoir between August 1 - October 31, 2013.

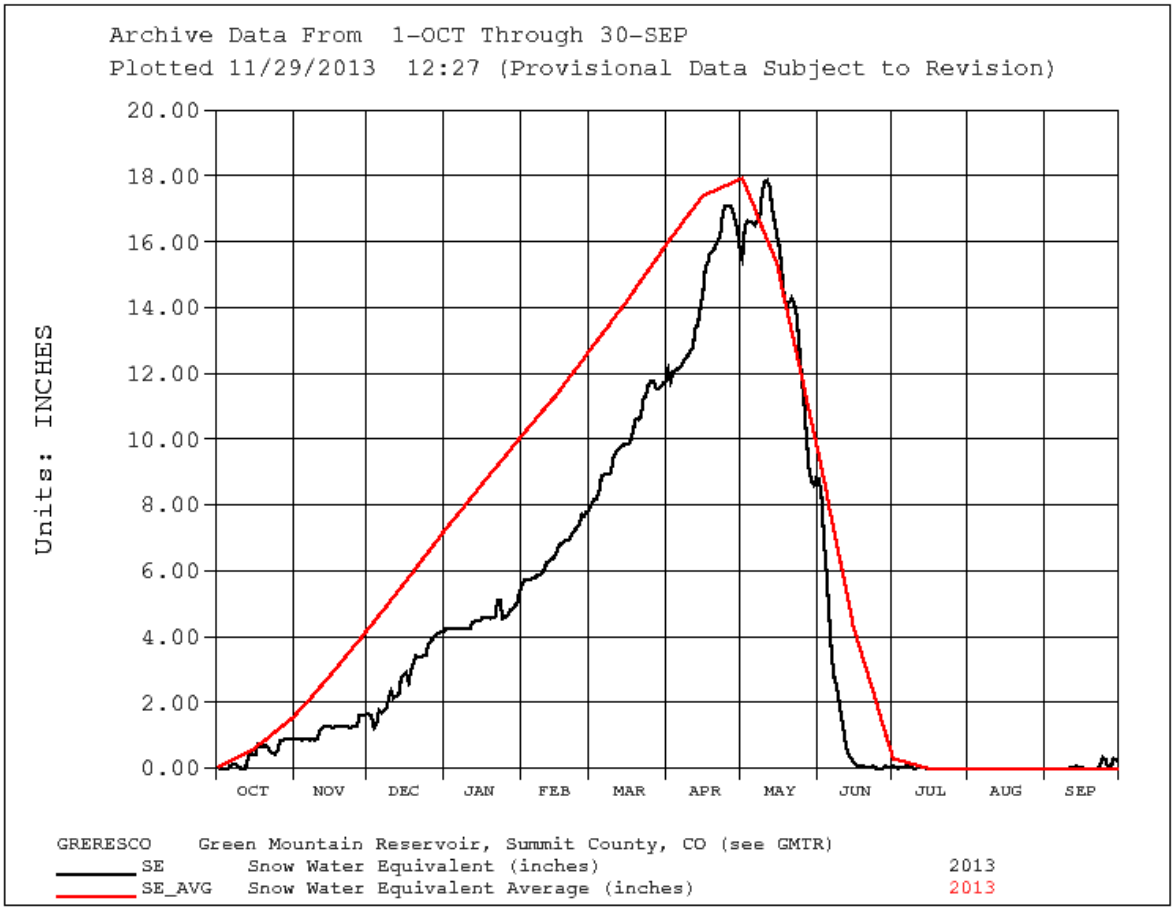



**Figure 7:** 2013 and 30 Year Average Snow-Water Equivalent for the Green Mountain Reservoir Drainage Area.

By continuing to store under the 1955 exchange right, Green Mountain Reservoir was able to reach a maximum physical content for the year on July 22, with a total of 142,104 AF in storage. Because the reservoir achieved a "paper fill", water was available to fully satisfy each of the following: the 52,000 AF Colorado-Big Thompson Project replacement pool; the 5,000 AF Silt Project reservation; the 66,000 AF HUP allocation; and the 20,000 AF set aside for contracts.

The maximum drawdown rate limitations, initially put in place in 2003 to alleviate landslide concerns, were continued in 2013. These drawdown rate limitations were to be initiated when the reservoir's water surface elevation dropped below 7880.0 feet. The 2013 available supply

and demands were such that the water surface elevation remained above 7880.0 feet during the entire irrigation season. Therefore, the drawdown rate limitations were never triggered.

While the interim policy requires that upstream depletions by Green Mountain Reservoir beneficiaries junior to Green Mountain Reservoir be charged against the "paper fill" of Green Mountain Reservoir, those depletions were not charged against this year's HUP allocation. Therefore, the entire 66,000 AF HUP allocation remained available when the reservoir achieved its "paper fill" on June 7, 2013.

In response to the dry conditions and the needs of the HUP beneficiaries, HUP surplus releases to benefit the endangered fish in the 15-Mile Reach were not made available until October 3, 2013. During October 3 - 31, 2013 Green Mountain Reservoir HUP surplus releases totaled 2,514 AF. As a result of extremely low streamflow conditions in mid-April, releases to augment the water rights of HUP beneficiaries downstream of Green Mountain Reservoir between April 13, 2014 and October 3, 2014 totaled 13,166 AF. The conservation efforts of the Grand Valley irrigators and the resumption of wetter conditions in the fall limited HUP releases to support the Cameo call to only 17,644 AF this year, in spite of the much-below average streamflow conditions throughout the summer. Together, the release for HUP beneficiaries, the direct HUP release to support the Cameo call, and the HUP surplus release to benefit the endangered fish totaled 33,324 AF in 2013. In October 2013 the HUP balance was 32,676 AF.

Both generators at the Green Mountain Powerplant were available for the entire year. The spillway was not used for flood operations, or to deliver water. There were no significant outages at Green Mountain Powerplant during WY 2013 outside of scheduled annual maintenance periods for each turbine. There were some short unit interruptions lasting only a few hours, but water deliveries were not compromised at any time. By the end of the WY 2013 Green Mountain Reservoir had a storage content of 107,059 AF, approximately 3,000 AF lower than the AOP 2013 projection. Recreation activities were relatively normal at Green Mountain Reservoir during WY 2013.

**Willow Creek Reservoir**

The Willow Creek contributing watershed maintained a below-average snowpack during the entire winter and early spring seasons. Figure 8 illustrates a comparison between the average historical snow-water equivalent and the actual. The snow-water content peaked in late March 2013 and began to drop steadily for a couple of weeks. But towards the middle of April 2013 a series of spring snow storms brought new snow, increasing the snowpack by up to 12 inches of snow-water equivalent. With the added snowpack and fresh snow at lower elevations, the runoff began in late April 2013. The runoff continued rising rapidly, with the WY 2013 peak daily average inflow of 901 cfs occurring on May 18, 2013.

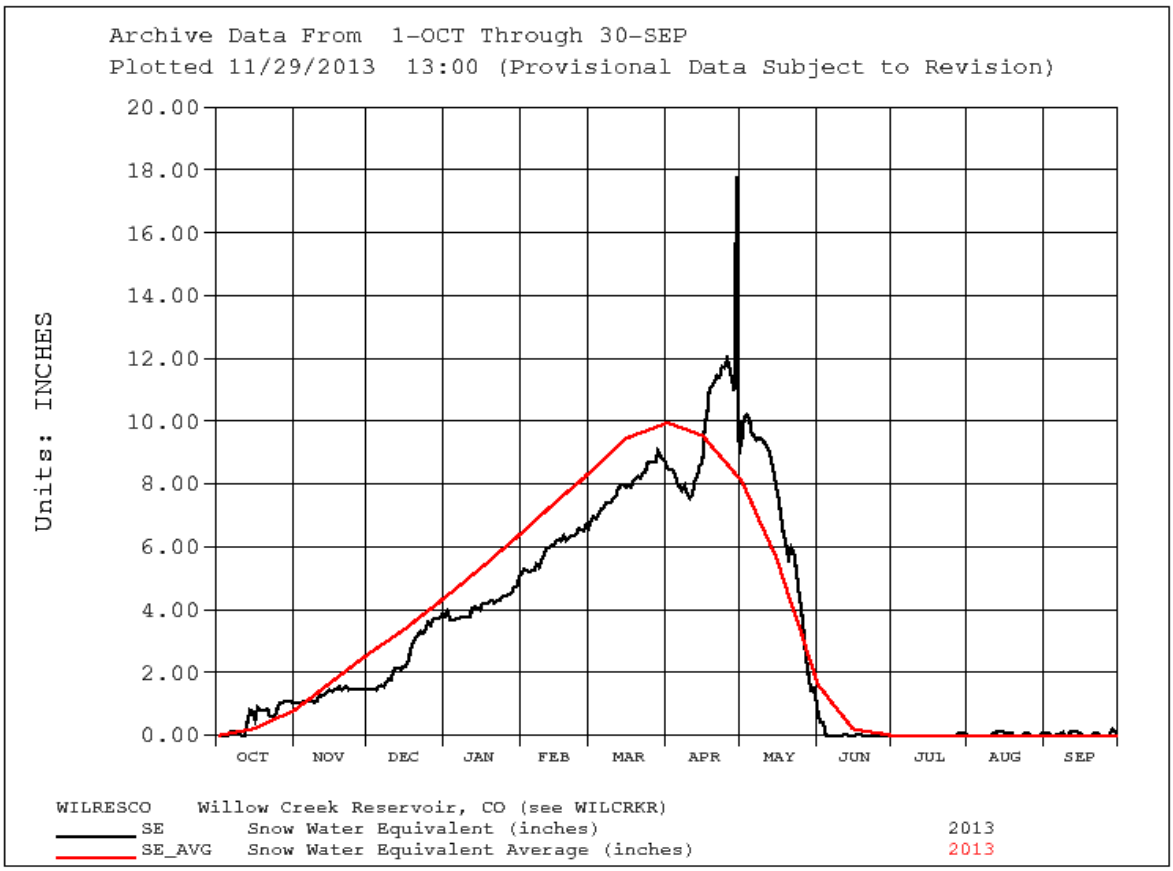



**Figure 8:** 2013 and 30-Year Average Snow-Water Equivalent 30-year Average for the Willow Creek Reservoir Drainage Area.

Reservoir operations were relatively normal during most of the year. There were no flood or drought operations at Willow Creek during WY 2013. The reservoir level began the WY at elevation 8,127.05 feet. By the middle of November, the reservoir had been drawn down to 8,116.93 feet, in preparation for winter operations. Willow Creek Canal was later winterized, and the canal pumps were turned off. The reservoir level was lowered again in early April, in preparation for the spring runoff. The runoff during May - June 2013 increased the reservoir level to the WY 2013 peak of 8128.69 feet. During July 2013 the reservoir level was lowered to 8117.13 feet on July 19, 2013 for refurbishing work of the outlet works gate mechanism. From that point on, the reservoir level began a slow climb, finishing the year at elevation 8,125.70 feet.

A total of 42,381 AF of water was pumped from Willow Creek to Granby during WY 2013. A total of 11,778 AF was released into Willow Creek below the dam. The WY 2013 maximum daily average release of 412 cfs occurred on May 17, 2013; the day before the peak of the inflow.

## Granby Reservoir

The snowpack within the Upper Colorado River watershed above Granby Reservoir was below average during the first few months of the WY 2013. In early April, the prospects for an average runoff season were poor. The snowpack was already beginning to melt, and expectations for fresh snow were low. Spring snowstorms moved into the area in late April and early May increasing the snowpack in the Granby Reservoir contributing watershed by more than 4 inches of snow-water equivalent. Figure 9 compares the WY 2013 and 30 year average snow-water equivalent for the Granby Reservoir drainage area.

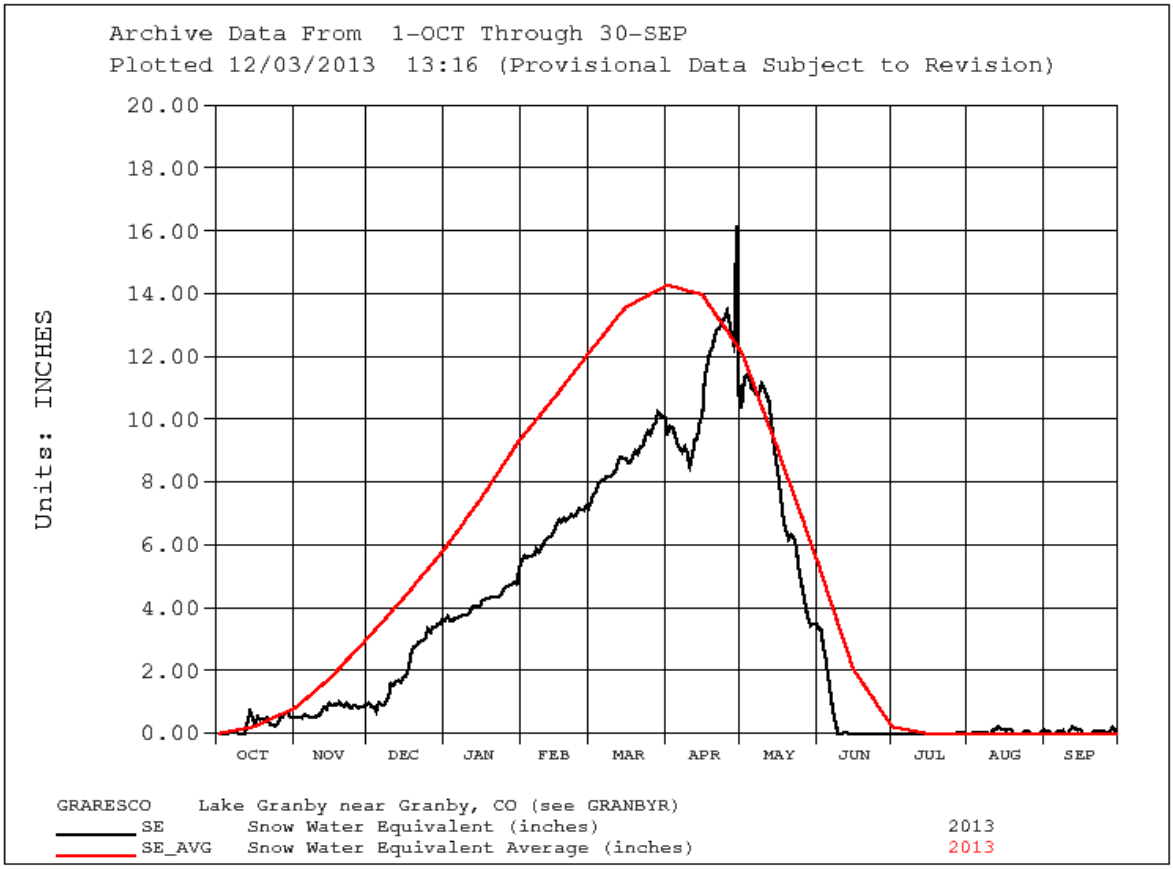



**Figure 9:** 2013 and 30-Year Average Snow-Water Equivalent for the Granby Reservoir Drainage Area.

Precipitation over the Upper Colorado River basin ended in the middle of May 2013. Runoff intensified soon after, as temperatures began to warm up. The summer months turned out to be relatively dry, with temporary bursts of monsoonal precipitation. The weather over the area remained dry and hot until early September 2013.

The hot and dry summer season ended with a storm in the middle of September 2013 which produced six days of light but continual precipitation. The storm produced sufficient runoff to

increase the Granby Reservoir content by more than 13,000 AF during the last two weeks of the WY.

Granby Reservoir began the year with a water surface elevation of 8248.35 feet and a storage content of 333,587 AF, 80 percent of the 30-year average. The Adams Tunnel diversions, which had been maintained during the hot and dry WY 2012, continued during the months of October - November 2012. The Farr Pumping Plant continued to pump water from Granby to Shadow Mountain during that period to feed the Adams Tunnel diversions. Granby Reservoir content had dropped to 299,937 AF by November 4, 2012.

The maintenance season for C-BT facilities put a stop to the Adams Tunnel diversions for several weeks between November - December 2012. The diversions through the Adams Tunnel finally resumed on December 3, 2012 as maintenance work was completed. The Adams Tunnel flow was limited to 80 cfs from December 3 – December 12, 2012. The Farr Pumping Plant resumed full pumping operation on December 12.

Once the Adams Tunnel operations resumed in December 2012 the diversions continued. Granby Reservoir content dropped to its WY 2013 minimum of 181,311 AF on April 28, 2013. The runoff season began in late April, while the diversions to the east slope diminished. Diversions of water through the Adams Tunnel were intermittent during May - September, driven by conditions over the east slope and a low 60 percent quota. Granby Reservoir reached its maximum level for the year on September 30, at elevation of 8254.70 feet with a storage content of 371,018 AF, 94 percent of the 30-year average.

Granby Reservoir finished WY 2013 with a total of 16.87 inches of precipitation, just under the 30-year average. The total natural inflow to Granby Reservoir was 238,600 AF, 96 percent of the 30-year average.

**Grand Lake/Shadow Mountain**

Grand Lake and Shadow Mountain Reservoir had relatively normal operations until July 2013 when the Grand Lake Water Clarity Initiative started.

The Grand Lake Water Clarity Initiative for WY 2013 was approved in June 2013. The operation was in place July 23, 2013-September 3, 2013. During the operation, diversions from the west slope through the Adams Tunnel were limited to just a portion of the native inflow to Grand Lake, in an attempt to maintain a small, positive flow from Grand Lake into Shadow Mountain. The pumping of water from the Farr Plant was discontinued during the operation. The low diversions through the Adams Tunnel required that C-BT deliveries on the CHFC and to the Big Thompson River be made using Carter Lake storage. All the ECAO water delivery commitments were met throughout the duration of the Grand Lake Water Clarity Initiative. Power generation was affected by the Grand Lake Water Clarity Initiative, with an estimated 16,000 MWh deferred by Mary's, Estes, Pole Hill and Flatiron powerplants from July 23 -

September 3, 2013. The loss in power output was a result of insufficient runoff to divert from Grand Lake and the Big Thompson River.

Soon after the Grand Lake Water Clarity Initiative ended on September 3, 2013 Grand Lake and Shadow Mountain Reservoir were affected by very high runoff and east-slope flood conditions, which forced high releases through the Shadow Mountain radial gates. Releases for the month of September 2013 totaled 16,849 AF; much higher than the normal 2,100 AF.

**Lake Estes**

The snowpack within the Big Thompson River watershed never reached average during WY 2013. It was a cold, dry winter season for the east slope of the C-BT. Nevertheless, WY 2013 cannot be categorized as a dry year for the Big Thompson River. Two separate weather disturbances, one in the spring and one in the fall of 2013, brought high levels of precipitation, increasing the cumulative precipitation totals to well above average. In WY 2013 the Big Thompson River watershed above Lake Estes had accumulated almost 30 inches of precipitation, according to precipitation readings taken by one of the National Weather Service cooperators in the area. The 30-year average for that station is 18.8 inches. Figure 10 compares the WY 2013 and 30-year average snow-water equivalent for the Olympus Dam drainage area.

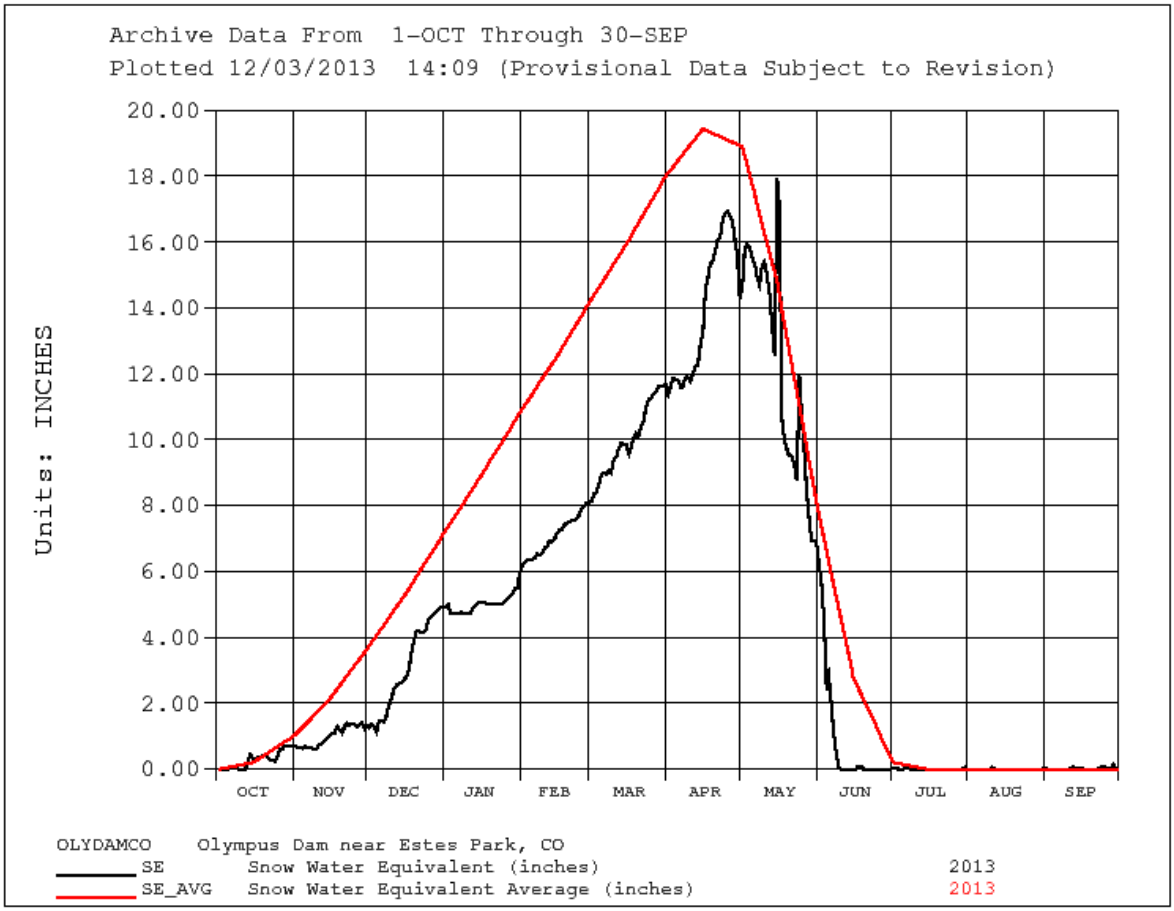



**Figure 10:** 2013 and 30 Year Average Snow-Water for the Olympus Dam Drainage Area

The weather remained cold until the beginning of the spring. During March 2013 the temperatures began to warm up, promising an early runoff season but by April 2013 a series of spring storms brought much needed snowfall to the area. The pattern continued for over a month, during April - May 2013, bringing significant snow and cooler temperatures to the foothills and eastern plains.

Runoff increased by late April 2013 as the lower elevation snowpack began to melt off. Temperatures began to rise rapidly in the middle of May 2013 and runoff increased. The inflow to Lake Estes continued to increase until the middle of June, peaking on June 10, 2013 at 748 cfs.

The total runoff produced by the Big Thompson River contributing area above Olympus Dam during April - July 2013 was 63,461 AF, slightly below the projected 67,000 AF. The September 2013 flood event increased the total inflow for the WY 2013 at Lake Estes to 114,660 AF, much higher than the 87,599 AF projected in the AOP 2013. Figure 11 shows a comparison between the cumulative inflow to Lake Estes, as projected in the AOP 2013, and the actual volume of inflow.

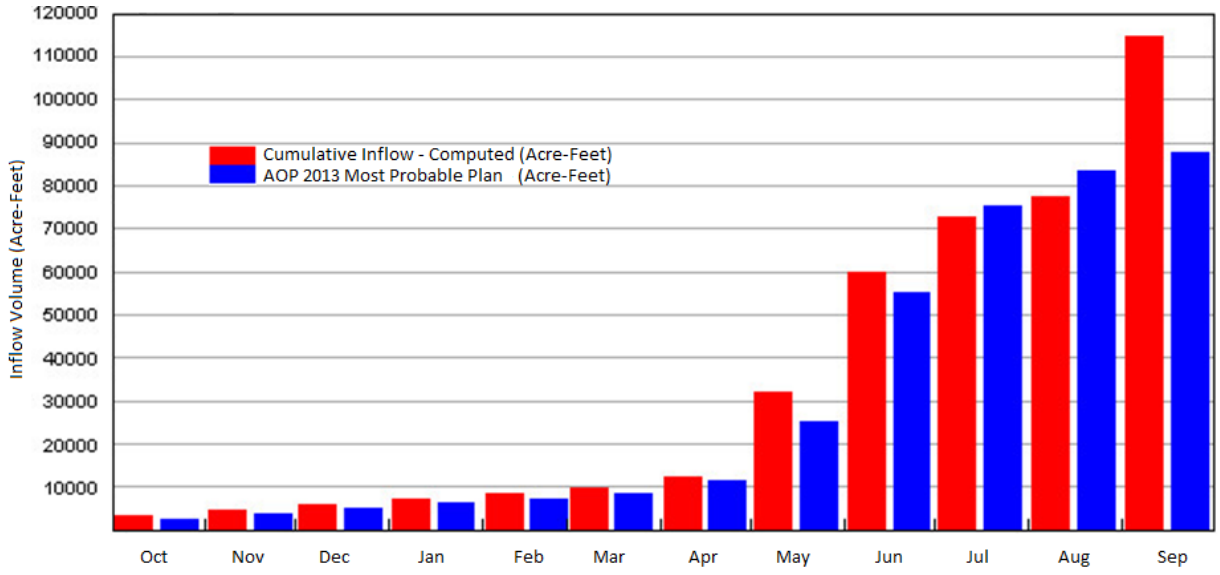



**Figure 11**: Cumulative Computed Inflow to Lake Estes AOP 2013 and Actual.

In early July 2013 a strong monsoon pattern settled over the region, bringing afternoon and evening showers to the mountains. The precipitation was insufficient to increase the inflow to Lake Estes. The weather over the foothills and eastern plains remained hot and dry. Eastern plains temperatures remained at more than 95 °F during July-September 2013. The Front Range also experienced an extended monsoon season during 2013 lasting until September. These conditions may have contributed to the rainfall event and massive flooding experienced over the Front Range in the middle of September 2013.

Most of the Big Thompson River water diverted through the Olympus Tunnel during WY 2013 was classified as skim water, although decreed water for the cities of Loveland and Berthoud was also captured. The C-BT did not enter priority to capture and store Big Thompson River water during the runoff season of WY 2013. However, during the September 2013 flood event, the C-BT captured an estimated total of 8,582 AF of water, which was stored at Carter and Horsetooth reservoirs. Some of that water was accounted as captured by the Olympus Tunnel.

Estes Powerplant Unit 3 was under clearance for most of WY 2013 for headcover repair. The unit was made available July 2013, just a few days before the Grand Lake Water Clarity Initiative operation started. The repair work was successful, and the unit was tested shortly after the Adams Tunnel flows were reduced for the Grand Lake Water Clarity Initiative in July 2013.

During the period September 10 - September 15, 2013 an average of 12 inches of rain fell over the Big Thompson River contributing area. In response to the unprecedented inflow to Lake Estes, releases from Olympus Dam were increased steadily to pass inflows. Diversion from the west slope was suspended at the beginning of the flood. A flow of 550 cfs was maintained through the Olympus Tunnel for most of the day on September 12, 2013; helping to alleviate

flooding below Olympus Dam. Free river conditions were declared, enabling the C-BT to capture some east slope priority water.

As the flooding continued on September 12, 2013 adjustments to the operations had to be made to protect C-BT facilities. Power generation at Estes Powerplant was initially suspended at midnight on September 11, 2013. But on September 12, 2013 the Mary's Lake level continued to rise in response to the high flows coming from Wind River. Power generation of 5 MW with one unit at Estes Powerplant was restored to lower the level of Mary's Lake. Wind River is a tributary of the Big Thompson River, and therefore a contributor to the Lake Estes inflow.

Another adjustment took place the afternoon of September 12, 2013. Flows in the Olympus Tunnel were reduced because of local rain runoff around the Pole Hill Powerplant. Olympus Tunnel flow was suspended on September 13, 2013.

The high inflow into Lake Estes continued for many days after the flood was considered to be over. All water entering Lake Estes was passed to the river below the dam for the remainder of WY 2013; the Olympus Tunnel did not convey any water. The Adams Tunnel also remained dry for the rest of September 2013.

The September 2013 flood caused significant sedimentation at Lake Estes. The high flows also affected the function of the stream gage at the Big Thompson above Lake Estes and the gage directly below Olympus Dam. Significant sedimentation and channel re-shaping took place at both locations. A new elevation-capacity table for Lake Estes may be developed in the near future to determine how much storage capacity was lost and at what elevations.

**Foothill's Power Arm**

Operations along the Foothill's Power Arm were relatively normal during WY 2013 until the September flood.

From the water accounting point of view, the WY 2013 began with Olympus Tunnel conveying water at full capacity on October 1, 2012; a continuation of operations from the WY 2012. The tunnel flow was suspended in November 2012 to allow the contractors to complete the work of sealing the Pole Hill Canal box culvert joints. The job was successful, and the leaks were stopped. The Olympus Tunnel outage also allowed the annual maintenance of Pole Hill Powerplant to be completed during November - December 2012.

Normal operations for Olympus Tunnel resumed on December 12, 2012. From December 2012 - July 2013 the Olympus Tunnel operated at full capacity, except for minor interruptions and small adjustments in flow. Grand Lake Water Clarity Initiative began thereafter.

When the Grand Lake Water Clarity initiative ended on September 3, 2013 the tunnel resumed operations. It was shut down on September 13 in response to the flooding situation around the Pole Hill Powerplant.

As part of the skim operation, the Olympus Tunnel diverted a total of 37,493 AF of Big Thompson River water during WY 2013 for hydropower generation, producing an estimated 60,000 MWh. The power was generated at Pole Hill, Flatiron and the Big Thompson powerplants. The skimmed water was returned to the Big Thompson River through the Big Thompson Powerplant and/or Wasteway at the CHFC trifurcation.

Flatiron Unit 2 was unavailable for most of the WY 2013. The unit became available on June 21, 2013. Flatiron Unit 1 was used to convey all the C-BT water while Unit 2 was being repaired. The unavailability of Flatiron Unit 2 prevented peaking generation operations because Unit 1 was normally operated at full capacity.

The CHFC 930 Section underwent its annual maintenance during the period March 27- April 19, 2013. During that time, the CHFC 550 section used C-BT water captured at the Dille Tunnel diversion dam in the Big Thompson Canyon to meet all the demands from C-BT allotees. The maintenance work scheduled for the CHFC 550 Section in late September/early October was cancelled as a result of the September 2013 flood.

Pumping to Carter Reservoir continued during the CHFC 930 Section outage. The Adams Tunnel continued conveying water from the west slope at a reduced rate to satisfy the needs of the Flatiron pump and the demands along the CHFC.

The bifurcation at Flatiron Powerplant was not used during WY 2013. The Flatiron Unit 3 pump was always available when needed.

**Carter Reservoir**

Carter Reservoir began WY 2013 with 54,638 AF of water in storage, dropping to 41,049 AF by December 2012.

Pumping to Carter Reservoir began on December 13, 2012. The operation was temporarily interrupted on February 23, 2013 to accommodate testing and repair work for Flatiron Unit 3. The February stoppage also served a secondary purpose; to strategically position Carter Reservoir in preparation for the three week outage of the CHFC 930 Section in late March. By interrupting the pumping operation for 3 weeks in February-March, critical reservoir capacity was reserved for pumping operations during the scheduled CHFC930 Section annual maintenance in March-April. Pumping resumed on March 12.

The initial pumping session at Flatiron Powerplant ended on May 3 with the Carter Reservoir content at 106,115 AF. A second pumping session was started on June 28. The pump was run

from June 28 – July 21, storing sufficient water at Carter Reservoir to accommodate maintenance on its outlet works gate later in the fall. The pump stoppage on July 21 preceded the beginning of the Grand Lake Water Clarity Initiative.

During the Grand Lake Water Clarity Initiative water from Carter Lake was used to satisfy demands for C-BT water along the CHFC and the Big Thompson River. Flatiron Unit 3 generated power while conveying water to Flatiron Reservoir. A total of 1,600 MW of electric power were produced during the August through September period. Another 100 MW were also produced in November 2012.

Flatiron Unit 3 pumped a total of 97,237 AF of water during WY 2013 using 31,172 MW of energy to complete the task. The 30-year average pumping volume is 85,020 AF. The extra pumping was needed in preparation for the Grand Lake Water Clarity Initiative.

A total of 87,385 AF of water were delivered from Carter Reservoir during WY 2013, comprised of 78,401 AF of C-BT water and 8,983 AF of Windy Gap Project water.

During the September 2013 flood, Carter Reservoir received a significant amount of precipitation and local runoff. It is estimated that during September 11 - September 15, Carter Reservoir captured 1,150 AF of water from local runoff and precipitation. Carter Reservoir also stored 1,246 AF of priority water pumped from Flatiron Reservoir during September 2013. Some of this water was local flood runoff captured at Pinewood and Flatiron reservoirs.

Carter Reservoir ended the WY with 49,912 AF of water in storage, 90 percent of the 20-year average, well positioned to accommodate the refurbishing work at the outlet works gates later in the fall. Recreation at Carter Reservoir was successful all season, with all the boat ramps in the water through the summer and fall months.

**Horsetooth Reservoir**

Horsetooth Reservoir began WY 2013 with 56,639 AF of water in storage. The reservoir content rose over 10,000 AF during the first 16 days of October 2012 before stabilizing. From October - December its content remained relatively unchanged. When diversions from the west slope resumed in the middle of December, the reservoir level began to rise once again. Horsetooth Reservoir continued to rise until reaching its maximum content for WY 2013 on June 26, a volume of 127,051 AF, 81 percent of full capacity, and 104 percent of the 30-year average.

During the September 2013 flood, Horsetooth Reservoir received a significant amount of precipitation and local runoff. It is estimated that during September 11 -September 15, Horsetooth captured 3,053 AF of local runoff and precipitation.

Deliveries from Horsetooth Reservoir totaled 74,365 AF during WY 2013; 64,666 AF of C-BT water and 9,699 AF of Windy Gap Project water. Inflow to Horsetooth Reservoir via the CHFC

totaled 118,429 AF during WY 2013. Hoorsetooth Reservoir finished the WY 2013 with 94,523 AF in storage, 114 percent of the 30-year average.

Horsetooth Reservoir was able to store 3,133 AF of priority water. Some of this water was captured at Pinewood and Flatiron reservoirs from local runoff during the September flood. The rest of the priority water was captured via the Olympus Tunnel at the beginning of the September flood.

The recreation season at Horsetooth Reservoir was successful during WY 2013. All of the boat ramps remained in the water the entire recreation season.

## C-BT PLANNING AND CONTROL

The C-BT is operated for the purpose for which it was authorized and constructed; 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 ECAO in Loveland, Colorado. Staff at this office 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 Division of Water Resources of the state of Colorado, NCWCD, Upper Colorado and Great Plains regions of the Bureau of Reclamation, the Western Area Power Administration (Department of Energy), other 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 AOP.

The C-BT water operations are planned on a WY basis (October 1 - September 30). The AOP is prepared in early October of each year. 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 as necessary during the year as new information or changing conditions occur. Computer programs and models are used by ECAO to develop the AOP and water supply forecasts.

## ANNUAL OPERATING PLAN FOR WATER YEAR 2014

### Most-Probable Inflow Forecast

### Green Mountain Reservoir

Green Mountain Reservoir began WY 2014 with 107,000 AF in storage, 92 percent of average. Under the most-probable runoff scenario the reservoir content will gradually decline as the year progresses, reaching its 70,000 AF carryover storage target by March 31 and then begin refilling. By the end of May 2014 the reservoir content is expected to have increased to 110,000 AF. Under the most-probable runoff scenario the reservoir is expected to reach a physical fill by early July. Its storage content by the end of July is expected to be 145,000 AF.

Under the most-probable runoff forecast scenario, Green Mountain Reservoir may be able to participate in CROS during the spring of 2014. CROS is an interagency cooperative effort to enhance the spring peak flow along the 15-Mile-Reach of the Colorado River for the benefit of endangered fish species. The operational principle is to bypass excess reservoir inflow at the time of peak flow in the 15-Mile Reach without jeopardizing the ability to fill the reservoir. The final decision on CROS participation will be made in May. Regardless of whether Green Mountain participates in CROS during 2014, the reservoir is expected to fill by early July 2014. Using projected inflows and releases for August -September, Green Mountain's reservoir storage content is projected to drop to approximately 105,000 AF by the end of September.

Under the most-probable runoff scenario, the upstream Blue River depletions by the cities of Denver and Colorado Springs are projected to be about 110,000 AF during the WY 2014.

### Willow Creek Reservoir

Willow Creek Reservoir is beginning WY 2014 with 9,300 AF in storage, 105 percent of average. Under the most-probable runoff condition scenario, pumping operations from Willow Creek Reservoir to Granby Reservoir are projected to begin in April 2014. The Willow Creek Canal pumps are expected to operate from April - July. Peak runoff is projected to occur during the month of May 2014. Under the most-probable runoff condition scenario, river releases should average 7 cfs during most of WY 2014, with higher releases occurring during May - July 2014 to meet local irrigation demands. By the end of WY 2014 the Willow Creek Reservoir storage content should be approximately 9,000 AF.

### Granby Reservoir

Granby Reservoir is beginning WY 2014 with 371,000 AF in storage, 89 percent of average. Under the most-probable runoff scenario the Granby Reservoir storage content is projected to reach its yearly minimum of approximately 242,000 AF by the end of April 2014. Runoff is expected to begin in late April - May 2014. Native runoff along with pumping from Willow Creek Reservoir will increase the Granby Reservoir level rapidly in May -June 2014. Under the most-probable runoff condition scenario the Windy Gap Project pumps should remain off-line until April. Windy Gap Project pumping in April-June 2014 is expected to total 15,000 AF. Granby Reservoir should reach a maximum content for the year of about 401,000 AF in July 2014, with a water surface level of 8,259.6 feet.

Under the most-probable runoff scenario, Granby Reservoir is not projected to spill in WY 2014. For this reason, Granby Reservoir will not participate in CROS during the spring of 2014. By September 30, 2014, Granby Reservoir's content is expected to drop to 374,000 AF. The most-probable runoff forecast assumes that some pumping from Farr Pumping Plant to Shadow Mountain will occur during August - September 2014. Any decision regarding alternative summer Farr Pumping Plant operations for Grand Lake Water Clarity Initiatives will be made once improved hydrologic and demand projections are developed later in the spring.

**East Slope - Colorado-Big Thompson Project**

Under the WY 2014 most-probable runoff scenario, irrigation, municipal and industrial demands for C-BT and Windy Gap Project water total 209,000 AF. This demand includes water to be delivered from Horsetooth Reservoir, Carter Reservoir, the CHFC trifurcation, and other sections of the C-BT conveyance system. This total includes C-BT Project deliveries of 194,400 AF and Windy Gap Project deliveries of 14,600 AF.

Pumping to Carter Reservoir will begin in late December 2013 after flood related maintenance and inspection work is completed and the Foothills Power system is brought back into operation. The Flatiron Unit 3 pump to Carter Reservoir is expected to operate until early May 2014. Under the most-probable runoff scenario, Carter Reservoir is expected to reach its maximum level for the WY about the end of April 2014, with a storage content of approximately 107,000 AF. Beginning in May 2014, the reservoir's content is expected to drop steadily in response to increased water demand and termination of pumping. Pumping to Carter Reservoir is not expected to resume until September 2014. The total volume pumped to Carter Reservoir in WY 2014 is expected to be 94,900 AF. Under this scenario a total of 86,100 AF is expected to be delivered from Carter Reservoir this year. The total delivery includes 8,400 AF of Windy Gap Project water. By the end of the WY the reservoir content is expected to have fallen to 49,000 AF.

The CHFC 930 Section may undergo maintenance during the first two weeks of April 2014. If this maintenance occurs, the inflow to Horsetooth Reservoir will drop significantly. Maintenance on the CHFC 550 Section will likely occur in September 2014. The maintenance on this canal section normally lasts two weeks.

Deliveries of C-BT and Windy Gap Project water from the CHFC to the Big Thompson River are expected to total 14,600 AF. Deliveries from the CHFC are made from the trifurcation located at the Big Thompson River Canyon Mouth using the Big Thompson Powerplant and the Wasteway chute.

Under the most-probable runoff scenario, Horsetooth Reservoir will reach a maximum storage content of 150,000 AF by early June 2014. The reservoir content will then decline throughout the summer, reaching a content of 115,600 AF by the end of September 2014. Approximately 100,900 AF will be delivered from Horsetooth Reservoir during WY 2014, including 6,200 AF of Windy Gap Project water.

## Reasonable-Minimum Inflow Forecast

### Green Mountain Reservoir

Green Mountain Reservoir is beginning WY 2014 with 107,000 AF in storage, 92 percent of average. Under the minimum reasonable runoff conditions scenario the reservoir content will gradually decline as the year progresses, reaching its 70,000 AF carryover storage target by March 31, 2014 and then begin refilling. By the end of May 2014 the reservoir content is expected to have increased to 96,500 AF. Under the minimum reasonable runoff scenario the reservoir is expected to reach a "paper fill", but not a physical fill. The storage content is projected to reach a maximum of 116,000 AF by late June 2014 and decline to 104,000 by the end of July 2014.

Since Green Mountain Reservoir would not reach a physical fill under the minimum reasonable runoff scenario, it is not projected to participate in CROS during the spring of 2014. CROS is an interagency cooperative effort to enhance the spring peak flow along the 15-Mile-Reach of the Colorado River for the benefit of endangered fish species. The operational principle is to bypass excess reservoir inflow at the time of peak flow in the 15-Mile Reach without jeopardizing the ability to fill the reservoir. The final decision on CROS participation will be made in May 2014. Regardless of whether Green Mountain participates in CROS during 2014, the reservoir is expected to fill by early July 2014. Using projected inflows and releases for August and September 2014, Green Mountain Reservoir storage content is projected to drop to approximately 75,000 AF by the end of September 2014.

Under the reasonable minimum runoff scenario, the upstream Blue River depletions by the cities of Denver and Colorado Springs are projected to be about 60,600 AF during the WY 2014.

### Willow Creek Reservoir

Willow Creek Reservoir is beginning WY 2014 with 9,300 AF in storage, 105 percent of average. Under the minimum reasonable runoff scenario, pumping operations from Willow Creek Reservoir to Granby Reservoir will begin in April 2014. The Willow Creek Canal pumps are expected to operate from April -August 2014. Peak runoff is projected to occur during the month of May 2014. Under the minimum reasonable runoff condition scenario, river releases should average 7 cfs for most of WY 2014, with higher releases occurring between May -July 2014 to meet local irrigation demands. By the end of WY 2014 the Willow Creek Reservoir storage content should be approximately 9,000 AF.

### Granby Reservoir

Granby Reservoir is beginning WY 2014 with 371,000 AF in storage, 89 percent of average. Under the minimum reasonable runoff scenario the Granby Reservoir storage content is projected to reach its yearly minimum of 239,000 AF by the end of April 2014. Runoff is expected to begin in late April - May 2014. Native inflows and pumping from Willow Creek Reservoir will increase the reservoir level rapidly in May - June. Under the minimum reasonable runoff scenario the Windy Gap Project pumps should remain off-line until May. Windy Gap Project pumping in May 2014 is expected to total 5,000 AF. Granby Reservoir is projected to

reach a maximum content for the year of 294,000 AF in June 2014, with a water surface level of 8241.3 feet.

Under the minimum reasonable runoff scenario Granby Reservoir is not projected to spill in WY 2014. For this reason, Granby Reservoir is not anticipated to participate in CROS during the spring of 2014. By September 30, 2014 Granby Reservoir's content is expected to drop to 254,000 AF. The minimum reasonable runoff scenario assumes that some pumping from Farr Pumping Plant to Shadow Mountain will occur in August - September, 2014. Any decision regarding alternative summer Farr Pumping Plant operations for Grand Lake Water Clarity Initiatives will be made once improved hydrologic and demand projections are developed later in the spring.

**East Slope - Colorado-Big Thompson Project**

Under the WY 2014 minimum reasonable runoff scenario, irrigation, municipal and industrial demands for C-BT and Windy Gap Project water total 228,600 AF. This demand includes water to be delivered from Horsetooth Reservoir, Carter Reservoir, the CHFC trifurcation, and other sections of the C-BT conveyance system. This total includes C-BT Project deliveries of 214,000 AF and Windy Gap Project deliveries of 14,600 AF.

Pumping to Carter Reservoir will begin in late December, once flood related maintenance and inspection work is completed and the Foothills Power system is brought back on line. The Flatiron Unit 3 pumping to Carter Reservoir is expected to continue until early May 2014. Under the most-probable runoff scenario, Carter Reservoir is expected to reach its maximum level at the end of April 2014, with a storage content of 106,000 AF. Beginning in May 2014, the reservoir content is expected to drop steadily through June in response to increased water demand and termination of pumping. Pumping to Carter Reservoir is expected to resume in July and continue into August 2014. The total volume pumped to Carter Reservoir in WY 2014 is expected to be 102,600 AF. Under this scenario a total of 93,500 AF is expected to be delivered from Carter Reservoir this year. The total delivery includes 8,400 AF of Windy Gap Project water. By the end of the WY the reservoir content is expected to have fallen to about 49,000 AF.

The CHFC 930 Section may undergo maintenance during the first two weeks of April 2014. If this maintenance occurs, the inflow to Horsetooth Reservoir will drop significantly. Maintenance on the CHFC 550 Section will likely occur sometime in September 2014. The maintenance on this canal section normally lasts two weeks.

Deliveries of C-BT and Windy Gap Project water from the CHFC to the Big Thompson River are expected to total 16,700 AF. Deliveries from the CHFC are made from the trifurcation located at the Big Thompson River Canyon Mouth using the Big Thompson Powerplant and the Wasteway chute.

Under the minimum reasonable runoff scenario, Horsetooth Reservoir will reach a maximum storage content of 150,000 AF by early June 2014. The reservoir content will then decline throughout the summer, reaching a content of 103,900 AF by the end of September 2014. Approximately 110,700 AF will be delivered from Horsetooth Reservoir during WY 2014, including 6,200 AF of Windy Gap Project water.

## Reasonable-Maximum Inflow Forecast

### Green Mountain Reservoir

Green Mountain Reservoir is beginning WY 2014 with 107,000 AF in storage, 92 percent of historical average. Under the maximum reasonable runoff scenario the reservoir content will gradually decline as the year progresses, reaching its 65,000 AF carryover storage target by April 30, 2014 and then begin refilling. By end of May 2014 the reservoir content is expected to have increased to 80,000 AF and 135,000 AF by the end of June. Under the maximum reasonable runoff scenario the reservoir is expected to reach a physical fill by the middle of July 2014. Its storage content by the end of July 2014 is expected to be 150,000 AF.

Under the maximum reasonable runoff scenario, Green Mountain Reservoir is projected to participate in CROS during spring of 2014. CROS is an interagency cooperative effort to enhance the spring peak flow along the 15-Mile-Reach of the Colorado River for the benefit of endangered fish species. The operational principle is to bypass excess reservoir inflow at the time of peak flow in the 15-Mile Reach without jeopardizing the ability to fill the reservoir. The final decision on CROS participation will be made in May 2014. Regardless of whether Green Mountain participates in CROS during 2014, the reservoir is expected to fill by the middle of July 2014. Using projected inflows and releases for August - September 2014, Green Mountain Reservoir storage content is projected to drop to approximately 115,000 AF by the end of September 2014.

Under the most-probable runoff scenario, the upstream Blue River depletions by the cities of Denver and Colorado Springs are projected to be 79,700 AF during the WY 2014.

### Willow Creek Reservoir

Willow Creek Reservoir is beginning WY 2014 with 9,300 AF in storage, 105 percent of average. Under the maximum reasonable runoff condition scenario, pumping operations from Willow Creek Reservoir to Granby Reservoir will begin in April 2014. The Willow Creek Canal pumps are expected to operate from April - September 2014. The peak runoff is projected to occur during the month of July. Under the maximum reasonable runoff scenario, river releases should average 7 cfs during most of WY 2014, with higher releases occurring between May - July 2014 to meet local irrigation demands. By the end of WY 2014 the Willow Creek Reservoir storage content is projected to be 9,000 AF.

### Granby Reservoir

Granby Reservoir is beginning WY 2014 with 371,000 AF in storage, 89 percent of average. Under the maximum reasonable runoff scenario the Granby Reservoir storage content is projected to reach its yearly minimum of approximately 242,000 AF by the end of April 2014. Runoff is expected to begin in late April - May 2014. Native runoff along with pumping from Willow Creek Reservoir will increase the reservoir level rapidly in May - July. Under the maximum reasonable runoff scenario the Windy Gap Project pumps should remain off-line until April. Windy Gap Project pumping in April-June 2014 is expected to total 20,000 AF. Granby Reservoir should reach a maximum content for the year of about 529,000 AF in August 2014 with a water surface level of 8,278.5 feet.

Under the maximum reasonable runoff scenario Granby Reservoir is not projected to spill in WY 2014. For this reason, Granby Reservoir is not projected to participate in CROS during spring of 2014. By September 30, 2014 Granby Reservoir content is expected to drop to 525,000 AF. Very little pumping from Farr Pumping Plant to Shadow Mountain is projected from August - September 2014. Any decision regarding alternative summer Farr Pumping Plant operations for Grand Lake Water Clarity Initiative will be made once improved hydrologic and demand projections are developed later in the spring.

**East Slope - Colorado-Big Thompson Project**

Under the WY 2014 maximum reasonable runoff scenario, irrigation, municipal and industrial demands for C-BT and Windy Gap Project water total 192,300 AF. This demand includes water to be delivered from Horsetooth Reservoir, Carter Reservoir, the CHFC trifurcation and other sections of the C-BT conveyance system. This total includes C-BT Project deliveries of 177,700 AF and Windy Gap Project deliveries of 14,600 AF.

Pumping to Carter Reservoir will begin in late December 2014, after flood related maintenance and inspection work is completed and the Foothills Power system is brought back into operation. The Flatiron Unit 3 pumping to Carter Reservoir is expected to continue until early May 2014. Under the maximum reasonable runoff scenario, Carter Reservoir is expected to reach its maximum level for the WY at the end of April 2014 with a storage content of 107,000 AF. Beginning in May 2014, the reservoir content is expected to drop steadily in response to increased water demand and termination of pumping. Pumping to Carter Reservoir is not expected to be necessary for the remainder of the WY. The total volume pumped to Carter Reservoir in WY 2014 is expected to be 88,300 AF. Under this scenario a total of 79,500 AF is expected to be delivered from Carter Reservoir this year. The total delivery includes 8,400 AF of Windy Gap Project water. By the end of the WY the reservoir content is expected to have fallen to 49,000 AF.

The CHFC 930 Section may undergo maintenance during the first two weeks of April 2014. If this maintenance occurs, the inflow to Horsetooth Reservoir will drop significantly. Maintenance on the CHFC 550 Section will likely occur sometime in September 2014. The maintenance on this canal section normally lasts two weeks.

Deliveries of C-BT and Windy Gap Project water from the CHFC to the Big Thompson River are expected to total 12,800 AF. Deliveries from the CHFC are made from the trifurcation located at the Big Thompson River Canyon Mouth using the Big Thompson Powerplant, and the Wasteway chute.

Under the maximum reasonable runoff scenario, Horsetooth Reservoir will reach a maximum storage content of 150,000 AF by late May 2014. The reservoir content will then decline throughout the summer, reaching a content of 97,200 AF by the end of September 2014. Approximately 93,100 AF will be delivered from Horsetooth Reservoir during WY 2014, including 6,200 AF of Windy Gap Project water.

## IRRIGATION REQUIREMENTS

The amount of water that is made available to the C-BT for irrigation will be determined by NCWCD. This determination will be subject to change by agreement throughout the remainder of the irrigation season. Changes may occur as a result of substantial changes in the prevailing climatic, demand or operational conditions. Irrigation requirements for the three inflow conditions were 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."

## MINIMUM REQUIRED RESERVOIR RELEASES

January 19, 1961, the Secretary of the Interior established specific guidelines for water releases out of Lake Granby to satisfy fish habitat requirements. A release from Lake Granby of 20 cfs is required from October - April of each year. During the remaining months of the year, the control point is almost 3 miles downstream from the dam at the YMCA gauging station.

A minimum flow requirement of 75 cfs, 40 cfs during August, and 20 cfs during September is maintained at the YMCA gauge downstream of Lake Granby. The flow during the May-September period can be progressively reduced if the inflow during the WY to Shadow Mountain Lake, Grand Lake, and Lake Granby (less the decreed rights in the reach of the Colorado River between Granby Dam and the mouth of the Fraser River) and the water capable of being pumped from Willow Creek Reservoir during that year is forecasted to be 230,000 AF or less.

According to the *"Principles to Govern the Release of Water at Granby Dam to Provide Fishery Flows immediately Downstream in the Colorado River"* signed by the Secretary of the Interior and Commissioner of the Bureau of Reclamation in 1961, the following reduction of fishery flows below Lake Granby will apply on the basis of a forecast to be made by the Bureau of Reclamation during the last week in April, using information from all available sources.

| Forecast Inflow | Percentage Reduction |
|---|---|
| in AF | in Minimum Release |
| 220,000 - 230,000 | 15 |
| 210,000 - 220,000 | 20 |
| 195,000 - 210,000 | 25 |
| Less than 195,000 | 30 |

Adjustments will be made in the reductions, when appropriate, based on revised forecasts and consideration of actual flows during May - July. A copy of the document is included in the Standard Operating Procedures (SOP) for Granby Dams and Reservoir, Appendix A, Exhibit 4.
Also according to the SOP, Willow Creek below Willow Creek Reservoir is not considered a fishery resource since an irrigation ditch a short distance below the dam typically uses the entire flow in the late summer months. In the Secretarial determination minimum instream flow requirements for Willow Creek were not provided. However, a release of 7 cfs or inflow (whichever is the lesser) from Willow Creek Reservoir is required between October 1 -April 30 to augment fish habitat flows in the Colorado River.

In accordance with the SOP for Shadow Mountain Reservoir, Chapter 4, Section D, minimum releases from Shadow Mountain Lake of 35 cfs during September - October, 45 cfs during November and December, 20 cfs from January through May, 50 cfs in June - July, and 40 cfs in August or inflow (whichever is the lesser) must be maintained to protect fish and wildlife in the Colorado River above Lake Granby.

The minimum release required out of Green Mountain Reservoir 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. Releases are maintained at all times to be adequate for the preservation of fish habitat.

The State of Colorado's Division of Wildlife, and the United States Fish and Wildlife Service have recommended the following minimum release schedule for Lake Estes. This schedule meets the flow requirements of native fish along the Big Thompson River.

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

Diversion of flows from the Big Thompson River at Lake Estes for power production is generally restricted to the May 15 - September 15 period, since runoff during the remaining period of the year usually is much less than the recommended minimum flows. Releases in excess of inflows are not required.

## GREEN MOUNTAIN RESERVOIR OPERATIONS

Paragraph 6 of the October 5, 1955 Stipulation in the decree for the Consolidated Cases Nos. 2782, 5016, and 5017 in the United States District Court for the District of Colorado (Blue River Decree), calls for periodic plans for the operation of Green Mountain Reservoir to be developed. This plan addresses this requirement.

Provisions guiding the operations of Green Mountain Reservoir are contained in the following documents. Operations will be consistent with the applicable provisions in the following documents:

Manner of Operation of Project Facilities and Auxiliary Features, Senate Document No. 80, 75th Congress, 1st Session

Consolidated Cases Nos. 2782, 5016, and 5017
October 12, 1955, Stipulation and Decree
April 16, 1964, Stipulation and Decree

Operating Policy for Green Mountain Reservoir, Colorado-Big Thompson Project, published in the Federal Register, Vol. 48, No. 247, December 22, 1983,

September 4, 1996, Stipulation and Agreement in Colorado Water Div. 5, Case No. 91CW247 (Orchard Mesa Check Case), and attached HUP Operating Criteria.

**The General Operations Guided By These Provisions Are Given Below:**

1. Winter Operation (November-March)

   a. Bypass inflow to supply downstream vested senior rights.

   b. Make releases to replace water diverted or stored out of priority by the C-BT collection system, as required.

   c. Make releases for west slope irrigation and domestic uses per Green Mountain Operating Policy and the HUP Operating Criteria.

   d. Make releases for water service contracts pursuant to the Operating Policy.

   e. Maximize power generation, while maintaining:
      i. Adequate storage to meet the anticipated needs under the guiding documents.
      ii. A minimum power head consistent with the integrated system power operations.

2. Operation during Snowmelt Period (April-July)

   a. Bypass inflow to supply downstream vested senior rights.

   b. Make releases to replace water diverted or stored out of priority by the C-BT collection system, as required.

   c. Make releases for west slope irrigation and domestic uses per Green Mountain Operating Policy and the HUP Operating Criteria.

   d. Make releases for water service contracts pursuant to the Operating Policy.

   e. Participate in the Coordinated Reservoir Operations effort to enhance peak flows for the Colorado River Endangered Fishes. Reduce releases from traditional levels before and after the peak flow period on the Colorado River in the Grand Junction area. During peak flow period, release the lesser of inflows or turbine capacity for approximately a 10-day period.

f. Fill without spilling to maximize power generation by using the storage and power rights concurrently.
g. On or before June 30 each year, meet with Managing Entities established under the settlement of the Orchard Mesa Check Case to assess availability of surplus water in the Historic Users Pool (HUP).
h. Confer with Managing Entities on a regular basis through the irrigation season to assess availability of surplus water in the Historic Users Pool (HUP).
i. If a surplus condition is declared, make releases up to the amount of surplus, under agreements, to:
    i. the Grand Valley Powerplant up to its need or capacity; then to
    ii. the Grand Valley under the Municipal Recreation contract in excess of that needed by the powerplant
j. Maximize power operation consistent with 1.e.
k. Make releases as outlined in the above referenced documents.[1]

3. Operation After Snowmelt Period (August-October)

a. Bypass inflow to supply downstream vested senior rights.
b. Make releases to replace water diverted or stored out of priority by the C-BT collection system, as required.
c. Make releases for west slope irrigation and domestic uses per Green Mountain Operating Policy and the HUP Operating Criteria.
d. Make releases for water service contracts pursuant to the Operating Policy.
e. Confer with Managing Entities on a regular basis through the irrigation season to assess availability of surplus water in the Historic Users Pool (HUP).
f. If a surplus condition is declared, make releases up to the amount of surplus, under agreements, to:
    i. the Grand Valley Powerplant up to its need or capacity; then to
    ii. the Grand Valley under the Municipal Recreation contract in excess of that needed by the powerplant
g. Maximize power operation consistent with 1.e.
h. Make releases as outlined in the above referenced documents.[2]

1 By the use of these criteria for current operating purposes, the United States does not intend to imply any definition of rights and obligations. The order in which these criteria are listed does not reflect any intended priority.

2 By the use of these provisions for current operating purposes, the United States does not intend to imply any definition of rights and obligations. The order in which these criteria are listed does not reflect any intended priority.

## GREEN MOUNTAIN HISTORIC USERS POOL AND THE ORCHARD MESA CHECK CASE SETTLEMENT

### Background and Authority

The Orchard Mesa Check (Check) is a structure below the common afterbay of the Orchard Mesa Irrigation District (OMID) Pumping Plant and the federal Grand Valley Powerplant in the Grand Valley of Colorado. The purpose of the Check is to raise the water level in the common afterbay, allowing water to flow through the bypass channel to support hydropower operations and return to the Colorado River upstream of the Grand Valley Irrigation Company (GVIC) diversion dam.

Operation of the Check was determined to constitute an 'exchange' of water whereby water destined for the senior GVIC irrigation water rights is borrowed for pumping and hydroelectric power generation purposes and returned to GVIC for irrigation use. Operation of the Check influences the operation of the following: Grand Valley irrigation systems; Grand Valley Powerplant; Green Mountain Reservoir releases; and the 15-Mile Reach of the Colorado River. The 15-Mile Reach is that section of the Colorado River from the GVIC diversion dam to the confluence of the Gunnison River and has been designated critical habitat by the Upper Colorado River Endangered Fish Recovery Program.

The Check has been operated on an informal basis without a decreed right since approximately 1926 to manage flows in the Colorado River for the benefit of the United States, Grand Valley Water Users Association (GVWUA), and OMID. In the late 1980's, a hydropower development was proposed in a reach of the Colorado River between the Grand Valley Diversion Dam, the point where the exchange water is diverted, and the GVIC diversion dam where the exchange water is returned. The OMID was concerned that a water right awarded for this development could interfere with the exchange of water. In response the OMID filed an application in State Water Court on December 30, 1991, for approval of an exchange of water. This case (Water Division 5, Case No. 91CW247) was informally known as the Orchard Mesa Check Case. Resolution of the case resulted in a negotiated Stipulation and Agreement entered into the District Court, Water Division No. 5, State of Colorado, on September 4, 1996.

### Overview of the Stipulated Settlement

The settlement contains two major components: the Stipulation and Agreement and the Green Mountain Reservoir Historic Users Pool Operating Criteria (Operating Criteria). The Operating Criteria further defines operation of the Green Mountain Reservoir Historic Users Pool (HUP) consistent with Senate Document 80 and the 1984 Operating Policy. The parts of the Stipulation and Agreement pertinent to the operation of the HUP are summarized below.

As part of the Stipulation and Agreement the OMID and GVIC agree not to exercise their irrigation rights against any upstream HUP beneficiary provided that the Check is physically operable; there is at least 66,000 AF of water in storage in the Green Mountain Reservoir HUP, or approved substitute storage reservoir, when Green Mountain Reservoir storage rights cease to be in priority; and the water rights for the Shoshone Powerplant continue to be exercised in a manner consistent with their historical operation. (Section 3.b. of the Stipulation and Agreement).

The Stipulation and Agreement also provides that Reclamation will declare surplus water which is in excess of the needs of HUP beneficiaries for a given WY. Water declared surplus might be delivered through agreements for beneficial uses in western Colorado. This is to be done in accordance with the provisions of the HUP Operating Criteria, which are summarized below.

**Management of the Historic User's Pool (HUP) Under the Operating Criteria**

The management of the HUP is accomplished through the process defined in Sections 3.d and 3.e of the Operating Criteria. This process requires the development of this Annual HUP Operating Plan on or before June 30 of each year.

The Annual HUP Operating Plan is developed by the Bureau of Reclamation in consultation with the Grand Valley Water Users Association, the Orchard Mesa Irrigation District, the Grand Valley Irrigation Company, the Division 5 Engineer, the Colorado Water Conservation Board, and Fish and Wildlife Service (Managing Entities). The Managing Entities agree to make a good faith effort to develop an Annual HUP Operating Plan that is unanimously supported. However, the Bureau of Reclamation reserves the right to establish a release schedule should unanimous consent prove unattainable.

The Annual HUP Operating Plan is based upon actual HUP storage conditions, projected runoff forecasts, operational and climatological conditions, projected irrigation demands, and 15-Mile Reach flow needs. It is expressly recognized that, in some years, release of the entire HUP by the end of the irrigation season will not be necessary or possible.

On or before June 30 of each year the Bureau of Reclamation assembles initial information on storage in the HUP and comparative runoff years. Based upon the information assembled a meeting is held with the other Managing Entities. During this meeting a review of the forecasts is analyzed and initial determinations are made of the level of "checking" required to preserve water in the HUP, and of water surplus available for HUP beneficiaries.

The HUP operations are reviewed and modified by the Managing Entities as necessary to respond to changing conditions. Subsequent meetings or conference calls are held as needed to reconsider prevailing conditions including HUP storage conditions, runoff forecasts, climatological conditions, irrigation demands, 15-Mile Reach flow needs, and other operational conditions. The Managing Entities adjust the checking as warranted by the examination of prevailing conditions, and determine the water surplus and release schedule for HUP beneficiaries. During periods of below average river flows the Managing Entities may meet as frequently as every week.

This mechanism provides a way to integrate management of releases from the HUP with operation of the Check to accomplish the purposes of the Operating Criteria. The mechanism is also used to integrate releases from the HUP with releases for the endangered fish from other reservoirs including Ruedi and Wolford Mountain.

## OPERATION SKIM

Big Thompson River water in excess of the minimum instream flow requirements is diverted at Olympus Dam into the Foothills System to be used for power generation. This operation is known as "Operation Skim". The amount diverted depends on the flow at the Big Thompson River and the tributaries above Lake Estes, C-BT water imported through the Adams Tunnel, and the capacity of the Foothills System.

The water taken from the Big Thompson River can be used for power generation immediately. It can also be held in storage and replaced to the river with water from other facilities, depending on the power requirements. In general, water taken from the Big Thompson River at a variable rate, on a given date, is returned to the river at a flat rate, on the following day. This operation provides incidental benefits to the tourist and fishing industries along the Big Thompson Canyon by attenuating high flows, and by maintaining a steady stream during the runoff season.

Operation Skim and storage of surplus water from the Big Thompson River in C-BT reservoirs are managed according to the AOP and as prescribed by the ECAO Water Resources staff.

A total of 37,493 AF of Big Thompson River water was skimmed through the Olympus Tunnel, producing an estimated 64,000 megawatts of power at Pole Hill, Flatiron and the Big Thompson powerplants. The Dille Tunnel was able to skim 5,415 AF of water, producing an estimated 860 megawatts of power at the Big Thompson Powerplant.

## FLOOD BENEFITS

Precipitation in Colorado was below average during the fall and winter of WY 2013, while the early spring was wet and cool. After the snowy months of April - May, the weather turned hot and dry. The runoff season lasted from May - July. It was a normal runoff season with no significant peak flows or large volumes. Just after the runoff season ended in July, the monsoon season began. The monsoon season during WY 2013 was longer than normal, lasting until September.

On September 11, 2013 heavy precipitation began to fall over Northern Colorado. The storm lasted several days and produced a flood of historical proportions for the Front Range. Most of the precipitation occurred over the east slope, producing widespread flooding and damages. Other parts of the system such as Green Mountain and Granby reservoirs did not experience flooding to the magnitude of the east slope. The flood affected many of the C-BT facilities on the east slope and caused widespread damage.

Based on the data collected from the Colorado River Basin, and according to figures provided by the U.S. Army Corps of Engineers, the C-BT reservoirs over the west slope did not prevent any potential flood damages during WY 2013. While no C-BT reservoirs are authorized for flood control, prevented potential flood damages are calculated for Granby and Green Mountain reservoirs because their operations contribute ancillary benefits to conditions at Dotsero, a location where economic studies have enabled calculation of such benefits. Since construction, the C-BT (Green Mountain and Granby reservoirs) has prevented potential flood damages totaling $510,300.

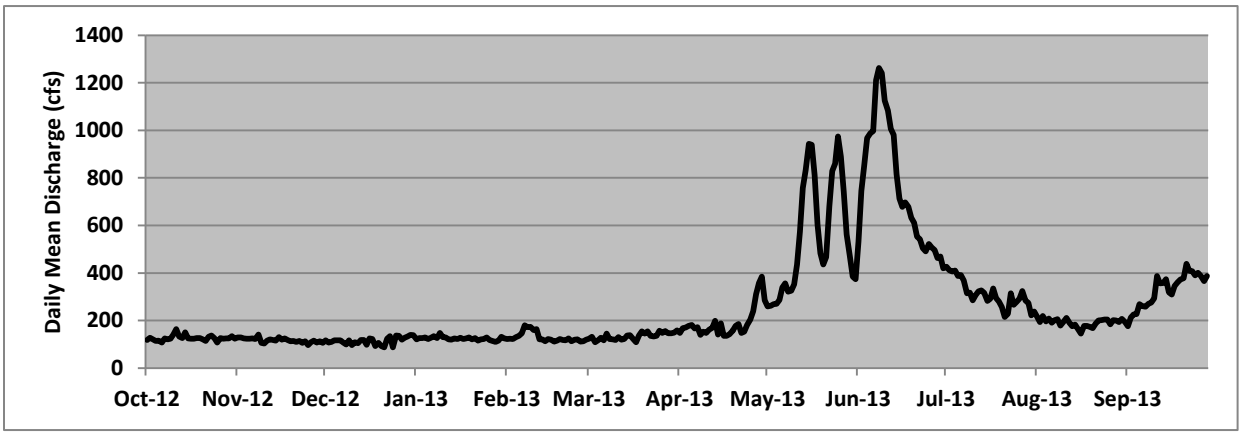
# APPENDIX A – DAILY RECORDS

**Appendix A (Table 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 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-2012 to 30-Sep-2013. 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.

**Inflow, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 125 | 135 | 112 | 139 | 131 | 112 | 149 | 385 | 385 | 469 | 222 | 207 |
| 2 | 120 | 123 | 106 | 139 | 125 | 120 | 158 | 285 | 374 | 420 | 238 | 193 |
| 3 | 118 | 129 | 117 | 120 | 122 | 123 | 147 | 260 | 531 | 426 | 216 | 176 |
| 4 | 127 | 129 | 107 | 127 | 123 | 131 | 168 | 262 | 746 | 411 | 193 | 213 |
| 5 | 121 | 125 | 110 | 126 | 122 | 108 | 171 | 268 | 853 | 406 | 218 | 225 |
| 6 | 114 | 124 | 116 | 129 | 131 | 117 | 178 | 270 | 967 | 410 | 196 | 227 |
| 7 | 116 | 123 | 117 | 122 | 135 | 128 | 182 | 287 | 988 | 388 | 208 | 268 |
| 8 | 107 | 125 | 117 | 127 | 147 | 116 | 166 | 339 | 997 | 391 | 190 | 261 |
| 9 | 124 | 122 | 107 | 134 | 180 | 145 | 172 | 356 | 1211 | 369 | 201 | 258 |
| 10 | 121 | 141 | 99 | 126 | 171 | 122 | 139 | 321 | 1263 | 314 | 206 | 270 |
| 11 | 124 | 105 | 117 | 148 | 173 | 120 | 154 | 326 | 1241 | 317 | 178 | 276 |
| 12 | 141 | 104 | 97 | 130 | 160 | 118 | 148 | 353 | 1125 | 285 | 194 | 293 |
| 13 | 163 | 115 | 108 | 129 | 163 | 130 | 161 | 436 | 1083 | 307 | 211 | 387 |
| 14 | 132 | 121 | 105 | 121 | 120 | 120 | 170 | 574 | 1007 | 323 | 191 | 356 |
| 15 | 125 | 119 | 118 | 119 | 121 | 122 | 198 | 758 | 981 | 327 | 175 | 357 |
| 16 | 150 | 116 | 118 | 124 | 113 | 137 | 141 | 833 | 816 | 315 | 182 | 373 |
| 17 | 125 | 130 | 98 | 123 | 122 | 138 | 188 | 943 | 713 | 283 | 164 | 319 |
| 18 | 123 | 120 | 125 | 127 | 119 | 123 | 135 | 940 | 678 | 291 | 145 | 309 |
| 19 | 123 | 124 | 122 | 122 | 111 | 109 | 136 | 812 | 697 | 335 | 177 | 346 |
| 20 | 126 | 119 | 93 | 125 | 116 | 137 | 142 | 604 | 679 | 294 | 177 | 360 |
| 21 | 126 | 112 | 106 | 129 | 122 | 154 | 158 | 483 | 632 | 279 | 173 | 372 |
| 22 | 120 | 114 | 93 | 121 | 118 | 145 | 177 | 436 | 611 | 256 | 168 | 378 |
| 23 | 113 | 110 | 87 | 126 | 116 | 154 | 186 | 466 | 553 | 215 | 186 | 438 |
| 24 | 132 | 114 | 124 | 115 | 124 | 136 | 147 | 681 | 542 | 228 | 200 | 409 |
| 25 | 137 | 106 | 134 | 121 | 113 | 132 | 153 | 829 | 505 | 315 | 202 | 407 |
| 26 | 127 | 112 | 87 | 122 | 120 | 135 | 182 | 860 | 491 | 267 | 205 | 390 |
| 27 | 108 | 96 | 136 | 129 | 121 | 157 | 205 | 974 | 521 | 278 | 204 | 401 |
| 28 | 127 | 108 | 135 | 118 | 111 | 148 | 240 | 890 | 507 | 292 | 184 | 388 |
| 29 | 124 | 116 | 119 | 115 | | 156 | 310 | 742 | 496 | 324 | 201 | 366 |
| 30 | 125 | 108 | 128 | 110 | | 147 | 358 | 562 | 462 | 284 | 200 | 387 |
| 31 | 125 | | 133 | 115 | | 147 | | 470 | | 274 | 194 | |
| | | | | | | | | | | | | |
| Min | 107 | 96 | 87 | 110 | 111 | 108 | 135 | 260 | 374 | 215 | 145 | 176 |
| Max | 163 | 141 | 136 | 148 | 180 | 157 | 358 | 974 | 1263 | 469 | 238 | 438 |
| Mean | 126 | 118 | 113 | 125 | 130 | 132 | 177 | 549 | 755 | 326 | 194 | 320 |
| ac-ft | 7704 | 7018 | 6913 | 7675 | 7227 | 8093 | 10530 | 33669 | 44854 | 19982 | 11883 | 19029 |

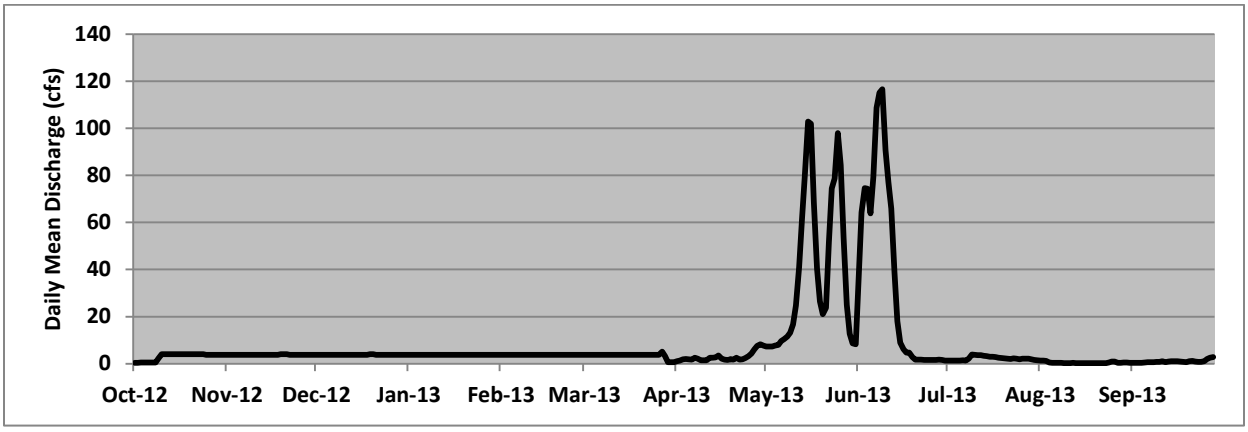


**Appendix A (Table 2 of 38)**
**Elliot Creek Canal near Green Mountain Reservoir, CO**

**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 from topographic map.
**Remarks.**—This is a diversion from Elliot Creek in the Blue River Basin to Green Mountain Reservoir. Recorder was operated in the early fall, and from29-Mar-2013 through 30-Sep-2013. Records are incomplete and only reliable while recorder was 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.

**Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 4 | 4 | 4 | 4 | 4 | 1 | 8 | 9 | 2 | 2 | 0 |
| 2 | 0 | 4 | 4 | 4 | 4 | 4 | 1 | 8 | 8 | 1 | 1 | 0 |
| 3 | 0 | 4 | 4 | 4 | 4 | 4 | 1 | 7 | 36 | 1 | 1 | 0 |
| 4 | 0 | 4 | 4 | 4 | 4 | 4 | 1 | 7 | 64 | 1 | 1 | 0 |
| 5 | 0 | 4 | 4 | 4 | 4 | 4 | 2 | 7 | 75 | 1 | 1 | 0 |
| 6 | 0 | 4 | 4 | 4 | 4 | 4 | 2 | 8 | 74 | 1 | 0 | 0 |
| 7 | 0 | 4 | 4 | 4 | 4 | 4 | 2 | 8 | 64 | 1 | 0 | 1 |
| 8 | 0 | 4 | 4 | 4 | 4 | 4 | 2 | 10 | 79 | 1 | 0 | 1 |
| 9 | 0 | 4 | 4 | 4 | 4 | 4 | 3 | 10 | 109 | 1 | 0 | 1 |
| 10 | 0 | 4 | 4 | 4 | 4 | 4 | 2 | 11 | 115 | 2 | 0 | 1 |
| 11 | 2 | 4 | 4 | 4 | 4 | 4 | 2 | 13 | 117 | 4 | 0 | 1 |
| 12 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 17 | 91 | 4 | 0 | 1 |
| 13 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 25 | 77 | 4 | 0 | 1 |
| 14 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 41 | 66 | 4 | 0 | 1 |
| 15 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 61 | 39 | 3 | 0 | 1 |
| 16 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 80 | 18 | 3 | 0 | 1 |
| 17 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 103 | 9 | 3 | 0 | 1 |
| 18 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 102 | 6 | 3 | 0 | 1 |
| 19 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 69 | 5 | 3 | 0 | 1 |
| 20 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 40 | 5 | 3 | 0 | 1 |
| 21 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 27 | 3 | 2 | 0 | 1 |
| 22 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 21 | 2 | 2 | 0 | 1 |
| 23 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 24 | 2 | 2 | 0 | 1 |
| 24 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 51 | 2 | 2 | 0 | 1 |
| 25 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 74 | 2 | 2 | 0 | 1 |
| 26 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 79 | 2 | 2 | 1 | 1 |
| 27 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 98 | 2 | 2 | 1 | 1 |
| 28 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 84 | 2 | 2 | 1 | 2 |
| 29 | 4 | 4 | 4 | 4 | | 5 | 6 | 54 | 2 | 2 | 0 | 2 |
| 30 | 4 | 4 | 4 | 4 | | 3 | 8 | 25 | 2 | 2 | 0 | 3 |
| 31 | 4 | | 4 | 4 | | 1 | | 13 | | 2 | 0 | |
| | | | | | | | | | | | | |
| Min | 0 | 4 | 4 | 4 | 4 | 1 | 1 | 7 | 2 | 1 | 0 | 0 |
| Max | 4 | 4 | 4 | 4 | 4 | 5 | 8 | 103 | 117 | 4 | 2 | 3 |
| Mean | 3 | 4 | 4 | 4 | 4 | 4 | 2 | 38 | 36 | 2 | 1 | 1 |
| ac-ft | 172 | 227 | 234 | 233 | 211 | 228 | 139 | 2347 | 2143 | 140 | 31 | 54 |

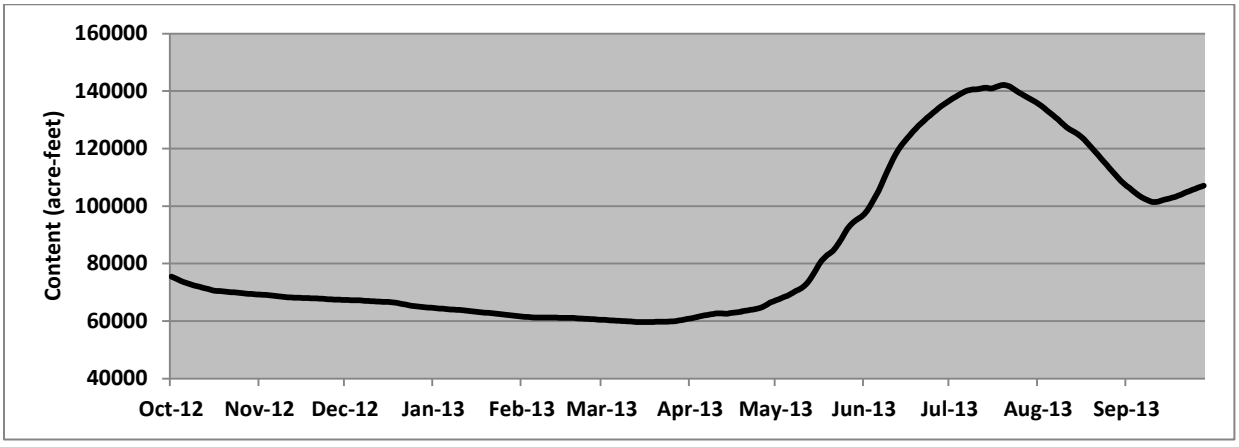


**Appendix A (Table 3 of 38)**
**Green Mountain Reservoir, CO**

**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 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 Colorado-Big Thompson Project diversions. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. 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 | 76357 | 69378 | 67417 | 64712 | 61812 | 60552 | 60541 | 66413 | 95694 | 135522 | 136760 | 108813 |
| 2 | 75905 | 69294 | 67381 | 64644 | 61713 | 60497 | 60736 | 66843 | 96271 | 136170 | 136210 | 107822 |
| 3 | 75457 | 69222 | 67358 | 64542 | 61603 | 60454 | 60909 | 67228 | 97140 | 136819 | 135600 | 106975 |
| 4 | 75011 | 69150 | 67322 | 64463 | 61505 | 60412 | 61115 | 67617 | 98447 | 137449 | 134897 | 106262 |
| 5 | 74577 | 69079 | 67287 | 64395 | 61407 | 60326 | 61321 | 68019 | 99974 | 138004 | 134099 | 105458 |
| 6 | 74148 | 69007 | 67263 | 64328 | 61331 | 60262 | 61537 | 68421 | 101712 | 138559 | 133263 | 104639 |
| 7 | 73733 | 68923 | 67228 | 64237 | 61256 | 60209 | 61757 | 68851 | 103506 | 139094 | 132472 | 103895 |
| 8 | 73343 | 68816 | 67192 | 64147 | 61201 | 60123 | 61955 | 69378 | 105311 | 139673 | 131682 | 103166 |
| 9 | 73006 | 68696 | 67134 | 64067 | 61212 | 60102 | 62163 | 69921 | 107540 | 140154 | 130915 | 102638 |
| 10 | 72694 | 68612 | 67041 | 63988 | 61212 | 60048 | 62306 | 70418 | 109858 | 140394 | 130093 | 102207 |
| 11 | 72408 | 68457 | 66983 | 63932 | 61223 | 59984 | 62471 | 70929 | 112117 | 140554 | 129179 | 101775 |
| 12 | 72146 | 68302 | 66902 | 63852 | 61201 | 59910 | 62636 | 71494 | 114164 | 140634 | 128271 | 101409 |
| 13 | 71887 | 68231 | 66855 | 63751 | 61212 | 59867 | 62714 | 72209 | 116133 | 140734 | 127383 | 101393 |
| 14 | 71617 | 68208 | 66797 | 63639 | 61191 | 59760 | 62625 | 73205 | 117947 | 140975 | 126689 | 101552 |
| 15 | 71322 | 68161 | 66762 | 63517 | 61180 | 59664 | 62614 | 74577 | 119691 | 141155 | 126070 | 101855 |
| 16 | 71089 | 68113 | 66727 | 63405 | 61147 | 59653 | 62603 | 76099 | 121125 | 141135 | 125529 | 102191 |
| 17 | 70806 | 68102 | 66657 | 63294 | 61147 | 59643 | 62825 | 77837 | 122367 | 140955 | 124934 | 102430 |
| 18 | 70612 | 68066 | 66646 | 63193 | 61136 | 59632 | 62937 | 79561 | 123545 | 140975 | 124136 | 102654 |
| 19 | 70515 | 68043 | 66611 | 63093 | 61115 | 59632 | 63048 | 81030 | 124730 | 141397 | 123250 | 102941 |
| 20 | 70430 | 68007 | 66460 | 62993 | 61093 | 59675 | 63171 | 82085 | 125883 | 141760 | 122220 | 103247 |
| 21 | 70345 | 67960 | 66297 | 62903 | 61071 | 59728 | 63327 | 82888 | 126952 | 142023 | 121125 | 103587 |
| 22 | 70248 | 67913 | 66099 | 62859 | 61017 | 59760 | 63517 | 83599 | 127968 | 142104 | 120016 | 103943 |
| 23 | 70139 | 67865 | 65892 | 62747 | 60942 | 59792 | 63729 | 84372 | 128895 | 141962 | 118880 | 104429 |
| 24 | 70066 | 67818 | 65754 | 62647 | 60887 | 59803 | 63864 | 85566 | 129807 | 141558 | 117733 | 104852 |
| 25 | 70006 | 67759 | 65593 | 62548 | 60812 | 59803 | 64011 | 87054 | 130648 | 140955 | 116592 | 105245 |
| 26 | 69921 | 67712 | 65364 | 62449 | 60757 | 59814 | 64214 | 88604 | 131470 | 140274 | 115462 | 105622 |
| 27 | 69799 | 67629 | 65249 | 62361 | 60703 | 59867 | 64463 | 90375 | 132337 | 139613 | 114321 | 106016 |
| 28 | 69714 | 67558 | 65157 | 62262 | 60627 | 59888 | 64780 | 92010 | 133186 | 138995 | 113152 | 106394 |
| 29 | 69617 | 67499 | 65019 | 62163 | | 59995 | 65237 | 93340 | 134021 | 138460 | 111996 | 106709 |
| 30 | 69521 | 67440 | 64882 | 62043 | | 60177 | 65788 | 94324 | 134799 | 137965 | 110881 | 107058 |
| 31 | 69437 | | 64780 | 61911 | | 60358 | | 95089 | | 137370 | 109790 | |
| | | | | | | | | | | | | |
| Min | 69437 | 67440 | 64780 | 61911 | 60627 | 59632 | 60541 | 66413 | 95694 | 135522 | 109790 | 101393 |
| Max | 76357 | 69378 | 67417 | 64712 | 61812 | 60552 | 65788 | 95089 | 134799 | 142104 | 136760 | 108813 |
| EOM | 69437 | 67440 | 64780 | 61911 | 60627 | 60358 | 65788 | 65788 | 134799 | 137370 | 109790 | 107058 |

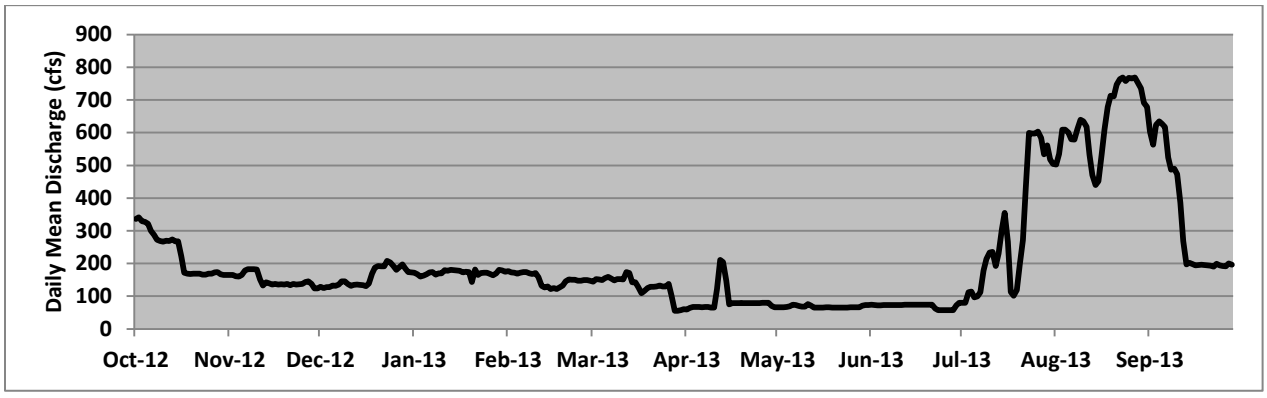


**Appendix A (Table 4 of 38)**
**Blue River below Green Mountain Reservoir, CO**

**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 $mi^2$ including 15.3 $mi^2$ of Elliot Creek above the diversion for Elliot Creek feeder canal. Flow regulated by Green Mountain Reservoir since 1942. There are transmountain diversions upstream from station. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. Records are complete and reliable, but the data has not been revised. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 307 | 165 | 124 | 173 | 179 | 150 | 57 | 70 | 73 | 72 | 518 | 691 |
| 2 | 340 | 165 | 124 | 173 | 175 | 147 | 60 | 66 | 73 | 80 | 504 | 679 |
| 3 | 336 | 165 | 129 | 172 | 177 | 145 | 60 | 66 | 74 | 80 | 502 | 603 |
| 4 | 341 | 165 | 125 | 167 | 173 | 153 | 64 | 66 | 73 | 80 | 535 | 563 |
| 5 | 330 | 161 | 128 | 161 | 171 | 151 | 67 | 66 | 72 | 112 | 609 | 624 |
| 6 | 328 | 160 | 128 | 163 | 169 | 149 | 67 | 67 | 72 | 114 | 609 | 635 |
| 7 | 321 | 165 | 133 | 167 | 172 | 155 | 67 | 69 | 73 | 97 | 600 | 627 |
| 8 | 300 | 179 | 131 | 173 | 174 | 159 | 67 | 74 | 73 | 99 | 580 | 617 |
| 9 | 288 | 183 | 135 | 174 | 174 | 154 | 67 | 73 | 73 | 112 | 579 | 524 |
| 10 | 272 | 182 | 146 | 166 | 170 | 149 | 67 | 70 | 73 | 179 | 610 | 487 |
| 11 | 268 | 183 | 145 | 169 | 168 | 152 | 65 | 68 | 73 | 214 | 639 | 490 |
| 12 | 267 | 182 | 138 | 170 | 171 | 153 | 65 | 68 | 73 | 233 | 634 | 473 |
| 13 | 270 | 151 | 132 | 180 | 158 | 152 | 122 | 76 | 73 | 235 | 618 | 386 |
| 14 | 269 | 133 | 134 | 177 | 131 | 174 | 211 | 72 | 74 | 192 | 533 | 268 |
| 15 | 274 | 142 | 136 | 181 | 126 | 171 | 204 | 66 | 74 | 231 | 471 | 197 |
| 16 | 268 | 140 | 135 | 180 | 130 | 143 | 147 | 66 | 74 | 303 | 439 | 203 |
| 17 | 268 | 136 | 133 | 179 | 122 | 142 | 75 | 66 | 74 | 355 | 452 | 198 |
| 18 | 221 | 138 | 131 | 178 | 125 | 128 | 79 | 66 | 74 | 266 | 533 | 194 |
| 19 | 172 | 136 | 139 | 173 | 122 | 109 | 79 | 66 | 74 | 113 | 610 | 195 |
| 20 | 169 | 137 | 169 | 175 | 127 | 116 | 79 | 66 | 74 | 102 | 678 | 196 |
| 21 | 168 | 136 | 188 | 174 | 133 | 125 | 79 | 66 | 74 | 119 | 713 | 195 |
| 22 | 169 | 138 | 193 | 143 | 145 | 129 | 79 | 65 | 74 | 196 | 711 | 194 |
| 23 | 168 | 134 | 191 | 182 | 152 | 129 | 79 | 65 | 74 | 272 | 747 | 193 |
| 24 | 169 | 138 | 191 | 165 | 150 | 129 | 79 | 66 | 63 | 432 | 763 | 190 |
| 25 | 166 | 136 | 208 | 171 | 151 | 132 | 79 | 66 | 58 | 600 | 769 | 199 |
| 26 | 166 | 136 | 203 | 172 | 147 | 130 | 79 | 66 | 58 | 598 | 757 | 195 |
| 27 | 169 | 138 | 193 | 172 | 148 | 129 | 79 | 66 | 57 | 597 | 767 | 192 |
| 28 | 169 | 144 | 181 | 168 | 150 | 137 | 80 | 66 | 57 | 603 | 766 | 192 |
| 29 | 173 | 145 | 189 | 164 | | 102 | 80 | 66 | 57 | 584 | 769 | 200 |
| 30 | 173 | 138 | 197 | 170 | | 55 | 80 | 66 | 57 | 533 | 753 | 196 |
| 31 | 167 | | 184 | 180 | | 55 | | 71 | | 561 | 735 | |
| | | | | | | | | | | | | |
| Min | 166 | 133 | 124 | 143 | 122 | 55 | 57 | 65 | 57 | 72 | 439 | 190 |
| Max | 341 | 183 | 208 | 182 | 179 | 174 | 211 | 76 | 74 | 603 | 769 | 691 |
| Mean | 241 | 152 | 155 | 171 | 153 | 136 | 85 | 68 | 70 | 270 | 629 | 360 |
| ac-ft | 14781 | 9008 | 9531 | 10516 | 8493 | 8323 | 5071 | 4146 | 4154 | 16562 | 38621 | 21379 |

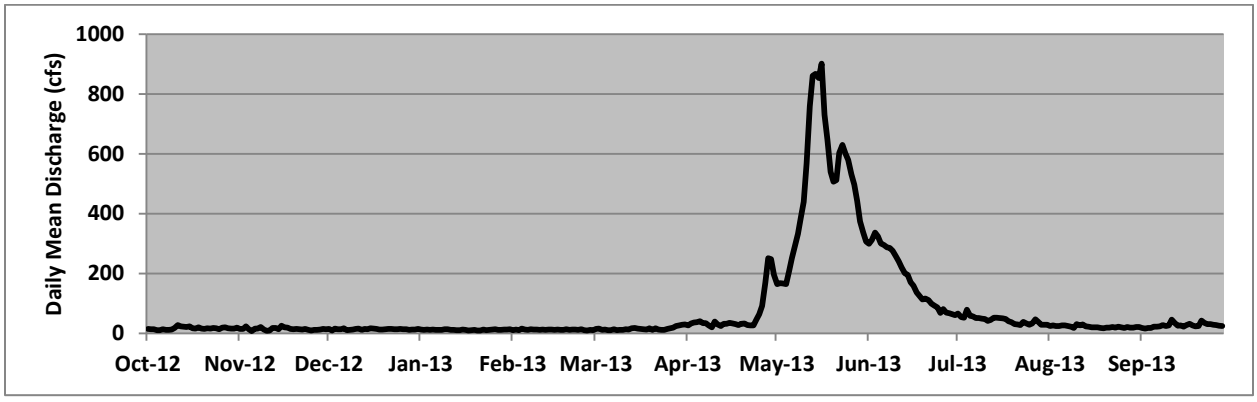


**Appendix A (Table 5 of 38)**
**Willow Creek Reservoir, CO**

**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 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-2012 to 30-Sep-2013. Records are complete and reliable, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

**Inflow, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 16 | 15 | 13 | 13 | 12 | 28 | 248 | 336 | 63 | 29 | 21 |
| 2 | 13 | 18 | 13 | 15 | 13 | 11 | 29 | 195 | 306 | 61 | 29 | 21 |
| 3 | 15 | 14 | 15 | 13 | 11 | 14 | 27 | 164 | 299 | 66 | 24 | 18 |
| 4 | 14 | 14 | 9 | 11 | 12 | 15 | 33 | 168 | 312 | 54 | 26 | 15 |
| 5 | 14 | 23 | 16 | 13 | 10 | 11 | 36 | 167 | 337 | 52 | 24 | 18 |
| 6 | 10 | 14 | 13 | 11 | 16 | 13 | 37 | 164 | 323 | 79 | 24 | 18 |
| 7 | 11 | 8 | 13 | 12 | 12 | 10 | 40 | 206 | 300 | 58 | 27 | 22 |
| 8 | 13 | 15 | 17 | 11 | 11 | 10 | 34 | 251 | 295 | 57 | 26 | 22 |
| 9 | 11 | 15 | 10 | 11 | 13 | 13 | 34 | 290 | 287 | 51 | 24 | 23 |
| 10 | 11 | 21 | 11 | 12 | 12 | 11 | 27 | 332 | 286 | 51 | 22 | 28 |
| 11 | 13 | 13 | 12 | 14 | 12 | 12 | 20 | 386 | 276 | 49 | 18 | 25 |
| 12 | 18 | 8 | 14 | 14 | 11 | 11 | 39 | 439 | 258 | 48 | 31 | 27 |
| 13 | 28 | 9 | 16 | 12 | 12 | 13 | 29 | 568 | 241 | 42 | 27 | 45 |
| 14 | 23 | 18 | 11 | 12 | 11 | 12 | 25 | 759 | 220 | 45 | 30 | 35 |
| 15 | 23 | 18 | 15 | 11 | 12 | 16 | 32 | 861 | 201 | 52 | 23 | 25 |
| 16 | 21 | 14 | 14 | 11 | 12 | 18 | 32 | 867 | 195 | 52 | 22 | 27 |
| 17 | 23 | 26 | 17 | 13 | 11 | 16 | 35 | 853 | 171 | 51 | 20 | 22 |
| 18 | 17 | 20 | 16 | 12 | 12 | 15 | 33 | 901 | 159 | 50 | 20 | 27 |
| 19 | 16 | 18 | 15 | 9 | 11 | 14 | 31 | 730 | 136 | 48 | 20 | 32 |
| 20 | 20 | 14 | 12 | 11 | 11 | 12 | 27 | 647 | 124 | 40 | 18 | 27 |
| 21 | 16 | 13 | 13 | 12 | 13 | 16 | 32 | 540 | 113 | 38 | 17 | 23 |
| 22 | 14 | 14 | 14 | 9 | 11 | 11 | 33 | 506 | 116 | 31 | 19 | 25 |
| 23 | 17 | 13 | 14 | 9 | 12 | 17 | 28 | 512 | 111 | 30 | 19 | 42 |
| 24 | 16 | 12 | 15 | 13 | 12 | 12 | 26 | 603 | 99 | 28 | 21 | 35 |
| 25 | 18 | 14 | 14 | 11 | 11 | 11 | 27 | 629 | 93 | 38 | 19 | 31 |
| 26 | 17 | 11 | 14 | 12 | 13 | 11 | 45 | 602 | 87 | 33 | 22 | 31 |
| 27 | 14 | 9 | 15 | 13 | 11 | 15 | 64 | 579 | 68 | 29 | 20 | 29 |
| 28 | 19 | 11 | 13 | 13 | 10 | 17 | 92 | 531 | 80 | 33 | 18 | 28 |
| 29 | 20 | 12 | 14 | 12 | | 19 | 169 | 497 | 69 | 46 | 21 | 25 |
| 30 | 17 | 13 | 11 | 12 | | 24 | 251 | 442 | 67 | 39 | 19 | 24 |
| 31 | 16 | | 13 | 13 | | 27 | | 374 | | 29 | 19 | |
| | | | | | | | | | | | | |
| Min | 10 | 8 | 9 | 9 | 10 | 10 | 20 | 164 | 67 | 28 | 17 | 15 |
| Max | 28 | 26 | 17 | 15 | 16 | 27 | 251 | 901 | 337 | 79 | 31 | 45 |
| Mean | 16 | 15 | 14 | 12 | 12 | 14 | 47 | 484 | 199 | 46 | 22 | 26 |
| ac-ft | 1008 | 874 | 836 | 728 | 659 | 873 | 2763 | 29723 | 11813 | 2852 | 1378 | 1567 |

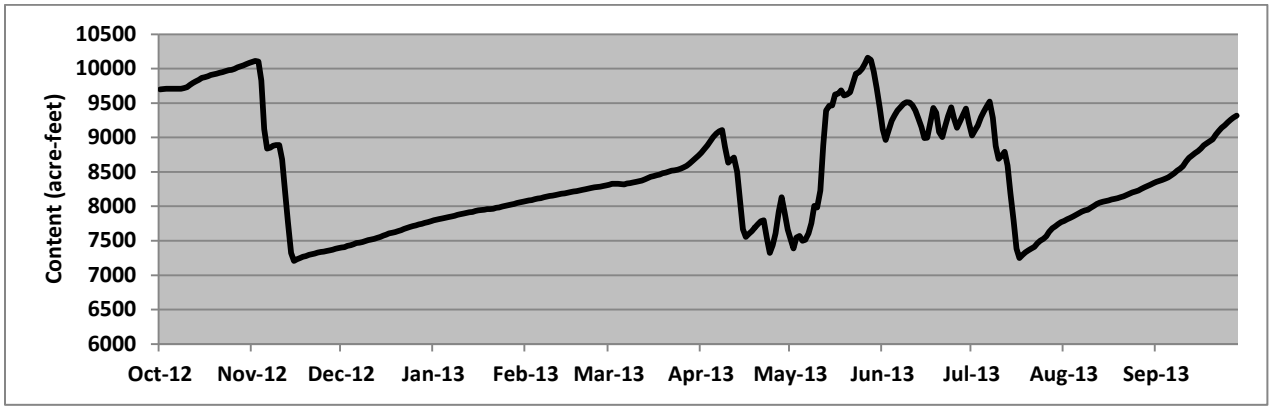


**Appendix A (Table 6 of 38)**
**Willow Creek Reservoir, CO**

**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 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 2012 to 30-Sep-2013. Record is 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 | 9693 | 10064 | 7383 | 7771 | 8057 | 8297 | 8698 | 7921 | 9715 | 9421 | 7741 | 8316 |
| 2 | 9696 | 10085 | 7393 | 7785 | 8069 | 8304 | 8738 | 7664 | 9421 | 9215 | 7768 | 8338 |
| 3 | 9701 | 10099 | 7404 | 7796 | 8076 | 8316 | 8776 | 7523 | 9118 | 9030 | 7787 | 8355 |
| 4 | 9704 | 10114 | 7406 | 7805 | 8086 | 8328 | 8827 | 7389 | 8965 | 9104 | 7810 | 8368 |
| 5 | 9707 | 10105 | 7424 | 7817 | 8090 | 8326 | 8885 | 7547 | 9112 | 9173 | 7830 | 8385 |
| 6 | 9707 | 9828 | 7437 | 7826 | 8105 | 8326 | 8944 | 7572 | 9242 | 9296 | 7851 | 8400 |
| 7 | 9707 | 9123 | 7450 | 7835 | 8114 | 8321 | 9007 | 7499 | 9323 | 9377 | 7877 | 8422 |
| 8 | 9710 | 8840 | 7468 | 7844 | 8121 | 8319 | 9056 | 7514 | 9391 | 9454 | 7902 | 8449 |
| 9 | 9710 | 8853 | 7474 | 7854 | 8133 | 8331 | 9088 | 7605 | 9443 | 9520 | 7923 | 8479 |
| 10 | 9710 | 8879 | 7483 | 7863 | 8142 | 8338 | 9109 | 7757 | 9490 | 9283 | 7940 | 8517 |
| 11 | 9715 | 8890 | 7494 | 7877 | 8149 | 8348 | 8861 | 8007 | 9515 | 8874 | 7949 | 8547 |
| 12 | 9732 | 8892 | 7507 | 7888 | 8157 | 8355 | 8634 | 7986 | 9506 | 8690 | 7979 | 8581 |
| 13 | 9766 | 8680 | 7521 | 7897 | 8166 | 8365 | 8674 | 8232 | 9465 | 8736 | 8005 | 8654 |
| 14 | 9792 | 8227 | 7527 | 7906 | 8173 | 8375 | 8710 | 8887 | 9391 | 8792 | 8036 | 8705 |
| 15 | 9817 | 7778 | 7540 | 7913 | 8183 | 8393 | 8502 | 9391 | 9280 | 8594 | 8052 | 8738 |
| 16 | 9839 | 7324 | 7554 | 7921 | 8190 | 8413 | 8081 | 9460 | 9152 | 8190 | 8066 | 8774 |
| 17 | 9865 | 7207 | 7574 | 7930 | 8197 | 8429 | 7666 | 9465 | 8994 | 7787 | 8076 | 8800 |
| 18 | 9877 | 7228 | 7590 | 7940 | 8207 | 8442 | 7556 | 9623 | 8996 | 7383 | 8086 | 8838 |
| 19 | 9888 | 7251 | 7605 | 7944 | 8214 | 8454 | 7601 | 9640 | 9224 | 7249 | 8098 | 8885 |
| 20 | 9908 | 7266 | 7616 | 7951 | 8222 | 8464 | 7639 | 9684 | 9430 | 7294 | 8109 | 8918 |
| 21 | 9919 | 7279 | 7628 | 7960 | 8232 | 8482 | 7689 | 9609 | 9361 | 7332 | 8121 | 8944 |
| 22 | 9928 | 7294 | 7641 | 7963 | 8239 | 8489 | 7741 | 9623 | 9081 | 7361 | 8133 | 8976 |
| 23 | 9940 | 7305 | 7655 | 7967 | 8249 | 8507 | 7782 | 9656 | 9004 | 7389 | 8147 | 9043 |
| 24 | 9951 | 7315 | 7671 | 7979 | 8258 | 8517 | 7796 | 9792 | 9162 | 7413 | 8166 | 9096 |
| 25 | 9966 | 7330 | 7684 | 7986 | 8266 | 8524 | 7534 | 9925 | 9307 | 7461 | 8183 | 9139 |
| 26 | 9977 | 7339 | 7698 | 7995 | 8275 | 8532 | 7324 | 9951 | 9441 | 7499 | 8202 | 9179 |
| 27 | 9983 | 7343 | 7714 | 8005 | 8282 | 8547 | 7437 | 9998 | 9272 | 7527 | 8217 | 9221 |
| 28 | 9998 | 7350 | 7725 | 8017 | 8287 | 8564 | 7605 | 10073 | 9139 | 7565 | 8232 | 9259 |
| 29 | 10018 | 7359 | 7739 | 8027 | | 8586 | 7925 | 10160 | 9237 | 7632 | 8254 | 9291 |
| 30 | 10032 | 7370 | 7748 | 8036 | | 8619 | 8130 | 10125 | 9332 | 7682 | 8275 | 9318 |
| 31 | 10046 | | 7759 | 8047 | | 8656 | | 9954 | | 7712 | 8294 | |
| | | | | | | | | | | | | |
| Min | 9693 | 7207 | 7383 | 7771 | 8057 | 8297 | 7324 | 7389 | 8965 | 7249 | 7741 | 8316 |
| Max | 10046 | 10114 | 7759 | 8047 | 8287 | 8656 | 9109 | 10160 | 9715 | 9520 | 8294 | 9318 |
| EOM | 10046 | 7370 | 7759 | 8047 | 8287 | 8656 | 8130 | 8130 | 9332 | 7712 | 8294 | 9318 |

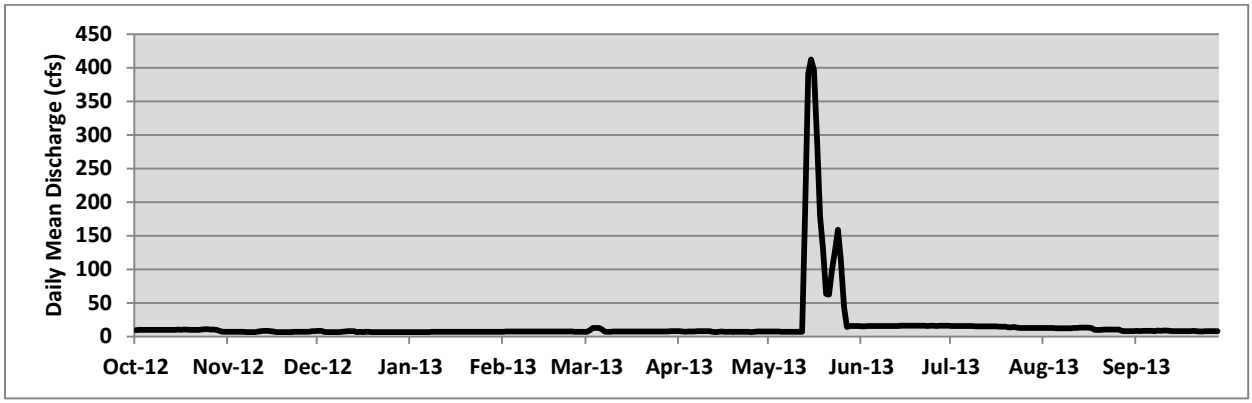


**Appendix A (Table 7 of 38)**
**Willow Creek below Willow Creek Reservoir, CO**

**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 from topographic map.
**Remarks.**-- Drainage area is 127 square miles. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 7 | 8 | 7 | 7 | 7 | 8 | 8 | 16 | 16 | 13 | 8 |
| 2 | 10 | 7 | 8 | 7 | 7 | 7 | 8 | 7 | 16 | 16 | 13 | 8 |
| 3 | 9 | 7 | 8 | 7 | 7 | 7 | 8 | 7 | 15 | 16 | 13 | 8 |
| 4 | 10 | 7 | 8 | 7 | 7 | 9 | 7 | 7 | 15 | 16 | 13 | 8 |
| 5 | 10 | 7 | 7 | 7 | 7 | 13 | 7 | 7 | 15 | 16 | 13 | 8 |
| 6 | 10 | 7 | 7 | 7 | 7 | 13 | 7 | 7 | 15 | 16 | 13 | 8 |
| 7 | 10 | 7 | 7 | 7 | 7 | 13 | 7 | 7 | 16 | 16 | 12 | 8 |
| 8 | 10 | 7 | 7 | 7 | 7 | 11 | 7 | 7 | 16 | 16 | 12 | 8 |
| 9 | 10 | 7 | 7 | 7 | 7 | 7 | 8 | 7 | 16 | 16 | 12 | 8 |
| 10 | 10 | 7 | 7 | 7 | 7 | 7 | 8 | 7 | 16 | 16 | 12 | 9 |
| 11 | 10 | 7 | 7 | 7 | 7 | 7 | 8 | 7 | 16 | 15 | 12 | 8 |
| 12 | 10 | 7 | 8 | 7 | 7 | 7 | 8 | 7 | 16 | 15 | 12 | 9 |
| 13 | 10 | 7 | 8 | 7 | 7 | 7 | 8 | 7 | 16 | 15 | 13 | 9 |
| 14 | 10 | 8 | 8 | 7 | 7 | 7 | 7 | 7 | 16 | 15 | 13 | 8 |
| 15 | 10 | 8 | 8 | 7 | 7 | 7 | 7 | 178 | 16 | 15 | 13 | 8 |
| 16 | 10 | 8 | 7 | 7 | 7 | 7 | 7 | 391 | 16 | 15 | 13 | 8 |
| 17 | 10 | 8 | 7 | 7 | 7 | 7 | 7 | 412 | 16 | 15 | 13 | 8 |
| 18 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 397 | 16 | 15 | 13 | 8 |
| 19 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 290 | 16 | 15 | 12 | 8 |
| 20 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 179 | 16 | 15 | 10 | 8 |
| 21 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 132 | 16 | 14 | 10 | 8 |
| 22 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 63 | 16 | 14 | 10 | 8 |
| 23 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 62 | 16 | 14 | 10 | 8 |
| 24 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 98 | 16 | 14 | 10 | 8 |
| 25 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 129 | 16 | 13 | 10 | 8 |
| 26 | 11 | 7 | 7 | 7 | 7 | 7 | 7 | 159 | 16 | 13 | 10 | 8 |
| 27 | 11 | 7 | 7 | 7 | 7 | 7 | 7 | 113 | 16 | 13 | 10 | 8 |
| 28 | 10 | 7 | 7 | 7 | 7 | 7 | 7 | 44 | 16 | 13 | 10 | 8 |
| 29 | 10 | 7 | 7 | 7 | | 7 | 7 | 14 | 16 | 13 | 8 | 8 |
| 30 | 10 | 7 | 7 | 7 | | 8 | 8 | 16 | 16 | 13 | 8 | 8 |
| 31 | 8 | | 7 | 7 | | 8 | | 16 | | 13 | 8 | |
| | | | | | | | | | | | | |
| Min | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 15 | 13 | 8 | 8 |
| Max | 11 | 8 | 8 | 7 | 7 | 13 | 8 | 412 | 16 | 16 | 13 | 9 |
| Mean | 10 | 7 | 7 | 7 | 7 | 8 | 7 | 90 | 16 | 15 | 11 | 8 |
| ac-ft | 610 | 422 | 435 | 428 | 408 | 492 | 436 | 5531 | 935 | 895 | 702 | 484 |

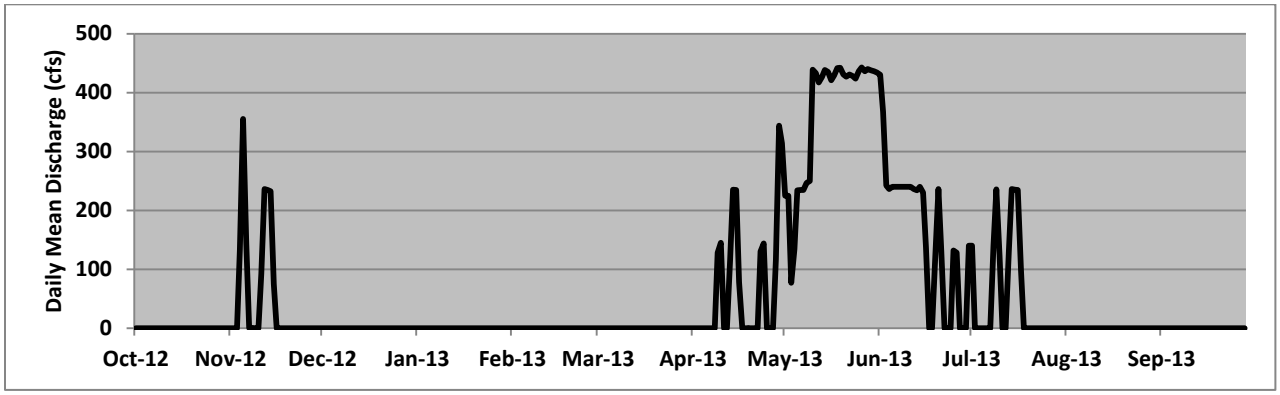


**Appendix A (Table 8 of 38)**
**Willow Creek Pump Canal, CO**

**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 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-2012 to 30-Sep-2013. Records are complete and reliable, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

**Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 344 | 436 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 314 | 434 | 140 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 225 | 430 | 140 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 225 | 367 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 242 | 0 | 0 | 0 |
| 6 | 0 | 134 | 0 | 0 | 0 | 0 | 0 | 134 | 236 | 0 | 0 | 0 |
| 7 | 0 | 355 | 0 | 0 | 0 | 0 | 0 | 234 | 240 | 0 | 0 | 0 |
| 8 | 0 | 144 | 0 | 0 | 0 | 0 | 0 | 234 | 240 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 235 | 240 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 246 | 240 | 140 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 128 | 250 | 240 | 236 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 145 | 439 | 240 | 123 | 0 | 0 |
| 13 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 433 | 240 | 0 | 0 | 0 |
| 14 | 0 | 236 | 0 | 0 | 0 | 0 | 0 | 417 | 236 | 0 | 0 | 0 |
| 15 | 0 | 234 | 0 | 0 | 0 | 0 | 116 | 426 | 234 | 130 | 0 | 0 |
| 16 | 0 | 232 | 0 | 0 | 0 | 0 | 235 | 439 | 240 | 236 | 0 | 0 |
| 17 | 0 | 75 | 0 | 0 | 0 | 0 | 235 | 435 | 230 | 235 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 421 | 137 | 235 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 429 | 0 | 98 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 441 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 442 | 120 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 431 | 236 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 427 | 130 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 431 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 130 | 428 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 144 | 424 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 | 132 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 443 | 128 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | | 0 | 0 | 436 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | | 0 | 116 | 440 | 0 | 0 | 0 | 0 |
| 31 | 0 | | 0 | 0 | | 0 | | 438 | | 0 | 0 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 0 | 0 | 0 |
| Max | 0 | 355 | 0 | 0 | 0 | 0 | 235 | 443 | 436 | 236 | 0 | 0 |
| Mean | 0 | 50 | 0 | 0 | 0 | 0 | 44 | 360 | 188 | 55 | 0 | 0 |
| ac-ft | 0 | 2979 | 0 | 0 | 0 | 0 | 2627 | 22125 | 11183 | 3391 | 0 | 0 |

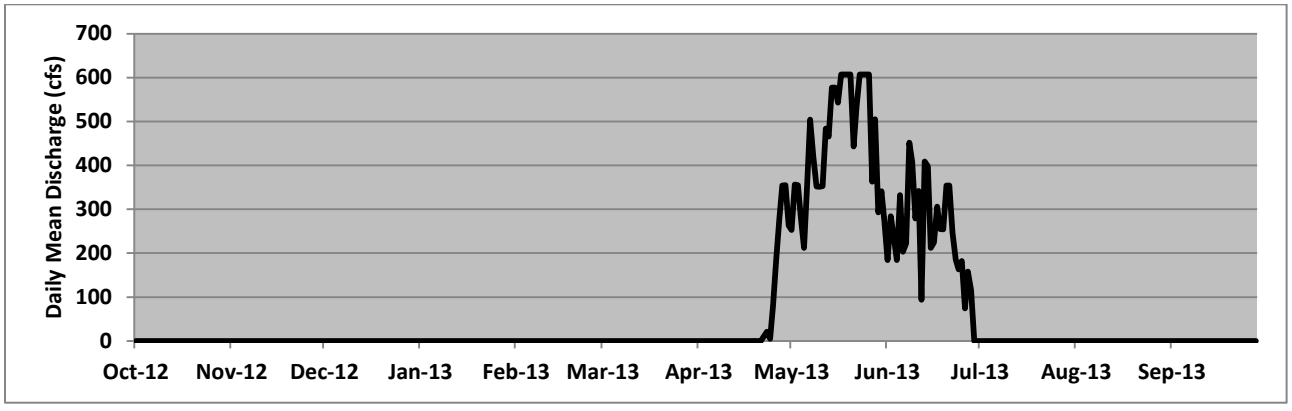


**Appendix A (Table 9 of 38)**
**Windy Gap Pumping Plant, CO**

**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 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-2012 to 30-Sep-2013. Records are complete and reliable, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

**Windy Gap Pump Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 355 | 341 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 263 | 273 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 253 | 184 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 356 | 284 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 355 | 239 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 281 | 184 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 212 | 332 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 361 | 203 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 504 | 222 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 420 | 452 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 352 | 408 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 351 | 279 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 353 | 342 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 484 | 94 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 466 | 409 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 577 | 398 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 577 | 212 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 543 | 224 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 607 | 306 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 607 | 255 | 0 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 607 | 254 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 607 | 354 | 0 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 443 | 354 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 533 | 246 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 607 | 186 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 607 | 163 | 0 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 79 | 607 | 182 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 185 | 607 | 74 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | | 0 | 280 | 363 | 158 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | | 0 | 354 | 505 | 116 | 0 | 0 | 0 |
| 31 | 0 | | 0 | 0 | | 0 | | 293 | | 0 | 0 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 212 | 74 | 0 | 0 | 0 |
| Max | 0 | 0 | 0 | 0 | 0 | 0 | 354 | 607 | 452 | 0 | 0 | 0 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 453 | 258 | 0 | 0 | 0 |
| ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 1849 | 27831 | 15301 | 0 | 0 | 0 |

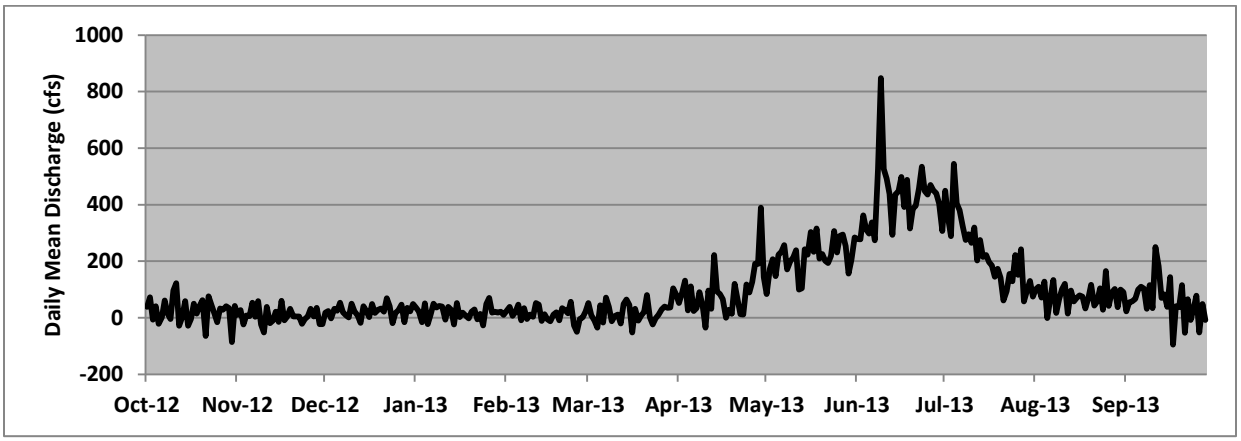


**Appendix A (Table 10 of 38)**
**Granby Reservoir, CO**

**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 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-2012 to 30-Sep-2013. Records are complete, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

**Inflow, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 76 | -86 | -23 | 22 | 22 | 1 | 104 | 389 | 205 | 404 | 130 | 100 |
| 2 | 25 | 42 | -23 | 49 | 10 | 22 | 83 | 144 | 284 | 307 | 75 | 91 |
| 3 | 38 | 10 | 19 | 36 | 23 | 52 | 52 | 84 | 278 | 449 | 101 | 23 |
| 4 | 72 | 27 | 23 | 22 | 38 | 9 | 89 | 174 | 277 | 353 | 110 | 55 |
| 5 | -7 | -24 | -2 | -16 | 6 | -10 | 131 | 207 | 362 | 289 | 71 | 58 |
| 6 | 41 | 8 | 32 | 51 | 20 | -35 | 26 | 147 | 313 | 544 | 128 | 67 |
| 7 | -21 | 6 | 25 | -22 | 47 | 44 | 111 | 223 | 298 | 405 | -1 | 100 |
| 8 | 1 | 53 | 53 | 12 | -9 | -17 | 24 | 233 | 338 | 380 | 71 | 110 |
| 9 | 61 | 4 | 20 | 50 | 34 | 71 | 34 | 257 | 273 | 323 | 133 | 103 |
| 10 | 14 | 59 | 9 | 36 | -5 | 38 | 90 | 171 | 526 | 276 | 17 | 31 |
| 11 | -5 | -24 | 1 | 42 | 12 | -13 | 41 | 200 | 848 | 295 | 66 | 115 |
| 12 | 96 | -52 | 49 | 39 | 4 | 5 | -35 | 213 | 526 | 265 | 101 | 34 |
| 13 | 123 | 39 | 23 | -7 | 52 | 11 | 97 | 239 | 492 | 319 | 120 | 250 |
| 14 | -29 | -19 | 8 | 39 | 47 | -20 | 32 | 100 | 438 | 203 | 15 | 183 |
| 15 | 0 | -10 | -18 | 28 | -11 | 48 | 222 | 104 | 293 | 275 | 96 | 70 |
| 16 | 59 | 22 | 41 | -24 | 12 | 65 | 92 | 242 | 436 | 215 | 58 | 82 |
| 17 | -29 | -15 | 24 | 52 | -6 | 46 | 84 | 223 | 448 | 222 | 70 | 38 |
| 18 | -4 | 60 | 2 | 2 | -13 | -52 | 65 | 303 | 498 | 197 | 79 | 144 |
| 19 | 49 | -9 | 49 | 18 | 11 | 31 | 0 | 233 | 391 | 184 | 75 | -95 |
| 20 | 15 | 5 | 17 | 7 | 19 | -11 | 28 | 316 | 487 | 144 | 33 | 41 |
| 21 | 42 | 32 | 28 | -2 | -9 | 8 | 14 | 209 | 316 | 173 | 68 | 37 |
| 22 | 63 | 5 | 32 | 21 | 35 | 21 | 120 | 226 | 386 | 141 | 116 | 115 |
| 23 | -65 | 5 | 22 | 30 | 28 | 81 | 66 | 201 | 396 | 61 | 43 | -53 |
| 24 | 75 | 5 | 69 | -5 | 16 | 2 | 13 | 194 | 457 | 94 | 57 | 66 |
| 25 | 46 | -21 | 41 | 13 | 56 | -24 | 11 | 218 | 534 | 155 | 104 | -8 |
| 26 | 16 | -4 | -19 | -27 | -27 | -2 | 118 | 307 | 448 | 129 | 28 | 32 |
| 27 | -15 | 5 | 17 | 48 | -50 | 10 | 89 | 231 | 436 | 222 | 166 | 78 |
| 28 | 33 | 32 | 26 | 70 | -5 | 30 | 127 | 290 | 469 | 152 | 42 | -53 |
| 29 | 28 | 5 | 47 | 18 | | 40 | 191 | 294 | 450 | 243 | 88 | 49 |
| 30 | 41 | 35 | -16 | 21 | | 36 | 191 | 253 | 440 | 58 | 102 | -8 |
| 31 | 34 | | 35 | 18 | | 36 | | 157 | | 97 | 37 | |
| | | | | | | | | | | | | |
| Min | -65 | -86 | -23 | -27 | -50 | -52 | -35 | 84 | 205 | 58 | -1 | -95 |
| Max | 123 | 60 | 69 | 70 | 56 | 81 | 222 | 389 | 848 | 544 | 166 | 250 |
| Mean | 28 | 6 | 20 | 21 | 13 | 17 | 77 | 219 | 412 | 244 | 77 | 62 |
| ac-ft | 1725 | 379 | 1210 | 1269 | 708 | 1035 | 4574 | 13425 | 24445 | 14998 | 4753 | 3675 |

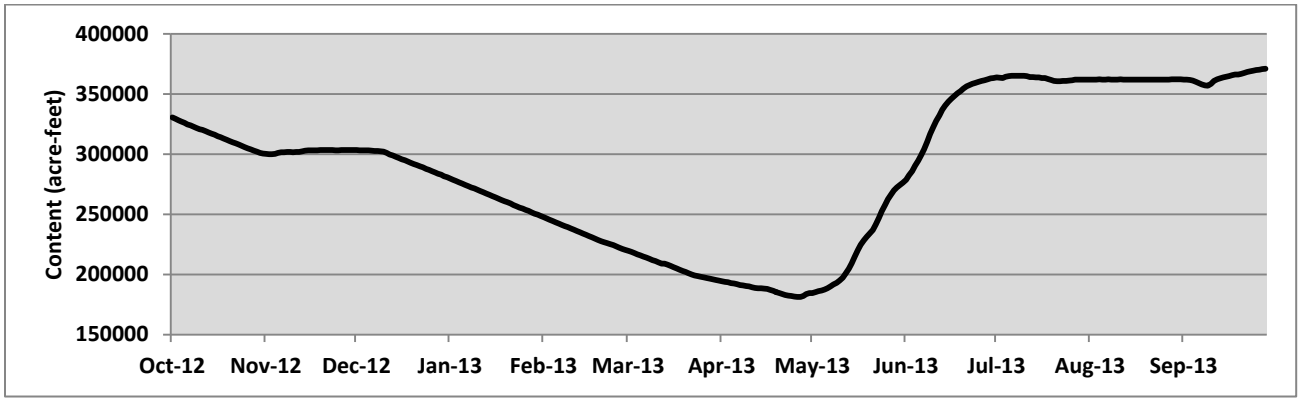


**Appendix A (Table 11 of 38)**
**Granby Reservoir, CO**

**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 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 Colorado-Big Thompson 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-2012 to 30-Sep-2013. Records are complete, 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 | 332718 | 300965 | 303323 | 281659 | 249539 | 221306 | 195405 | 183703 | 274362 | 362833 | 361938 | 362117 |
| 2 | 331626 | 300420 | 303323 | 280760 | 248455 | 220469 | 194970 | 184382 | 276193 | 363254 | 361938 | 362117 |
| 3 | 330537 | 300092 | 303378 | 279705 | 247420 | 219683 | 194314 | 184593 | 278762 | 363612 | 361938 | 361878 |
| 4 | 329449 | 299928 | 303214 | 278603 | 246437 | 218756 | 193879 | 185316 | 282291 | 363493 | 361998 | 361818 |
| 5 | 328195 | 299928 | 303049 | 277500 | 245358 | 217832 | 193485 | 185955 | 285849 | 363254 | 361998 | 361577 |
| 6 | 327166 | 300257 | 303159 | 276506 | 244331 | 216725 | 192836 | 186637 | 290393 | 364149 | 362117 | 361041 |
| 7 | 325969 | 301019 | 302995 | 275355 | 243359 | 215851 | 192533 | 187534 | 294492 | 364809 | 361998 | 359910 |
| 8 | 324775 | 301457 | 302830 | 274362 | 242237 | 214844 | 191882 | 188606 | 299054 | 365169 | 361998 | 358957 |
| 9 | 323752 | 301512 | 302665 | 273376 | 241265 | 213974 | 191188 | 190197 | 304035 | 364990 | 362117 | 358005 |
| 10 | 322679 | 301678 | 302499 | 272335 | 240198 | 213014 | 190758 | 191752 | 310227 | 365110 | 361998 | 357117 |
| 11 | 321602 | 301678 | 302334 | 271351 | 239182 | 212010 | 190370 | 193095 | 316703 | 365110 | 361998 | 356758 |
| 12 | 320752 | 301623 | 301952 | 270366 | 238121 | 211009 | 190029 | 194840 | 322396 | 364990 | 361998 | 358360 |
| 13 | 320021 | 301678 | 300911 | 269280 | 237108 | 209920 | 189320 | 197159 | 327564 | 364689 | 362117 | 360684 |
| 14 | 318949 | 301788 | 299763 | 268253 | 236102 | 208879 | 188613 | 200645 | 331969 | 364029 | 361998 | 362117 |
| 15 | 317935 | 302280 | 298725 | 267275 | 235045 | 208969 | 188520 | 204787 | 336751 | 363970 | 361998 | 362894 |
| 16 | 317040 | 302830 | 297748 | 266147 | 233992 | 208159 | 188477 | 209287 | 340454 | 363851 | 361938 | 363672 |
| 17 | 316028 | 302995 | 296768 | 265172 | 232846 | 207167 | 188306 | 214522 | 343535 | 363612 | 361938 | 364327 |
| 18 | 314907 | 303159 | 295681 | 264099 | 231797 | 206043 | 187918 | 220052 | 345872 | 363254 | 361938 | 364930 |
| 19 | 313960 | 303159 | 294818 | 263031 | 230752 | 205056 | 187148 | 224528 | 348273 | 363254 | 361938 | 365528 |
| 20 | 312843 | 303214 | 293789 | 262013 | 229707 | 203982 | 186339 | 228243 | 350444 | 362474 | 361818 | 366070 |
| 21 | 311894 | 303323 | 292762 | 260949 | 228669 | 202956 | 185316 | 231372 | 352209 | 361577 | 361818 | 366251 |
| 22 | 310949 | 303378 | 291739 | 259936 | 227628 | 201932 | 184508 | 234135 | 354511 | 360922 | 361878 | 366790 |
| 23 | 309725 | 303432 | 290771 | 258874 | 226783 | 200999 | 183661 | 236819 | 356167 | 360447 | 361818 | 367571 |
| 24 | 308840 | 303487 | 289859 | 257716 | 226028 | 200023 | 182772 | 241507 | 357354 | 360447 | 361818 | 368294 |
| 25 | 307897 | 303378 | 288893 | 256659 | 225277 | 199097 | 182394 | 247026 | 358419 | 360684 | 361938 | 368715 |
| 26 | 306846 | 303159 | 287768 | 255559 | 224388 | 198479 | 182142 | 252612 | 359136 | 360803 | 361818 | 369200 |
| 27 | 305746 | 303214 | 286757 | 254608 | 223265 | 197993 | 181551 | 257615 | 360089 | 361100 | 361998 | 369861 |
| 28 | 304808 | 303323 | 285743 | 253658 | 222238 | 197597 | 181300 | 262521 | 360922 | 361338 | 361998 | 370222 |
| 29 | 303816 | 303378 | 284731 | 252711 | | 197028 | 181341 | 266504 | 361397 | 361758 | 361998 | 370585 |
| 30 | 302830 | 303323 | 283777 | 251617 | | 196325 | 182142 | 269954 | 362176 | 361758 | 362117 | 371010 |
| 31 | 301952 | | 282769 | 250578 | | 195798 | | 272283 | | 361818 | 362058 | |
| | | | | | | | | | | | | |
| Min | 301952 | 299928 | 282769 | 250578 | 222238 | 195798 | 181300 | 183703 | 274362 | 360447 | 361818 | 356758 |
| Max | 332718 | 303487 | 303378 | 281659 | 249539 | 221306 | 195405 | 272283 | 362176 | 365169 | 362117 | 371010 |
| EOM | 301952 | 303323 | 282769 | 250578 | 222238 | 195798 | 182142 | 182142 | 362176 | 361818 | 362058 | 371010 |

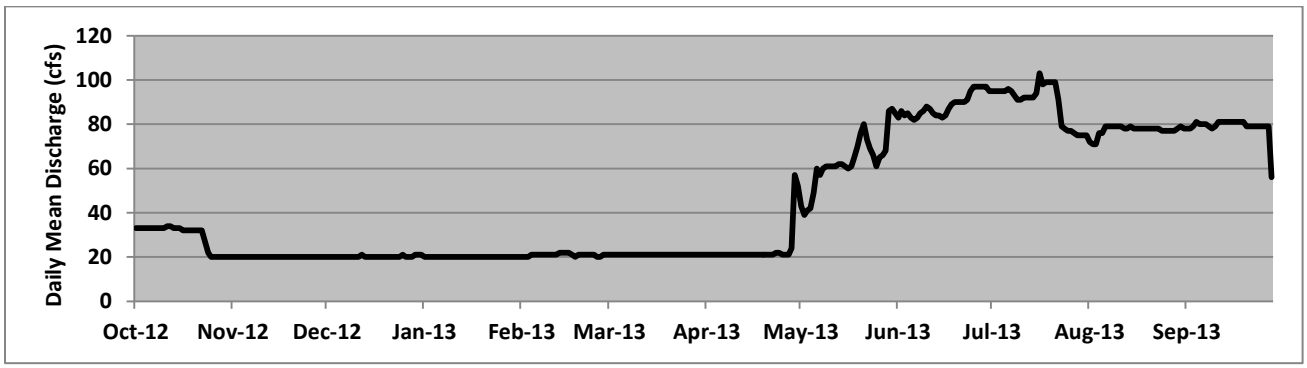


**Appendix A (Table 12 of 38)**
**Granby Reservoir, CO**

**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, 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 Colorado-Big Thompson Project. Data was provided by personnel from the Northern Colorado Water Conservancy District. Releases were made through the outlet works valve. 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-2012 to 30-Sep-2013. Records are complete and fair. This record contains operational data which could be subject to future revisions and changes.

**Discharge, Cubic Feet per Second, 2400-hour Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | 20 | 20 | 21 | 20 | 21 | 21 | 57 | 87 | 97 | 75 | 79 |
| 2 | 32 | 20 | 20 | 21 | 20 | 21 | 21 | 52 | 85 | 95 | 75 | 78 |
| 3 | 33 | 20 | 20 | 20 | 20 | 21 | 21 | 43 | 83 | 95 | 72 | 78 |
| 4 | 33 | 20 | 20 | 20 | 20 | 21 | 21 | 39 | 86 | 95 | 71 | 78 |
| 5 | 33 | 20 | 20 | 20 | 20 | 21 | 21 | 41 | 84 | 95 | 71 | 79 |
| 6 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 42 | 85 | 95 | 76 | 81 |
| 7 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 49 | 83 | 95 | 76 | 80 |
| 8 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 60 | 82 | 96 | 79 | 80 |
| 9 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 57 | 83 | 95 | 79 | 80 |
| 10 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 60 | 85 | 93 | 79 | 79 |
| 11 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 61 | 86 | 91 | 79 | 78 |
| 12 | 33 | 20 | 20 | 20 | 21 | 21 | 21 | 61 | 88 | 91 | 79 | 79 |
| 13 | 34 | 20 | 20 | 20 | 21 | 21 | 21 | 61 | 87 | 92 | 79 | 81 |
| 14 | 34 | 20 | 21 | 20 | 21 | 21 | 21 | 61 | 85 | 92 | 78 | 81 |
| 15 | 33 | 20 | 20 | 20 | 22 | 21 | 21 | 62 | 84 | 92 | 78 | 81 |
| 16 | 33 | 20 | 20 | 20 | 22 | 21 | 21 | 62 | 84 | 92 | 79 | 81 |
| 17 | 33 | 20 | 20 | 20 | 22 | 21 | 21 | 61 | 83 | 94 | 78 | 81 |
| 18 | 32 | 20 | 20 | 20 | 22 | 21 | 21 | 60 | 84 | 103 | 78 | 81 |
| 19 | 32 | 20 | 20 | 20 | 21 | 21 | 21 | 61 | 87 | 98 | 78 | 81 |
| 20 | 32 | 20 | 20 | 20 | 20 | 21 | 21 | 65 | 89 | 99 | 78 | 81 |
| 21 | 32 | 20 | 20 | 20 | 21 | 21 | 21 | 70 | 90 | 99 | 78 | 81 |
| 22 | 32 | 20 | 20 | 20 | 21 | 21 | 21 | 76 | 90 | 99 | 78 | 79 |
| 23 | 32 | 20 | 20 | 20 | 21 | 21 | 21 | 80 | 90 | 99 | 78 | 79 |
| 24 | 32 | 20 | 20 | 20 | 21 | 21 | 21 | 73 | 90 | 91 | 78 | 79 |
| 25 | 27 | 20 | 20 | 20 | 21 | 21 | 22 | 69 | 91 | 79 | 78 | 79 |
| 26 | 22 | 20 | 20 | 20 | 21 | 21 | 22 | 66 | 95 | 78 | 77 | 79 |
| 27 | 20 | 20 | 21 | 20 | 20 | 21 | 21 | 61 | 97 | 77 | 77 | 79 |
| 28 | 20 | 20 | 20 | 20 | 20 | 21 | 21 | 65 | 97 | 77 | 77 | 79 |
| 29 | 20 | 20 | 20 | 20 | | 21 | 21 | 66 | 97 | 76 | 77 | 79 |
| 30 | 20 | 20 | 20 | 20 | | 21 | 24 | 68 | 97 | 75 | 77 | 56 |
| 31 | 20 | | 21 | 20 | | 21 | | 86 | | 75 | 78 | |
| | | | | | | | | | | | | |
| Min | 20 | 20 | 20 | 20 | 20 | 21 | 21 | 39 | 82 | 75 | 71 | 56 |
| Max | 34 | 20 | 21 | 21 | 22 | 21 | 24 | 86 | 97 | 103 | 79 | 81 |
| Mean | 30 | 20 | 20 | 20 | 21 | 21 | 21 | 61 | 88 | 91 | 77 | 79 |
| ac-ft | 1851 | 1188 | 1234 | 1232 | 1156 | 1289 | 1257 | 3752 | 5215 | 5584 | 4732 | 4685 |

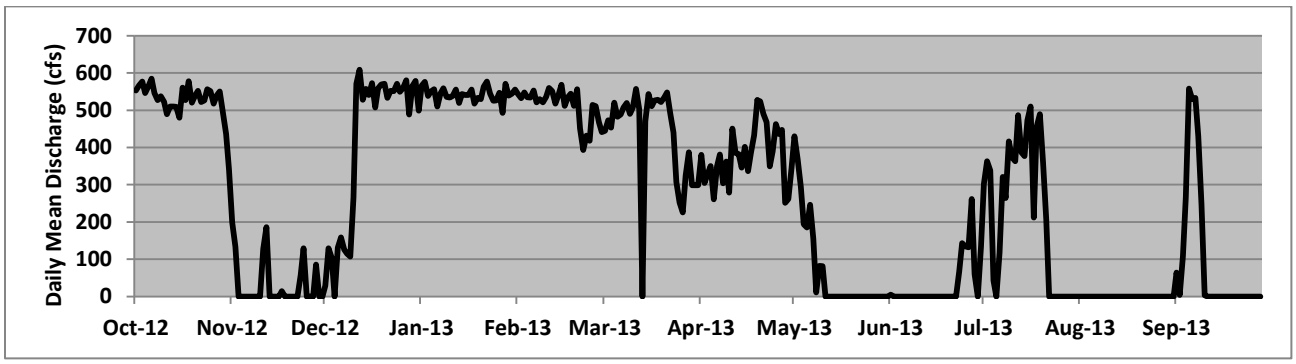


**Appendix A (Table 13 of 38)**
**Farr Pumping Plant, Granby Reservoir, CO**

**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 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 when transmountain diversions via Adams Tunnel are taking place. Data was provided by Farr Pumping Plant operators, Northern Colorado Water Conservancy District, each morning. Data was collected from 01-Oct-2012 to 30-Sep-2013. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

**Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 498 | 436 | 0 | 579 | 544 | 468 | 299 | 262 | 0 | 0 | 0 | 0 |
| 2 | 542 | 341 | 0 | 499 | 555 | 441 | 299 | 345 | 0 | 134 | 0 | 0 |
| 3 | 553 | 199 | 29 | 566 | 543 | 445 | 380 | 430 | 5 | 302 | 0 | 64 |
| 4 | 567 | 134 | 129 | 576 | 532 | 473 | 305 | 369 | 0 | 363 | 0 | 4 |
| 5 | 577 | 0 | 104 | 538 | 548 | 453 | 327 | 294 | 0 | 338 | 0 | 108 |
| 6 | 546 | 0 | 0 | 550 | 535 | 520 | 350 | 194 | 0 | 43 | 0 | 266 |
| 7 | 564 | 0 | 131 | 556 | 534 | 482 | 261 | 185 | 0 | 0 | 0 | 558 |
| 8 | 585 | 0 | 159 | 510 | 553 | 488 | 349 | 246 | 0 | 117 | 0 | 530 |
| 9 | 546 | 0 | 126 | 545 | 521 | 507 | 381 | 155 | 0 | 321 | 0 | 533 |
| 10 | 527 | 0 | 115 | 559 | 530 | 519 | 304 | 11 | 0 | 264 | 0 | 430 |
| 11 | 537 | 0 | 107 | 536 | 521 | 490 | 362 | 82 | 0 | 416 | 0 | 248 |
| 12 | 523 | 0 | 265 | 534 | 536 | 507 | 279 | 81 | 0 | 373 | 0 | 3 |
| 13 | 489 | 128 | 571 | 538 | 560 | 557 | 451 | 0 | 0 | 363 | 0 | 0 |
| 14 | 510 | 186 | 609 | 555 | 551 | 502 | 385 | 0 | 0 | 487 | 0 | 0 |
| 15 | 510 | 0 | 528 | 519 | 518 | 0 | 382 | 0 | 0 | 387 | 0 | 0 |
| 16 | 509 | 0 | 557 | 543 | 539 | 470 | 346 | 0 | 0 | 377 | 0 | 0 |
| 17 | 480 | 0 | 541 | 541 | 568 | 543 | 402 | 0 | 0 | 473 | 0 | 0 |
| 18 | 561 | 0 | 573 | 541 | 512 | 511 | 336 | 0 | 0 | 510 | 0 | 0 |
| 19 | 527 | 14 | 507 | 555 | 535 | 526 | 385 | 0 | 0 | 212 | 0 | 0 |
| 20 | 578 | 0 | 559 | 518 | 544 | 528 | 433 | 0 | 0 | 456 | 0 | 0 |
| 21 | 520 | 0 | 569 | 533 | 512 | 522 | 527 | 0 | 0 | 489 | 0 | 0 |
| 22 | 539 | 0 | 571 | 530 | 556 | 534 | 524 | 0 | 0 | 359 | 0 | 0 |
| 23 | 552 | 0 | 533 | 563 | 451 | 548 | 490 | 0 | 0 | 205 | 0 | 0 |
| 24 | 522 | 0 | 552 | 577 | 393 | 491 | 468 | 0 | 0 | 0 | 0 | 0 |
| 25 | 526 | 57 | 551 | 544 | 432 | 440 | 349 | 0 | 68 | 0 | 0 | 0 |
| 26 | 556 | 129 | 571 | 525 | 418 | 307 | 390 | 0 | 143 | 0 | 0 | 0 |
| 27 | 551 | 0 | 549 | 526 | 514 | 252 | 463 | 0 | 135 | 0 | 0 | 0 |
| 28 | 518 | 0 | 560 | 547 | 511 | 226 | 436 | 0 | 132 | 0 | 0 | 0 |
| 29 | 540 | 0 | 580 | 493 | | 324 | 447 | 0 | 262 | 0 | 0 | 0 |
| 30 | 550 | 86 | 488 | 571 | | 387 | 251 | 0 | 60 | 0 | 0 | 0 |
| 31 | 494 | | 565 | 539 | | 299 | | 0 | | 0 | 0 | |
| | | | | | | | | | | | | |
| Min | 480 | 0 | 0 | 493 | 393 | 0 | 251 | 0 | 0 | 0 | 0 | 0 |
| Max | 585 | 436 | 609 | 579 | 568 | 557 | 527 | 430 | 262 | 510 | 0 | 558 |
| Mean | 535 | 57 | 377 | 542 | 520 | 444 | 379 | 86 | 27 | 225 | 0 | 91 |
| ac-ft | 32862 | 3386 | 23164 | 33276 | 28841 | 27245 | 22495 | 5255 | 1594 | 13838 | 0 | 5433 |

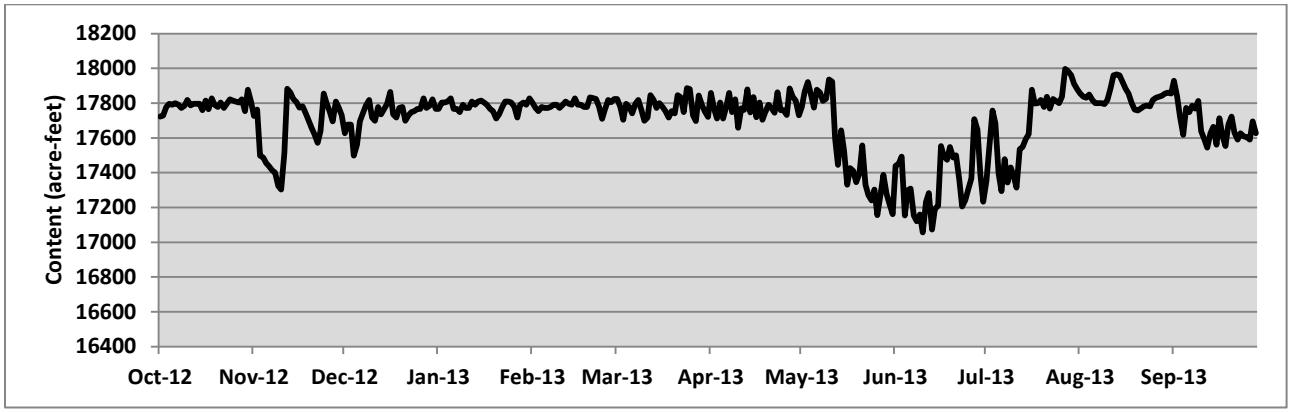


**Appendix A (Table 14 of 38)**
**Shadow Mountain/Grand Lake, CO**

**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 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-2012 to 30-Sep-2013. 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 | 17680 | 17877 | 17773 | 17822 | 17791 | 17806 | 17753 | 17814 | 17220 | 17390 | 17910 | 17860 |
| 2 | 17685 | 17808 | 17731 | 17767 | 17827 | 17824 | 17721 | 17731 | 17161 | 17233 | 17879 | 17855 |
| 3 | 17722 | 17726 | 17626 | 17767 | 17804 | 17824 | 17858 | 17778 | 17439 | 17353 | 17855 | 17929 |
| 4 | 17727 | 17763 | 17676 | 17804 | 17772 | 17777 | 17766 | 17866 | 17453 | 17546 | 17837 | 17837 |
| 5 | 17777 | 17498 | 17676 | 17804 | 17754 | 17704 | 17711 | 17921 | 17493 | 17758 | 17832 | 17721 |
| 6 | 17796 | 17487 | 17498 | 17809 | 17777 | 17796 | 17803 | 17853 | 17154 | 17684 | 17850 | 17617 |
| 7 | 17791 | 17456 | 17561 | 17827 | 17772 | 17777 | 17711 | 17774 | 17300 | 17395 | 17818 | 17772 |
| 8 | 17801 | 17437 | 17695 | 17767 | 17772 | 17741 | 17779 | 17877 | 17310 | 17293 | 17800 | 17749 |
| 9 | 17791 | 17414 | 17745 | 17767 | 17777 | 17796 | 17858 | 17861 | 17153 | 17477 | 17800 | 17786 |
| 10 | 17772 | 17400 | 17787 | 17749 | 17791 | 17819 | 17748 | 17813 | 17122 | 17343 | 17800 | 17769 |
| 11 | 17786 | 17324 | 17818 | 17791 | 17791 | 17759 | 17821 | 17826 | 17160 | 17430 | 17795 | 17813 |
| 12 | 17819 | 17303 | 17717 | 17772 | 17772 | 17699 | 17659 | 17937 | 17057 | 17380 | 17818 | 17639 |
| 13 | 17788 | 17511 | 17699 | 17772 | 17791 | 17717 | 17771 | 17924 | 17231 | 17315 | 17887 | 17592 |
| 14 | 17796 | 17884 | 17777 | 17809 | 17809 | 17847 | 17761 | 17598 | 17282 | 17535 | 17960 | 17545 |
| 15 | 17796 | 17860 | 17736 | 17791 | 17796 | 17818 | 17880 | 17444 | 17073 | 17549 | 17965 | 17626 |
| 16 | 17796 | 17823 | 17767 | 17809 | 17791 | 17772 | 17746 | 17644 | 17192 | 17594 | 17960 | 17663 |
| 17 | 17759 | 17805 | 17796 | 17814 | 17827 | 17801 | 17835 | 17527 | 17208 | 17622 | 17924 | 17561 |
| 18 | 17814 | 17773 | 17864 | 17804 | 17791 | 17777 | 17719 | 17331 | 17553 | 17877 | 17884 | 17713 |
| 19 | 17764 | 17782 | 17736 | 17791 | 17791 | 17754 | 17803 | 17426 | 17494 | 17798 | 17855 | 17608 |
| 20 | 17827 | 17745 | 17717 | 17767 | 17777 | 17717 | 17704 | 17411 | 17474 | 17801 | 17800 | 17553 |
| 21 | 17791 | 17705 | 17772 | 17754 | 17777 | 17754 | 17754 | 17345 | 17548 | 17819 | 17763 | 17676 |
| 22 | 17777 | 17658 | 17777 | 17712 | 17833 | 17741 | 17791 | 17395 | 17487 | 17777 | 17758 | 17723 |
| 23 | 17804 | 17621 | 17699 | 17736 | 17830 | 17846 | 17772 | 17558 | 17501 | 17837 | 17768 | 17631 |
| 24 | 17772 | 17571 | 17730 | 17777 | 17824 | 17833 | 17746 | 17330 | 17362 | 17768 | 17782 | 17589 |
| 25 | 17796 | 17640 | 17749 | 17809 | 17783 | 17748 | 17863 | 17272 | 17206 | 17823 | 17787 | 17626 |
| 26 | 17822 | 17855 | 17754 | 17809 | 17709 | 17887 | 17759 | 17241 | 17243 | 17813 | 17782 | 17608 |
| 27 | 17814 | 17800 | 17767 | 17804 | 17764 | 17882 | 17759 | 17302 | 17303 | 17800 | 17818 | 17605 |
| 28 | 17809 | 17750 | 17767 | 17777 | 17819 | 17729 | 17732 | 17155 | 17367 | 17837 | 17832 | 17589 |
| 29 | 17804 | 17695 | 17827 | 17717 | | 17698 | 17885 | 17274 | 17708 | 17997 | 17837 | 17695 |
| 30 | 17822 | 17810 | 17772 | 17791 | | 17845 | 17835 | 17387 | 17648 | 17984 | 17842 | 17626 |
| 31 | 17754 | | 17786 | 17804 | | 17790 | | 17277 | | 17960 | 17855 | |
| | | | | | | | | | | | | |
| Min | 17680 | 17303 | 17498 | 17712 | 17709 | 17698 | 17659 | 17155 | 17057 | 17233 | 17758 | 17545 |
| Max | 17827 | 17884 | 17864 | 17827 | 17833 | 17887 | 17885 | 17937 | 17708 | 17997 | 17965 | 17929 |
| EOM | 17754 | 17810 | 17786 | 17804 | 17819 | 17790 | 17835 | 17835 | 17648 | 17960 | 17855 | 17626 |

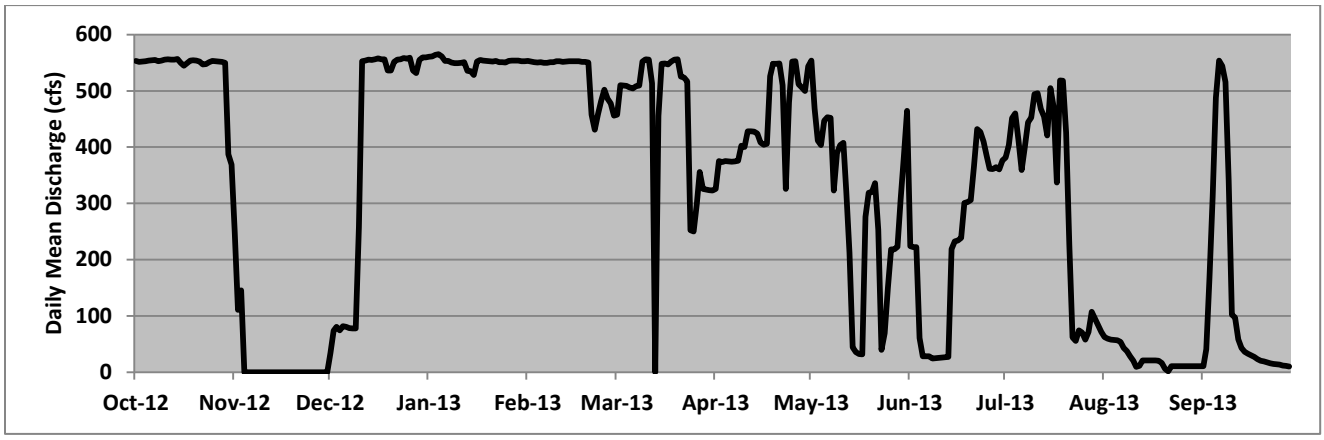


**Appendix A (Table 15 of 38)**
**Alva B. Adams Tunnel at East Portal, near Estes Park, CO**

**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 from topographic map.
**Remarks.**-- Constructed between 1940 and 1947. Tunnel is 13.1 miles long, and extends between Grand Lake and Estes Park. Its maximum capacity is 550 cubic feet per second. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 554 | 387 | 0 | 560 | 552 | 477 | 323 | 500 | 384 | 360 | 84 | 11 |
| 2 | 553 | 369 | 0 | 560 | 553 | 456 | 323 | 543 | 464 | 376 | 71 | 11 |
| 3 | 553 | 248 | 34 | 561 | 553 | 457 | 326 | 554 | 224 | 381 | 63 | 11 |
| 4 | 552 | 111 | 74 | 561 | 552 | 510 | 375 | 468 | 222 | 404 | 60 | 41 |
| 5 | 552 | 145 | 81 | 564 | 551 | 509 | 373 | 411 | 222 | 452 | 58 | 168 |
| 6 | 553 | 0 | 74 | 565 | 550 | 509 | 375 | 404 | 61 | 460 | 57 | 312 |
| 7 | 554 | 0 | 82 | 561 | 551 | 506 | 374 | 447 | 28 | 413 | 57 | 488 |
| 8 | 554 | 0 | 80 | 553 | 550 | 504 | 374 | 453 | 28 | 359 | 54 | 554 |
| 9 | 555 | 0 | 78 | 553 | 550 | 508 | 375 | 452 | 28 | 400 | 43 | 544 |
| 10 | 553 | 0 | 78 | 551 | 551 | 509 | 376 | 323 | 24 | 444 | 37 | 516 |
| 11 | 554 | 0 | 78 | 549 | 551 | 552 | 402 | 389 | 25 | 452 | 29 | 341 |
| 12 | 556 | 0 | 259 | 549 | 552 | 556 | 400 | 404 | 26 | 494 | 20 | 102 |
| 13 | 556 | 0 | 552 | 550 | 552 | 555 | 428 | 407 | 26 | 496 | 10 | 97 |
| 14 | 555 | 0 | 554 | 551 | 551 | 514 | 428 | 321 | 26 | 468 | 11 | 58 |
| 15 | 556 | 0 | 555 | 536 | 552 | 0 | 428 | 213 | 27 | 454 | 21 | 43 |
| 16 | 557 | 0 | 555 | 535 | 553 | 455 | 424 | 44 | 219 | 420 | 21 | 36 |
| 17 | 550 | 0 | 556 | 528 | 553 | 548 | 408 | 35 | 233 | 505 | 21 | 33 |
| 18 | 545 | 0 | 557 | 552 | 553 | 548 | 404 | 32 | 234 | 471 | 21 | 30 |
| 19 | 549 | 0 | 556 | 555 | 553 | 547 | 406 | 32 | 239 | 337 | 21 | 27 |
| 20 | 554 | 0 | 556 | 554 | 551 | 552 | 526 | 276 | 301 | 518 | 20 | 23 |
| 21 | 555 | 0 | 536 | 553 | 551 | 556 | 548 | 319 | 302 | 518 | 16 | 20 |
| 22 | 554 | 0 | 536 | 553 | 550 | 556 | 548 | 320 | 306 | 426 | 6 | 19 |
| 23 | 552 | 0 | 551 | 552 | 457 | 525 | 549 | 336 | 365 | 227 | 2 | 18 |
| 24 | 547 | 0 | 555 | 553 | 431 | 524 | 510 | 253 | 432 | 62 | 10 | 16 |
| 25 | 548 | 0 | 556 | 551 | 458 | 517 | 326 | 40 | 427 | 55 | 11 | 14 |
| 26 | 551 | 0 | 558 | 551 | 482 | 252 | 479 | 69 | 410 | 75 | 11 | 14 |
| 27 | 553 | 0 | 557 | 550 | 502 | 250 | 552 | 149 | 383 | 70 | 11 | 13 |
| 28 | 553 | 0 | 559 | 553 | 486 | 300 | 553 | 218 | 362 | 58 | 10 | 12 |
| 29 | 552 | 0 | 536 | 554 | | 356 | 512 | 218 | 361 | 72 | 11 | 11 |
| 30 | 551 | 0 | 532 | 554 | | 326 | 506 | 223 | 364 | 107 | 11 | 10 |
| 31 | 550 | | 555 | 554 | | 325 | | 308 | | 95 | 11 | |
| | | | | | | | | | | | | |
| Min | 545 | 0 | 0 | 528 | 431 | 0 | 323 | 32 | 24 | 55 | 2 | 10 |
| Max | 557 | 387 | 559 | 565 | 553 | 556 | 553 | 554 | 464 | 518 | 84 | 554 |
| Mean | 553 | 42 | 367 | 552 | 534 | 460 | 431 | 296 | 225 | 336 | 29 | 120 |
| ac-ft | 33914 | 2495 | 22552 | 33903 | 29605 | 28232 | 25604 | 18142 | 13371 | 20652 | 1751 | 7113 |

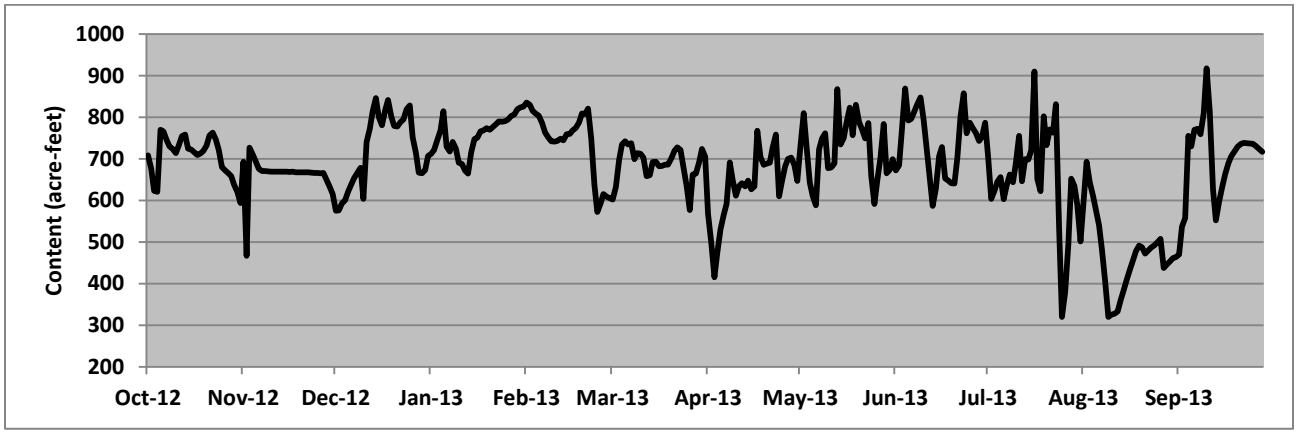


**Appendix A (Table16 of 38)**
**Marys Lake, CO**

**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 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-2012 to 30-Sep-2013. Record is complete and reliable. The gage does not record water surface levels below elevation 8,022.62 feet, content of 322 AF. 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 | 772 | 621 | 632 | 673 | 824 | 609 | 723 | 684 | 673 | 753 | 589 | 462 |
| 2 | 731 | 593 | 615 | 707 | 825 | 605 | 705 | 647 | 699 | 787 | 501 | 464 |
| 3 | 708 | 693 | 575 | 712 | 835 | 602 | 568 | 732 | 672 | 697 | 601 | 469 |
| 4 | 676 | 467 | 576 | 721 | 830 | 632 | 499 | 810 | 684 | 603 | 693 | 537 |
| 5 | 623 | 727 | 593 | 745 | 815 | 696 | 415 | 728 | 771 | 623 | 643 | 558 |
| 6 | 620 | 710 | 600 | 768 | 808 | 734 | 475 | 643 | 869 | 645 | 611 | 755 |
| 7 | 770 | 693 | 620 | 814 | 804 | 742 | 531 | 610 | 792 | 656 | 578 | 730 |
| 8 | 766 | 676 | 638 | 729 | 786 | 734 | 565 | 588 | 796 | 603 | 540 | 770 |
| 9 | 745 | 671 | 654 | 717 | 763 | 737 | 592 | 723 | 814 | 635 | 481 | 772 |
| 10 | 730 | 671 | 666 | 740 | 752 | 699 | 691 | 748 | 831 | 662 | 405 | 759 |
| 11 | 724 | 670 | 678 | 724 | 742 | 714 | 649 | 761 | 847 | 644 | 320 | 810 |
| 12 | 714 | 669 | 604 | 691 | 742 | 712 | 611 | 677 | 792 | 690 | 325 | 917 |
| 13 | 732 | 669 | 740 | 687 | 743 | 703 | 634 | 679 | 726 | 755 | 327 | 812 |
| 14 | 754 | 669 | 772 | 671 | 748 | 658 | 641 | 689 | 653 | 646 | 332 | 627 |
| 15 | 758 | 669 | 814 | 665 | 744 | 660 | 634 | 868 | 586 | 699 | 359 | 552 |
| 16 | 725 | 669 | 846 | 716 | 759 | 692 | 647 | 734 | 628 | 698 | 385 | 597 |
| 17 | 722 | 669 | 801 | 747 | 760 | 693 | 626 | 750 | 706 | 720 | 409 | 633 |
| 18 | 716 | 668 | 780 | 751 | 768 | 682 | 634 | 787 | 728 | 910 | 433 | 663 |
| 19 | 709 | 669 | 816 | 766 | 774 | 683 | 767 | 823 | 653 | 652 | 456 | 689 |
| 20 | 713 | 668 | 841 | 768 | 787 | 686 | 704 | 757 | 648 | 622 | 478 | 706 |
| 21 | 719 | 668 | 802 | 774 | 809 | 686 | 686 | 830 | 641 | 802 | 491 | 718 |
| 22 | 732 | 668 | 779 | 770 | 807 | 701 | 688 | 788 | 640 | 733 | 488 | 729 |
| 23 | 756 | 667 | 778 | 776 | 820 | 719 | 690 | 772 | 701 | 771 | 472 | 735 |
| 24 | 763 | 667 | 788 | 783 | 749 | 727 | 728 | 749 | 802 | 763 | 480 | 738 |
| 25 | 746 | 667 | 794 | 790 | 636 | 721 | 758 | 786 | 858 | 831 | 487 | 738 |
| 26 | 721 | 666 | 819 | 789 | 572 | 681 | 610 | 659 | 762 | 535 | 492 | 737 |
| 27 | 680 | 666 | 828 | 790 | 592 | 635 | 646 | 591 | 786 | 320 | 500 | 736 |
| 28 | 672 | 665 | 751 | 794 | 615 | 577 | 682 | 648 | 773 | 380 | 507 | 731 |
| 29 | 666 | 666 | 715 | 803 | | 662 | 700 | 704 | 762 | 494 | 437 | 724 |
| 30 | 658 | 649 | 667 | 806 | | 665 | 703 | 784 | 743 | 652 | 445 | 717 |
| 31 | 638 | | 665 | 819 | | 692 | | 665 | | 634 | 453 | |
| | | | | | | | | | | | | |
| Min | 620 | 467 | 575 | 665 | 572 | 577 | 415 | 588 | 586 | 320 | 320 | 462 |
| Max | 772 | 727 | 846 | 819 | 835 | 742 | 767 | 868 | 869 | 910 | 693 | 917 |
| EOM | 638 | 649 | 665 | 819 | 615 | 692 | 703 | 703 | 743 | 634 | 453 | 717 |

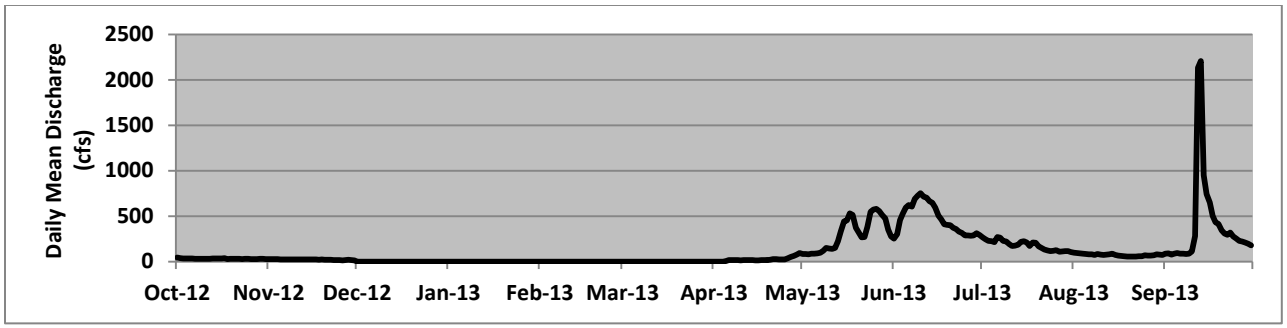


**Appendix A (Table 17 of 38)**
**Big Thompson River above Lake Estes, CO**

**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 $mi^2$. Station consists of data collection platform as primary record with graphic chart recorder as backup. Recorder was operated from 01-Oct-2012 until 13-Nov-12, before it was winterized. The station was put back into service from 5-Apr-2012 to 30-Sep-2012. Values for the off-season are marked as zero, but winter month flows normally fluctuate between 10 and 30 cfs. Peak flows during the September flood have not been revised but are suspect because of irregularities in the sub-daily stage record. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43 | 29 | 0 | 0 | 0 | 0 | 0 | 85 | 251 | 268 | 99 | 88 |
| 2 | 39 | 27 | 0 | 0 | 0 | 0 | 0 | 84 | 301 | 244 | 93 | 90 |
| 3 | 36 | 26 | 0 | 0 | 0 | 0 | 0 | 80 | 458 | 228 | 90 | 76 |
| 4 | 35 | 25 | 0 | 0 | 0 | 0 | 0 | 86 | 531 | 224 | 87 | 87 |
| 5 | 36 | 25 | 0 | 0 | 0 | 0 | 6 | 86 | 593 | 213 | 83 | 93 |
| 6 | 34 | 24 | 0 | 0 | 0 | 0 | 18 | 90 | 622 | 270 | 80 | 86 |
| 7 | 31 | 24 | 0 | 0 | 0 | 0 | 17 | 97 | 606 | 263 | 79 | 86 |
| 8 | 31 | 24 | 0 | 0 | 0 | 0 | 17 | 118 | 688 | 227 | 73 | 83 |
| 9 | 30 | 23 | 0 | 0 | 0 | 0 | 17 | 150 | 725 | 221 | 84 | 87 |
| 10 | 29 | 24 | 0 | 0 | 0 | 0 | 14 | 143 | 753 | 192 | 77 | 111 |
| 11 | 29 | 23 | 0 | 0 | 0 | 0 | 15 | 139 | 714 | 172 | 71 | 281 |
| 12 | 29 | 23 | 0 | 0 | 0 | 0 | 15 | 152 | 704 | 176 | 76 | 2132 |
| 13 | 33 | 23 | 0 | 0 | 0 | 0 | 16 | 224 | 665 | 185 | 80 | 2208 |
| 14 | 34 | 25 | 0 | 0 | 0 | 0 | 17 | 333 | 646 | 216 | 89 | 949 |
| 15 | 33 | 22 | 0 | 0 | 0 | 0 | 13 | 441 | 594 | 225 | 73 | 743 |
| 16 | 33 | 22 | 0 | 0 | 0 | 0 | 14 | 454 | 506 | 210 | 67 | 650 |
| 17 | 37 | 22 | 0 | 0 | 0 | 0 | 17 | 532 | 463 | 170 | 62 | 503 |
| 18 | 28 | 20 | 0 | 0 | 0 | 0 | 16 | 513 | 411 | 209 | 58 | 432 |
| 19 | 32 | 22 | 0 | 0 | 0 | 0 | 16 | 371 | 403 | 207 | 57 | 414 |
| 20 | 30 | 20 | 0 | 0 | 0 | 0 | 22 | 319 | 400 | 169 | 56 | 344 |
| 21 | 29 | 20 | 0 | 0 | 0 | 0 | 26 | 268 | 374 | 151 | 54 | 308 |
| 22 | 29 | 20 | 0 | 0 | 0 | 0 | 27 | 269 | 359 | 134 | 56 | 294 |
| 23 | 28 | 18 | 0 | 0 | 0 | 0 | 23 | 384 | 331 | 121 | 59 | 321 |
| 24 | 29 | 18 | 0 | 0 | 0 | 0 | 22 | 547 | 318 | 116 | 59 | 277 |
| 25 | 30 | 17 | 0 | 0 | 0 | 0 | 25 | 574 | 289 | 120 | 68 | 252 |
| 26 | 27 | 14 | 0 | 0 | 0 | 0 | 37 | 581 | 288 | 124 | 65 | 228 |
| 27 | 27 | 16 | 0 | 0 | 0 | 0 | 51 | 556 | 284 | 109 | 65 | 220 |
| 28 | 29 | 20 | 0 | 0 | 0 | 0 | 62 | 512 | 287 | 111 | 69 | 209 |
| 29 | 30 | 18 | 0 | 0 | | 0 | 77 | 475 | 313 | 115 | 80 | 195 |
| 30 | 29 | 14 | 0 | 0 | | 0 | 93 | 352 | 290 | 115 | 78 | 180 |
| 31 | 28 | | 0 | 0 | | 0 | | 276 | | 106 | 75 | |
| | | | | | | | | | | | | |
| Min | 27 | 14 | 0 | 0 | 0 | 0 | 0 | 80 | 251 | 106 | 54 | 76 |
| Max | 43 | 29 | 0 | 0 | 0 | 0 | 93 | 581 | 753 | 270 | 99 | 2208 |
| Mean | 32 | 22 | 0 | 0 | 0 | 0 | 23 | 300 | 472 | 181 | 73 | 401 |
| ac-ft | 1942 | 1285 | 0 | 0 | 0 | 0 | 1372 | 18397 | 28052 | 11110 | 4477 | 23811 |

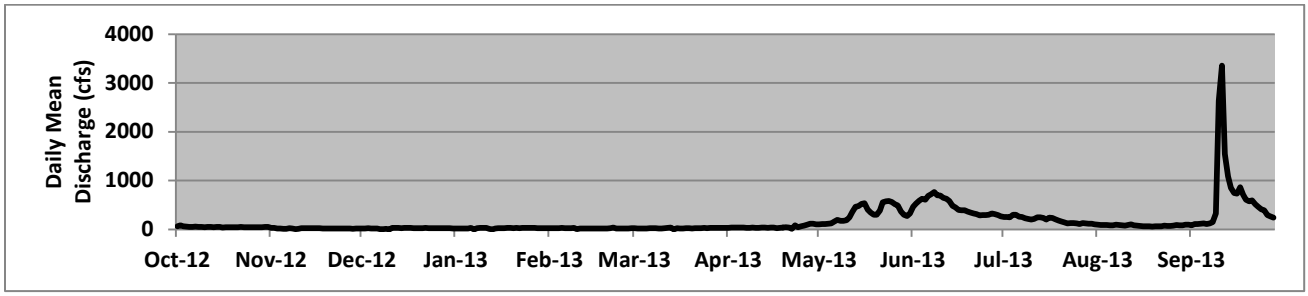


**Appendix A (Table 18 of 38)**
**Olympus Dam, CO**

**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. Inflow is computed based on change-in-storage, flow through the Adams Tunnel and outflow. This year Olympus Dam experienced its worst flood since impoundment, with an estimated hourly inflow 5,280 cfs the night of 12-Sep-2013. Records are complete and reliable, but have not been revised. This record contains operational data which could be subject to future revisions and changes.

**Inflow, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 88 | 52 | 18 | 22 | 25 | 19 | 29 | 118 | 273 | 294 | 113 | 97 |
| 2 | 66 | 49 | 16 | 19 | 27 | 24 | 33 | 104 | 325 | 268 | 102 | 97 |
| 3 | 62 | 33 | 15 | 20 | 27 | 23 | 31 | 101 | 462 | 257 | 95 | 81 |
| 4 | 81 | 32 | 18 | 20 | 27 | 16 | 36 | 110 | 532 | 255 | 91 | 109 |
| 5 | 61 | 17 | 21 | 20 | 26 | 18 | 35 | 111 | 591 | 244 | 91 | 108 |
| 6 | 58 | 16 | 20 | 18 | 26 | 17 | 36 | 113 | 626 | 300 | 87 | 114 |
| 7 | 54 | 9 | 20 | 18 | 28 | 20 | 35 | 125 | 605 | 297 | 86 | 119 |
| 8 | 53 | 14 | 16 | 29 | 27 | 21 | 37 | 160 | 686 | 257 | 82 | 112 |
| 9 | 56 | 23 | 2 | 0 | 26 | 21 | 34 | 194 | 720 | 253 | 95 | 121 |
| 10 | 53 | 15 | 7 | 26 | 25 | 22 | 29 | 178 | 765 | 227 | 87 | 150 |
| 11 | 50 | 7 | 13 | 30 | 30 | 18 | 35 | 173 | 699 | 212 | 86 | 325 |
| 12 | 45 | 10 | 0 | 29 | 6 | 21 | 32 | 191 | 694 | 204 | 74 | 2634 |
| 13 | 48 | 23 | 32 | 29 | 18 | 21 | 33 | 249 | 648 | 217 | 90 | 3355 |
| 14 | 51 | 25 | 29 | 10 | 19 | 28 | 34 | 356 | 630 | 248 | 100 | 1543 |
| 15 | 46 | 21 | 28 | 0 | 18 | 37 | 39 | 460 | 580 | 250 | 81 | 1085 |
| 16 | 49 | 22 | 27 | 19 | 18 | 0 | 33 | 473 | 485 | 237 | 75 | 850 |
| 17 | 53 | 22 | 32 | 23 | 18 | 26 | 38 | 523 | 450 | 204 | 69 | 745 |
| 18 | 40 | 21 | 31 | 26 | 19 | 20 | 35 | 536 | 400 | 239 | 65 | 731 |
| 19 | 44 | 21 | 29 | 25 | 17 | 20 | 26 | 403 | 390 | 235 | 64 | 866 |
| 20 | 44 | 20 | 22 | 29 | 19 | 23 | 28 | 347 | 389 | 208 | 62 | 710 |
| 21 | 44 | 20 | 25 | 28 | 19 | 21 | 38 | 297 | 365 | 183 | 59 | 608 |
| 22 | 43 | 19 | 24 | 26 | 21 | 19 | 46 | 297 | 348 | 162 | 64 | 577 |
| 23 | 41 | 18 | 26 | 28 | 23 | 23 | 37 | 388 | 324 | 141 | 65 | 592 |
| 24 | 47 | 19 | 27 | 27 | 34 | 22 | 13 | 553 | 310 | 125 | 65 | 516 |
| 25 | 45 | 17 | 27 | 29 | 18 | 23 | 84 | 573 | 289 | 127 | 74 | 464 |
| 26 | 42 | 15 | 25 | 31 | 20 | 28 | 46 | 584 | 291 | 132 | 70 | 414 |
| 27 | 41 | 15 | 26 | 29 | 16 | 26 | 64 | 560 | 293 | 124 | 71 | 389 |
| 28 | 44 | 20 | 27 | 29 | 17 | 28 | 78 | 519 | 300 | 109 | 75 | 291 |
| 29 | 45 | 17 | 27 | 28 | | 31 | 94 | 489 | 326 | 127 | 90 | 266 |
| 30 | 43 | 14 | 22 | 26 | | 29 | 117 | 362 | 315 | 125 | 85 | 239 |
| 31 | 43 | | 22 | 26 | | 30 | | 298 | | 119 | 81 | |
| | | | | | | | | | | | | |
| Min | 40 | 7 | 0 | 0 | 6 | 0 | 13 | 101 | 273 | 109 | 59 | 81 |
| Max | 88 | 52 | 32 | 31 | 34 | 37 | 117 | 584 | 765 | 300 | 113 | 3355 |
| Mean | 51 | 21 | 22 | 23 | 22 | 22 | 43 | 321 | 470 | 206 | 80 | 610 |
| ac-ft | 3131 | 1244 | 1332 | 1425 | 1217 | 1373 | 2553 | 19700 | 27940 | 12629 | 4938 | 36253 |

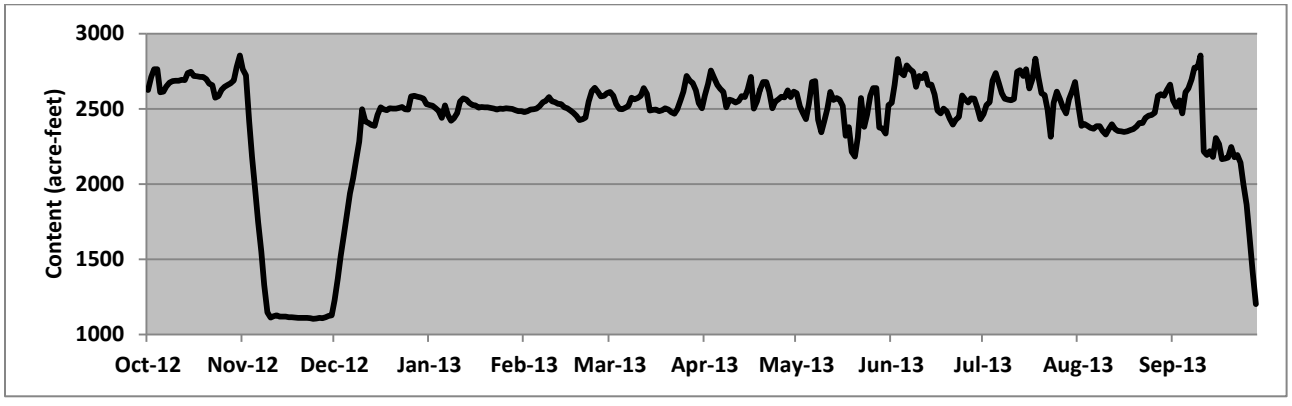


**Appendix A (Table 19 of 38)**
**Olympus Dam, CO**

**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 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-2012 to 30-Sep-2013. 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 | 2513 | 2778 | 1123 | 2567 | 2484 | 2587 | 2537 | 2577 | 2335 | 2511 | 2618 | 2625 |
| 2 | 2585 | 2855 | 1127 | 2530 | 2484 | 2604 | 2504 | 2614 | 2524 | 2431 | 2677 | 2660 |
| 3 | 2625 | 2762 | 1226 | 2525 | 2478 | 2613 | 2589 | 2603 | 2539 | 2465 | 2522 | 2558 |
| 4 | 2711 | 2723 | 1371 | 2521 | 2484 | 2585 | 2665 | 2516 | 2659 | 2525 | 2387 | 2514 |
| 5 | 2762 | 2419 | 1521 | 2503 | 2494 | 2532 | 2756 | 2475 | 2831 | 2544 | 2400 | 2556 |
| 6 | 2764 | 2180 | 1660 | 2486 | 2497 | 2499 | 2706 | 2432 | 2742 | 2686 | 2387 | 2470 |
| 7 | 2609 | 1957 | 1805 | 2440 | 2501 | 2497 | 2659 | 2530 | 2723 | 2739 | 2375 | 2609 |
| 8 | 2614 | 1747 | 1937 | 2522 | 2517 | 2508 | 2633 | 2679 | 2789 | 2676 | 2367 | 2637 |
| 9 | 2648 | 1551 | 2040 | 2459 | 2544 | 2519 | 2611 | 2684 | 2762 | 2603 | 2384 | 2696 |
| 10 | 2674 | 1328 | 2157 | 2421 | 2553 | 2574 | 2509 | 2427 | 2745 | 2567 | 2384 | 2773 |
| 11 | 2684 | 1147 | 2282 | 2437 | 2579 | 2563 | 2561 | 2344 | 2647 | 2561 | 2352 | 2777 |
| 12 | 2688 | 1111 | 2497 | 2472 | 2551 | 2572 | 2554 | 2416 | 2718 | 2558 | 2330 | 2855 |
| 13 | 2688 | 1120 | 2416 | 2547 | 2544 | 2587 | 2542 | 2501 | 2705 | 2566 | 2368 | 2217 |
| 14 | 2693 | 1127 | 2407 | 2569 | 2534 | 2638 | 2553 | 2613 | 2733 | 2747 | 2397 | 2192 |
| 15 | 2691 | 1118 | 2394 | 2561 | 2532 | 2599 | 2584 | 2559 | 2659 | 2757 | 2365 | 2219 |
| 16 | 2737 | 1118 | 2387 | 2539 | 2511 | 2489 | 2577 | 2572 | 2662 | 2718 | 2352 | 2180 |
| 17 | 2747 | 1119 | 2459 | 2525 | 2503 | 2492 | 2630 | 2561 | 2594 | 2762 | 2351 | 2306 |
| 18 | 2718 | 1115 | 2509 | 2522 | 2488 | 2496 | 2713 | 2517 | 2489 | 2637 | 2346 | 2265 |
| 19 | 2716 | 1113 | 2497 | 2508 | 2475 | 2484 | 2501 | 2320 | 2470 | 2699 | 2351 | 2165 |
| 20 | 2711 | 1112 | 2491 | 2513 | 2453 | 2491 | 2551 | 2378 | 2501 | 2834 | 2359 | 2170 |
| 21 | 2711 | 1111 | 2503 | 2509 | 2426 | 2503 | 2625 | 2214 | 2483 | 2705 | 2365 | 2176 |
| 22 | 2698 | 1110 | 2501 | 2511 | 2431 | 2496 | 2679 | 2182 | 2435 | 2603 | 2383 | 2247 |
| 23 | 2667 | 1111 | 2501 | 2506 | 2442 | 2478 | 2679 | 2309 | 2395 | 2591 | 2407 | 2179 |
| 24 | 2657 | 1110 | 2506 | 2501 | 2549 | 2468 | 2616 | 2571 | 2427 | 2494 | 2407 | 2194 |
| 25 | 2574 | 1109 | 2513 | 2496 | 2620 | 2497 | 2504 | 2381 | 2447 | 2314 | 2440 | 2141 |
| 26 | 2584 | 1104 | 2497 | 2501 | 2640 | 2558 | 2547 | 2462 | 2589 | 2539 | 2455 | 1999 |
| 27 | 2626 | 1105 | 2496 | 2499 | 2611 | 2614 | 2563 | 2585 | 2563 | 2614 | 2459 | 1863 |
| 28 | 2647 | 1110 | 2582 | 2503 | 2582 | 2718 | 2580 | 2638 | 2542 | 2563 | 2473 | 1654 |
| 29 | 2659 | 1107 | 2585 | 2501 | | 2688 | 2575 | 2638 | 2569 | 2511 | 2587 | 1413 |
| 30 | 2670 | 1113 | 2580 | 2499 | | 2672 | 2623 | 2376 | 2567 | 2470 | 2597 | 1202 |
| 31 | 2689 | | 2575 | 2491 | | 2623 | | 2370 | | 2563 | 2587 | |
| | | | | | | | | | | | | |
| Min | 2513 | 1104 | 1123 | 2421 | 2426 | 2468 | 2501 | 2182 | 2335 | 2314 | 2330 | 1202 |
| Max | 2764 | 2855 | 2585 | 2569 | 2640 | 2718 | 2756 | 2684 | 2831 | 2834 | 2677 | 2855 |
| EOM | 2689 | 1113 | 2575 | 2491 | 2582 | 2623 | 2623 | 2623 | 2567 | 2563 | 2587 | 1202 |

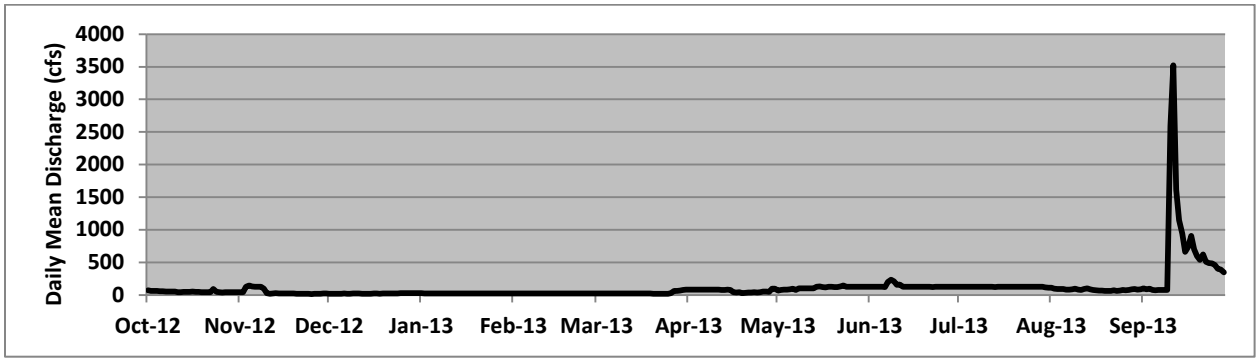


**Appendix A (Table 20 of 38)**
**Big Thompson River below Olympus Dam, CO**

**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 $mi^2$. Area at site used between 29-Jan-1934 and 21-Mar-1951 was 162 $mi^2$. Station consists of data collection platform and digital recorder as primary record. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. Record is complete. Flow calculations during peak runoff could lose accuracy as the water begins to flow over the outside boards. Flows between 12-Sep-2013 and 25-Sep-2013 were estimated based on radial gate openings at the dam. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 66 | 42 | 21 | 26 | 22 | 23 | 79 | 97 | 126 | 125 | 117 | 83 |
| 2 | 51 | 43 | 23 | 26 | 22 | 23 | 80 | 96 | 126 | 128 | 112 | 86 |
| 3 | 70 | 42 | 19 | 26 | 22 | 22 | 81 | 66 | 125 | 127 | 110 | 101 |
| 4 | 63 | 45 | 18 | 25 | 22 | 22 | 81 | 79 | 126 | 125 | 96 | 87 |
| 5 | 63 | 127 | 18 | 25 | 22 | 22 | 80 | 84 | 126 | 126 | 91 | 95 |
| 6 | 61 | 146 | 20 | 25 | 22 | 22 | 82 | 81 | 126 | 126 | 90 | 75 |
| 7 | 59 | 130 | 18 | 25 | 22 | 22 | 80 | 85 | 125 | 125 | 90 | 73 |
| 8 | 58 | 128 | 21 | 25 | 22 | 22 | 81 | 97 | 123 | 124 | 83 | 75 |
| 9 | 51 | 125 | 20 | 25 | 22 | 22 | 82 | 77 | 198 | 124 | 82 | 75 |
| 10 | 50 | 128 | 20 | 25 | 22 | 22 | 81 | 102 | 233 | 125 | 86 | 76 |
| 11 | 50 | 99 | 21 | 22 | 22 | 22 | 80 | 100 | 211 | 126 | 97 | 78 |
| 12 | 52 | 28 | 21 | 22 | 22 | 22 | 80 | 99 | 157 | 125 | 81 | 2595 |
| 13 | 43 | 19 | 21 | 22 | 22 | 22 | 80 | 102 | 161 | 126 | 77 | 3520 |
| 14 | 44 | 22 | 20 | 22 | 22 | 21 | 78 | 100 | 125 | 128 | 91 | 1614 |
| 15 | 50 | 26 | 18 | 22 | 22 | 22 | 79 | 102 | 125 | 122 | 102 | 1149 |
| 16 | 48 | 22 | 18 | 22 | 22 | 21 | 80 | 124 | 127 | 127 | 86 | 943 |
| 17 | 48 | 21 | 20 | 22 | 22 | 21 | 78 | 129 | 124 | 126 | 76 | 663 |
| 18 | 51 | 23 | 21 | 22 | 22 | 21 | 41 | 119 | 124 | 127 | 74 | 736 |
| 19 | 45 | 22 | 22 | 23 | 22 | 21 | 40 | 119 | 125 | 124 | 68 | 904 |
| 20 | 46 | 21 | 19 | 22 | 22 | 21 | 41 | 124 | 127 | 124 | 65 | 699 |
| 21 | 44 | 21 | 25 | 22 | 22 | 21 | 27 | 125 | 125 | 124 | 63 | 599 |
| 22 | 45 | 20 | 24 | 22 | 22 | 20 | 34 | 123 | 124 | 124 | 61 | 536 |
| 23 | 43 | 18 | 24 | 22 | 22 | 19 | 39 | 123 | 125 | 126 | 60 | 623 |
| 24 | 44 | 19 | 24 | 22 | 22 | 19 | 40 | 132 | 123 | 126 | 70 | 507 |
| 25 | 91 | 18 | 24 | 22 | 23 | 19 | 42 | 143 | 125 | 124 | 62 | 491 |
| 26 | 49 | 17 | 24 | 22 | 23 | 19 | 39 | 127 | 125 | 126 | 69 | 486 |
| 27 | 43 | 15 | 25 | 22 | 23 | 19 | 41 | 127 | 125 | 126 | 75 | 458 |
| 28 | 39 | 18 | 26 | 22 | 23 | 27 | 53 | 127 | 126 | 124 | 73 | 399 |
| 29 | 42 | 18 | 26 | 22 | | 61 | 50 | 126 | 126 | 126 | 77 | 391 |
| 30 | 41 | 20 | 26 | 22 | | 61 | 46 | 125 | 127 | 126 | 85 | 349 |
| 31 | 42 | | 26 | 22 | | 66 | | 126 | | 125 | 91 | |
| | | | | | | | | | | | | |
| Min | 39 | 15 | 18 | 22 | 22 | 19 | 27 | 66 | 123 | 122 | 60 | 73 |
| Max | 91 | 146 | 26 | 26 | 23 | 66 | 82 | 143 | 233 | 128 | 117 | 3520 |
| Mean | 51 | 48 | 22 | 23 | 22 | 25 | 63 | 109 | 136 | 125 | 83 | 619 |
| ac-ft | 3155 | 2855 | 1330 | 1418 | 1220 | 1552 | 3749 | 6701 | 8101 | 7699 | 5067 | 36764 |

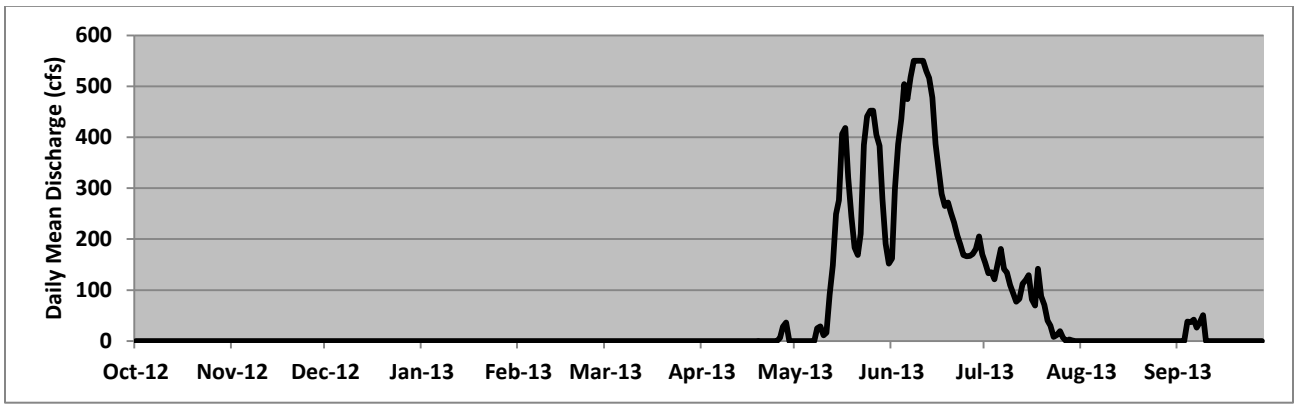


**Appendix A (Table 21 of 38)**
**Olympus Tunnel near Estes Park, CO**

**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 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 capacity is 550 cubic feet per second. 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 from 01-Oct-2012 through 30-Sep-2013. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

**Hydropower Diversion (Skim), Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 191 | 205 | 0 | 0 |
| 2 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 152 | 170 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 162 | 154 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 298 | 133 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 386 | 135 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 436 | 121 | 0 | 38 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 504 | 151 | 0 | 37 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 475 | 181 | 0 | 42 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 518 | 141 | 0 | 26 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 550 | 134 | 0 | 37 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 550 | 110 | 0 | 51 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 550 | 93 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 550 | 77 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 91 | 530 | 83 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 149 | 516 | 112 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 249 | 478 | 120 | 0 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 276 | 387 | 130 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 406 | 340 | 82 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 418 | 289 | 70 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 321 | 265 | 142 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 244 | 272 | 88 | 0 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 183 | 252 | 71 | 0 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 169 | 232 | 40 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 210 | 207 | 30 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 385 | 190 | 8 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 441 | 169 | 12 | 0 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 452 | 166 | 19 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 452 | 167 | 7 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | | 0 | 28 | 405 | 171 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | | 0 | 36 | 383 | 181 | 3 | 0 | 0 |
| 31 | 0 | | 0 | 0 | | 0 | | 279 | | 1 | 0 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 152 | 0 | 0 | 0 |
| Max | 27 | 0 | 0 | 0 | 0 | 0 | 36 | 452 | 550 | 205 | 0 | 51 |
| Mean | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 180 | 338 | 91 | 0 | 8 |
| ac-ft | 107 | 0 | 0 | 0 | 0 | 0 | 139 | 11076 | 20065 | 5583 | 0 | 457 |

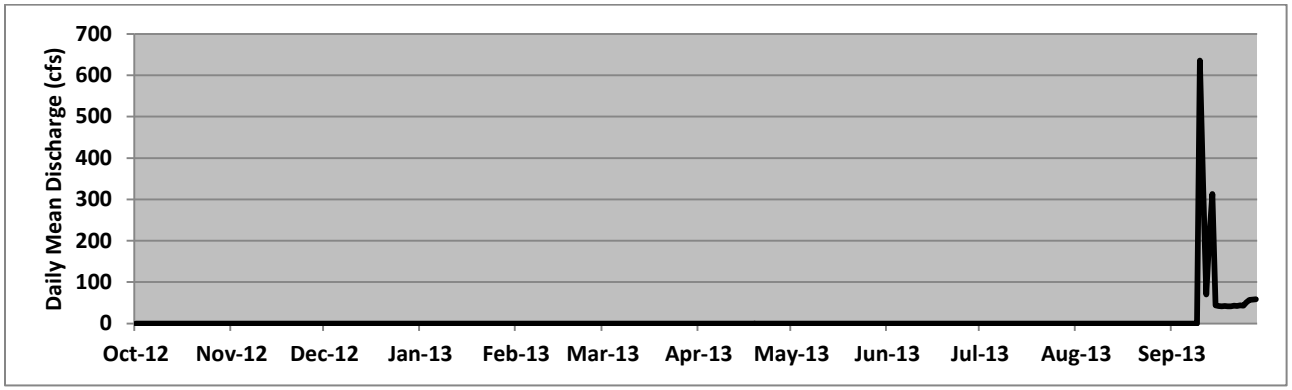


**Appendix A (Table 22 of 38)**
**Olympus Tunnel, CO**

**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 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 capacity is 550 cubic feet per second. The right to divert native run-off is determined by the Colorado Division of Water Resources. **Record between 12- Sep-2013 and 30-Sep-2013 was accounted as Olympus Tunnel diversions, but in reality most of the water came from other sources along the Southern Power Arm of the C-BT. The Olympus Tunnel flow was interrupted on 13-Sep-2013.** Period of record from 01-Oct-2012 through 30-Sep-2013. Record is complete and reliable.

**Priority Diversion Flow, Cubic Feet per Second, 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 | 636 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 337 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 313 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |
| 29 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 58 |
| 30 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 58 |
| 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 | 636 |
| Mean | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 74 |
| ac-ft | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4371 |

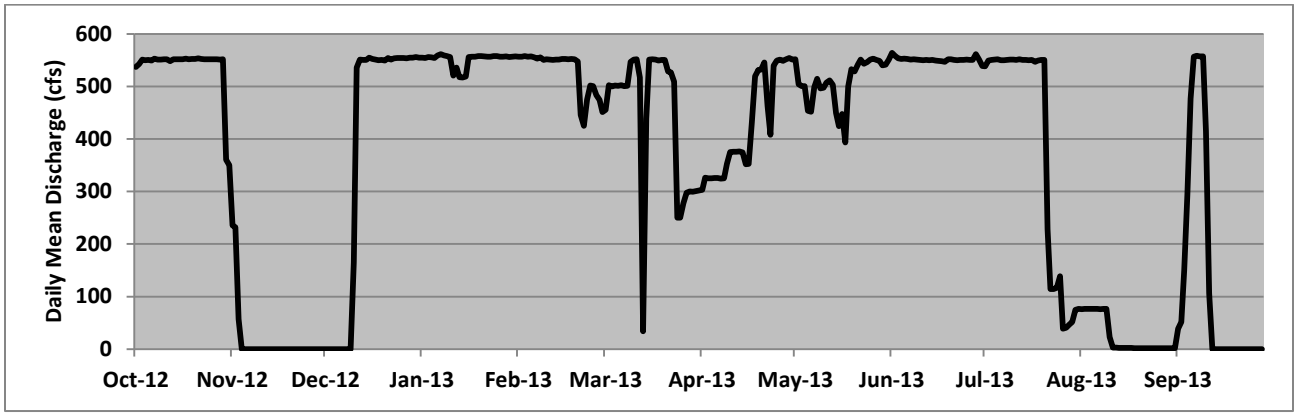


**Appendix A (Table 23 of 38)**
**Olympus Tunnel, CO**

**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 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 capacity is 550 cubic feet per second. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 550 | 360 | 0 | 556 | 557 | 474 | 301 | 554 | 541 | 551 | 75 | 2 |
| 2 | 551 | 350 | 0 | 555 | 557 | 451 | 302 | 551 | 551 | 539 | 76 | 2 |
| 3 | 537 | 235 | 0 | 554 | 557 | 456 | 303 | 552 | 564 | 538 | 76 | 39 |
| 4 | 543 | 232 | 0 | 554 | 556 | 502 | 326 | 504 | 559 | 549 | 76 | 52 |
| 5 | 551 | 57 | 0 | 556 | 558 | 500 | 325 | 501 | 553 | 551 | 77 | 150 |
| 6 | 550 | 0 | 0 | 555 | 557 | 502 | 325 | 500 | 552 | 551 | 77 | 295 |
| 7 | 550 | 0 | 0 | 554 | 557 | 501 | 325 | 454 | 553 | 551 | 77 | 477 |
| 8 | 549 | 0 | 0 | 559 | 555 | 502 | 326 | 452 | 552 | 550 | 76 | 556 |
| 9 | 553 | 0 | 0 | 561 | 553 | 501 | 324 | 499 | 551 | 550 | 76 | 559 |
| 10 | 551 | 0 | 0 | 559 | 555 | 501 | 325 | 514 | 552 | 550 | 76 | 557 |
| 11 | 551 | 0 | 0 | 558 | 551 | 547 | 353 | 496 | 551 | 551 | 76 | 557 |
| 12 | 551 | 0 | 165 | 556 | 551 | 551 | 375 | 498 | 550 | 551 | 23 | 415 |
| 13 | 551 | 0 | 536 | 521 | 551 | 552 | 376 | 508 | 550 | 550 | 3 | 106 |
| 14 | 548 | 0 | 551 | 536 | 551 | 517 | 376 | 512 | 551 | 552 | 3 | 0 |
| 15 | 551 | 0 | 551 | 517 | 551 | 34 | 376 | 503 | 550 | 550 | 3 | 0 |
| 16 | 552 | 0 | 551 | 517 | 551 | 439 | 375 | 449 | 551 | 550 | 2 | 0 |
| 17 | 552 | 0 | 555 | 519 | 552 | 551 | 352 | 424 | 549 | 550 | 2 | 0 |
| 18 | 551 | 0 | 552 | 556 | 552 | 552 | 352 | 448 | 549 | 551 | 2 | 0 |
| 19 | 553 | 0 | 551 | 557 | 552 | 551 | 432 | 393 | 548 | 547 | 2 | 0 |
| 20 | 552 | 0 | 550 | 556 | 552 | 550 | 520 | 500 | 547 | 549 | 2 | 0 |
| 21 | 552 | 0 | 550 | 558 | 551 | 551 | 531 | 533 | 552 | 551 | 2 | 0 |
| 22 | 553 | 0 | 549 | 558 | 547 | 551 | 532 | 528 | 551 | 551 | 2 | 0 |
| 23 | 553 | 0 | 554 | 557 | 446 | 528 | 546 | 541 | 551 | 228 | 2 | 0 |
| 24 | 552 | 0 | 551 | 557 | 425 | 527 | 463 | 551 | 550 | 114 | 2 | 0 |
| 25 | 552 | 0 | 553 | 557 | 475 | 509 | 408 | 543 | 550 | 114 | 2 | 0 |
| 26 | 552 | 0 | 554 | 558 | 502 | 250 | 539 | 546 | 551 | 117 | 2 | 0 |
| 27 | 552 | 0 | 554 | 558 | 500 | 250 | 549 | 551 | 551 | 138 | 2 | 0 |
| 28 | 552 | 0 | 554 | 556 | 483 | 278 | 551 | 553 | 550 | 39 | 1 | 0 |
| 29 | 552 | 0 | 553 | 557 | | 298 | 548 | 551 | 551 | 41 | 2 | 0 |
| 30 | 551 | 0 | 555 | 557 | | 300 | 552 | 548 | 561 | 47 | 2 | 0 |
| 31 | 552 | | 555 | 556 | | 300 | | 540 | | 51 | 2 | |
| | | | | | | | | | | | | |
| Min | 537 | 0 | 0 | 517 | 425 | 34 | 301 | 393 | 541 | 39 | 1 | 0 |
| Max | 553 | 360 | 555 | 561 | 558 | 552 | 552 | 554 | 564 | 552 | 77 | 559 |
| Mean | 551 | 41 | 343 | 551 | 536 | 454 | 410 | 510 | 551 | 418 | 29 | 126 |
| ac-ft | 33796 | 2445 | 21075 | 33826 | 29714 | 27868 | 24331 | 31277 | 32752 | 25686 | 1780 | 7455 |

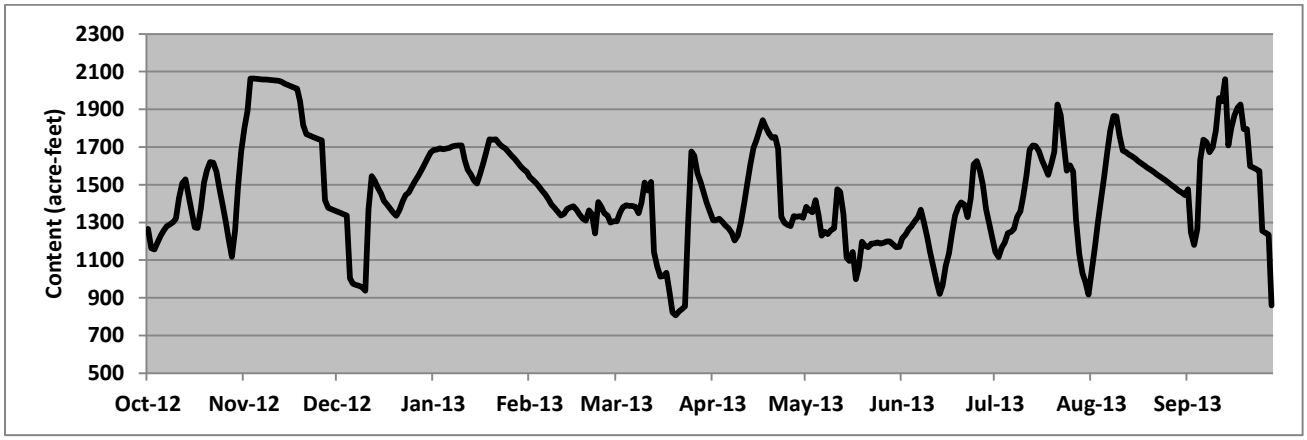


**Appendix A (Table 24 of 38)**
**Pinewood Reservoir near Loveland, Colorado , CO**

**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 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. Used as the forebay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. Record is complete and reliable. The gage is capable of measuring the water surface elevation down to 6555.70 feet, a content of 604 AF. 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 | 1249 | 1484 | 1371 | 1640 | 1582 | 1300 | 1404 | 1333 | 1168 | 1291 | 985 | 1458 |
| 2 | 1236 | 1675 | 1364 | 1671 | 1568 | 1306 | 1357 | 1325 | 1170 | 1219 | 917 | 1446 |
| 3 | 1265 | 1799 | 1357 | 1685 | 1540 | 1307 | 1312 | 1383 | 1216 | 1143 | 1043 | 1476 |
| 4 | 1164 | 1893 | 1350 | 1686 | 1525 | 1352 | 1310 | 1366 | 1235 | 1117 | 1168 | 1247 |
| 5 | 1156 | 2063 | 1344 | 1693 | 1508 | 1381 | 1320 | 1353 | 1263 | 1166 | 1296 | 1180 |
| 6 | 1191 | 2063 | 1337 | 1688 | 1489 | 1390 | 1302 | 1418 | 1280 | 1192 | 1421 | 1265 |
| 7 | 1228 | 2061 | 1003 | 1691 | 1468 | 1388 | 1283 | 1342 | 1306 | 1242 | 1543 | 1630 |
| 8 | 1256 | 2060 | 975 | 1695 | 1447 | 1388 | 1269 | 1230 | 1328 | 1250 | 1665 | 1740 |
| 9 | 1278 | 2059 | 969 | 1703 | 1424 | 1383 | 1244 | 1251 | 1367 | 1265 | 1788 | 1726 |
| 10 | 1289 | 2058 | 963 | 1707 | 1394 | 1348 | 1204 | 1238 | 1298 | 1330 | 1864 | 1672 |
| 11 | 1301 | 2057 | 956 | 1708 | 1375 | 1405 | 1229 | 1259 | 1220 | 1358 | 1863 | 1698 |
| 12 | 1319 | 2054 | 938 | 1708 | 1355 | 1512 | 1303 | 1269 | 1142 | 1438 | 1759 | 1788 |
| 13 | 1432 | 2053 | 1371 | 1629 | 1337 | 1469 | 1401 | 1476 | 1064 | 1548 | 1681 | 1959 |
| 14 | 1509 | 2052 | 1546 | 1579 | 1345 | 1514 | 1500 | 1463 | 986 | 1687 | 1672 | 1942 |
| 15 | 1529 | 2047 | 1522 | 1554 | 1372 | 1142 | 1605 | 1345 | 921 | 1708 | 1661 | 2060 |
| 16 | 1449 | 2037 | 1484 | 1521 | 1378 | 1066 | 1695 | 1112 | 967 | 1705 | 1650 | 1708 |
| 17 | 1360 | 2029 | 1454 | 1507 | 1385 | 1012 | 1736 | 1096 | 1072 | 1677 | 1639 | 1800 |
| 18 | 1274 | 2023 | 1416 | 1560 | 1368 | 1015 | 1790 | 1143 | 1137 | 1630 | 1626 | 1868 |
| 19 | 1271 | 2016 | 1395 | 1617 | 1343 | 1033 | 1843 | 1000 | 1239 | 1593 | 1614 | 1909 |
| 20 | 1374 | 2009 | 1372 | 1675 | 1321 | 926 | 1807 | 1062 | 1337 | 1552 | 1602 | 1925 |
| 21 | 1512 | 1942 | 1352 | 1740 | 1309 | 823 | 1774 | 1197 | 1383 | 1612 | 1590 | 1796 |
| 22 | 1576 | 1815 | 1335 | 1740 | 1364 | 808 | 1750 | 1175 | 1406 | 1675 | 1579 | 1796 |
| 23 | 1621 | 1768 | 1367 | 1741 | 1345 | 827 | 1753 | 1169 | 1395 | 1926 | 1567 | 1599 |
| 24 | 1617 | 1761 | 1413 | 1721 | 1242 | 842 | 1689 | 1186 | 1328 | 1870 | 1555 | 1591 |
| 25 | 1567 | 1754 | 1444 | 1703 | 1408 | 855 | 1330 | 1189 | 1428 | 1713 | 1543 | 1582 |
| 26 | 1482 | 1748 | 1459 | 1693 | 1384 | 1305 | 1298 | 1194 | 1609 | 1575 | 1532 | 1573 |
| 27 | 1394 | 1741 | 1491 | 1676 | 1348 | 1677 | 1287 | 1188 | 1626 | 1603 | 1520 | 1255 |
| 28 | 1303 | 1736 | 1518 | 1656 | 1337 | 1655 | 1280 | 1193 | 1572 | 1570 | 1508 | 1245 |
| 29 | 1211 | 1418 | 1545 | 1640 | | 1561 | 1333 | 1200 | 1499 | 1313 | 1495 | 1235 |
| 30 | 1118 | 1378 | 1576 | 1619 | | 1513 | 1329 | 1199 | 1369 | 1133 | 1482 | 859 |
| 31 | 1257 | | 1605 | 1599 | | 1461 | | 1183 | | 1031 | 1469 | |
| | | | | | | | | | | | | |
| Min | 1118 | 1378 | 938 | 1507 | 1242 | 808 | 1204 | 1000 | 921 | 1031 | 917 | 859 |
| Max | 1621 | 2063 | 1605 | 1741 | 1582 | 1677 | 1843 | 1476 | 1626 | 1926 | 1864 | 2060 |
| EOM | 1257 | 1378 | 1605 | 1599 | 1337 | 1461 | 1329 | 1329 | 1369 | 1031 | 1469 | 859 |

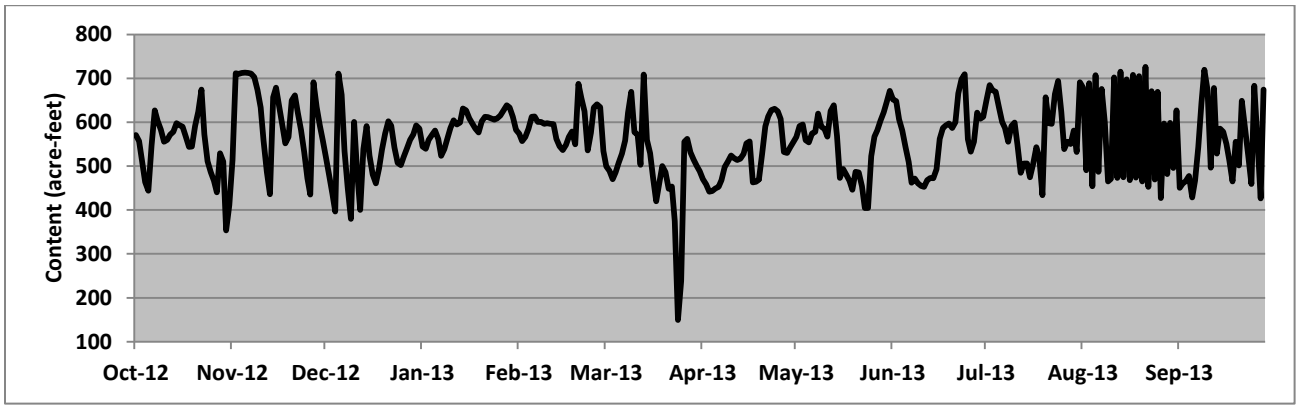


**Appendix A (Table 25 of 38)**
**Flatiron Reservoir, CO**

**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 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-2012 to 30-Sep-2013. 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 | 693 | 353 | 592 | 592 | 612 | 634 | 500 | 543 | 645 | 608 | 532 | 496 |
| 2 | 670 | 411 | 559 | 585 | 583 | 534 | 488 | 554 | 672 | 612 | 691 | 627 |
| 3 | 571 | 514 | 520 | 545 | 574 | 500 | 470 | 567 | 651 | 650 | 678 | 450 |
| 4 | 557 | 711 | 479 | 540 | 557 | 489 | 458 | 591 | 648 | 685 | 491 | 460 |
| 5 | 508 | 710 | 437 | 560 | 566 | 470 | 442 | 595 | 607 | 673 | 689 | 466 |
| 6 | 464 | 713 | 396 | 571 | 586 | 485 | 443 | 559 | 581 | 670 | 454 | 477 |
| 7 | 444 | 713 | 711 | 581 | 612 | 508 | 449 | 554 | 544 | 634 | 708 | 429 |
| 8 | 547 | 712 | 663 | 561 | 613 | 529 | 453 | 574 | 509 | 601 | 487 | 468 |
| 9 | 627 | 711 | 534 | 523 | 601 | 558 | 468 | 578 | 462 | 587 | 676 | 543 |
| 10 | 603 | 703 | 451 | 538 | 601 | 622 | 498 | 619 | 472 | 555 | 599 | 644 |
| 11 | 583 | 674 | 380 | 565 | 596 | 669 | 510 | 590 | 461 | 591 | 465 | 720 |
| 12 | 555 | 633 | 601 | 587 | 598 | 577 | 524 | 585 | 455 | 599 | 471 | 673 |
| 13 | 560 | 558 | 492 | 604 | 597 | 571 | 518 | 568 | 453 | 549 | 702 | 496 |
| 14 | 571 | 488 | 400 | 595 | 596 | 503 | 514 | 625 | 468 | 485 | 473 | 678 |
| 15 | 578 | 436 | 539 | 599 | 562 | 708 | 517 | 639 | 473 | 506 | 716 | 528 |
| 16 | 598 | 657 | 591 | 631 | 545 | 560 | 528 | 568 | 472 | 506 | 474 | 586 |
| 17 | 593 | 678 | 524 | 627 | 536 | 530 | 552 | 473 | 493 | 475 | 698 | 578 |
| 18 | 590 | 635 | 481 | 609 | 548 | 475 | 556 | 493 | 562 | 505 | 468 | 550 |
| 19 | 568 | 592 | 461 | 597 | 567 | 420 | 463 | 480 | 587 | 543 | 708 | 513 |
| 20 | 544 | 552 | 495 | 586 | 579 | 463 | 464 | 467 | 593 | 521 | 474 | 465 |
| 21 | 544 | 567 | 537 | 577 | 550 | 500 | 470 | 446 | 597 | 434 | 705 | 556 |
| 22 | 591 | 649 | 575 | 602 | 688 | 486 | 528 | 487 | 587 | 657 | 465 | 502 |
| 23 | 624 | 662 | 602 | 612 | 655 | 448 | 590 | 485 | 600 | 598 | 726 | 649 |
| 24 | 674 | 622 | 592 | 612 | 625 | 453 | 613 | 454 | 665 | 597 | 453 | 587 |
| 25 | 572 | 583 | 542 | 609 | 536 | 375 | 628 | 405 | 698 | 664 | 671 | 525 |
| 26 | 511 | 532 | 507 | 606 | 576 | 150 | 631 | 404 | 709 | 694 | 469 | 459 |
| 27 | 486 | 472 | 502 | 609 | 634 | 238 | 625 | 523 | 561 | 623 | 669 | 683 |
| 28 | 466 | 435 | 521 | 615 | 641 | 555 | 607 | 567 | 533 | 538 | 427 | 557 |
| 29 | 440 | 691 | 540 | 627 | | 562 | 532 | 582 | 556 | 555 | 597 | 426 |
| 30 | 530 | 634 | 560 | 639 | | 531 | 530 | 604 | 622 | 550 | 482 | 674 |
| 31 | 510 | | 572 | 634 | | 515 | | 623 | | 581 | 599 | |
| | | | | | | | | | | | | |
| Min | 440 | 353 | 380 | 523 | 536 | 150 | 442 | 404 | 453 | 434 | 427 | 426 |
| Max | 693 | 713 | 711 | 639 | 688 | 708 | 631 | 639 | 709 | 694 | 726 | 720 |
| EOM | 510 | 634 | 572 | 634 | 641 | 515 | 530 | 530 | 622 | 581 | 599 | 674 |

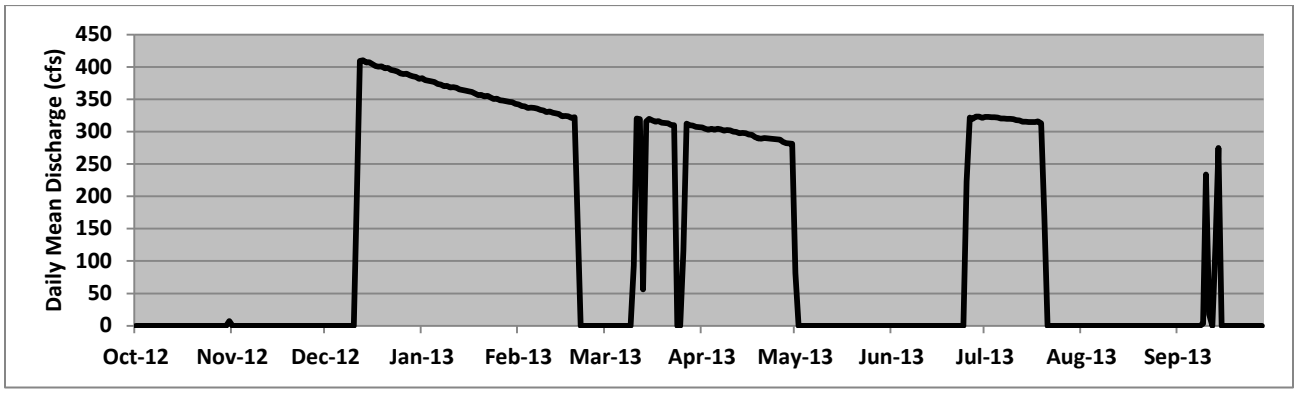


**Appendix A (Table 26 of 38)**
**Flatiron Powerplant Unit 3 Pump, CO**

**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, or to generate power. The maximum capacity is approximately 480 cubic feet per second, but the efficiency varies according to the water surface levels at Carter Lake and Flatiron Reservoir. Discharges are measured using a flow meter inside the pressure conduit. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

**Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 385 | 345 | 0 | 307 | 282 | 0 | 323 | 0 | 0 |
| 2 | 0 | 7 | 0 | 382 | 343 | 0 | 307 | 281 | 0 | 321 | 0 | 0 |
| 3 | 0 | 0 | 0 | 382 | 342 | 0 | 306 | 82 | 0 | 323 | 0 | 0 |
| 4 | 0 | 0 | 0 | 380 | 340 | 0 | 305 | 0 | 0 | 323 | 0 | 0 |
| 5 | 0 | 0 | 0 | 379 | 339 | 0 | 303 | 0 | 0 | 322 | 0 | 0 |
| 6 | 0 | 0 | 0 | 378 | 336 | 0 | 304 | 0 | 0 | 322 | 0 | 0 |
| 7 | 0 | 0 | 0 | 376 | 337 | 0 | 303 | 0 | 0 | 322 | 0 | 0 |
| 8 | 0 | 0 | 0 | 374 | 337 | 0 | 304 | 0 | 0 | 320 | 0 | 0 |
| 9 | 0 | 0 | 0 | 373 | 336 | 0 | 304 | 0 | 0 | 320 | 0 | 0 |
| 10 | 0 | 0 | 0 | 370 | 333 | 0 | 302 | 0 | 0 | 320 | 0 | 0 |
| 11 | 0 | 0 | 0 | 371 | 333 | 0 | 303 | 0 | 0 | 320 | 0 | 3 |
| 12 | 0 | 0 | 0 | 368 | 330 | 93 | 302 | 0 | 0 | 319 | 0 | 234 |
| 13 | 0 | 0 | 190 | 369 | 331 | 320 | 300 | 0 | 0 | 318 | 0 | 17 |
| 14 | 0 | 0 | 410 | 368 | 329 | 319 | 299 | 0 | 0 | 317 | 0 | 0 |
| 15 | 0 | 0 | 410 | 365 | 328 | 56 | 297 | 0 | 0 | 316 | 0 | 127 |
| 16 | 0 | 0 | 407 | 364 | 327 | 316 | 298 | 0 | 0 | 315 | 0 | 275 |
| 17 | 0 | 0 | 407 | 363 | 324 | 320 | 298 | 0 | 0 | 315 | 0 | 0 |
| 18 | 0 | 0 | 404 | 362 | 324 | 317 | 296 | 0 | 0 | 315 | 0 | 0 |
| 19 | 0 | 0 | 401 | 361 | 324 | 315 | 295 | 0 | 0 | 315 | 0 | 0 |
| 20 | 0 | 0 | 400 | 359 | 321 | 316 | 292 | 0 | 0 | 316 | 0 | 0 |
| 21 | 0 | 0 | 401 | 356 | 322 | 314 | 290 | 0 | 0 | 313 | 0 | 0 |
| 22 | 0 | 0 | 398 | 357 | 152 | 313 | 289 | 0 | 0 | 169 | 0 | 0 |
| 23 | 0 | 0 | 398 | 355 | 0 | 313 | 290 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 395 | 355 | 0 | 311 | 290 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 394 | 353 | 0 | 310 | 289 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 393 | 350 | 0 | 0 | 289 | 0 | 0 | 0 | 0 | 0 |
| 27 | 0 | 0 | 390 | 351 | 0 | 0 | 288 | 0 | 223 | 0 | 0 | 0 |
| 28 | 0 | 0 | 389 | 349 | 0 | 116 | 288 | 0 | 322 | 0 | 0 | 0 |
| 29 | 0 | 0 | 390 | 348 | | 312 | 284 | 0 | 320 | 0 | 0 | 0 |
| 30 | 0 | 0 | 387 | 347 | | 310 | 282 | 0 | 323 | 0 | 0 | 0 |
| 31 | 0 | | 386 | 346 | | 310 | | 0 | | 0 | 0 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 346 | 0 | 0 | 282 | 0 | 0 | 0 | 0 | 0 |
| Max | 0 | 7 | 410 | 385 | 345 | 320 | 307 | 282 | 323 | 323 | 0 | 275 |
| Mean | 0 | 0 | 237 | 364 | 255 | 161 | 297 | 21 | 40 | 221 | 0 | 22 |
| ac-ft | 0 | 14 | 14554 | 22364 | 14126 | 9865 | 17627 | 1276 | 2351 | 13589 | 0 | 1301 |

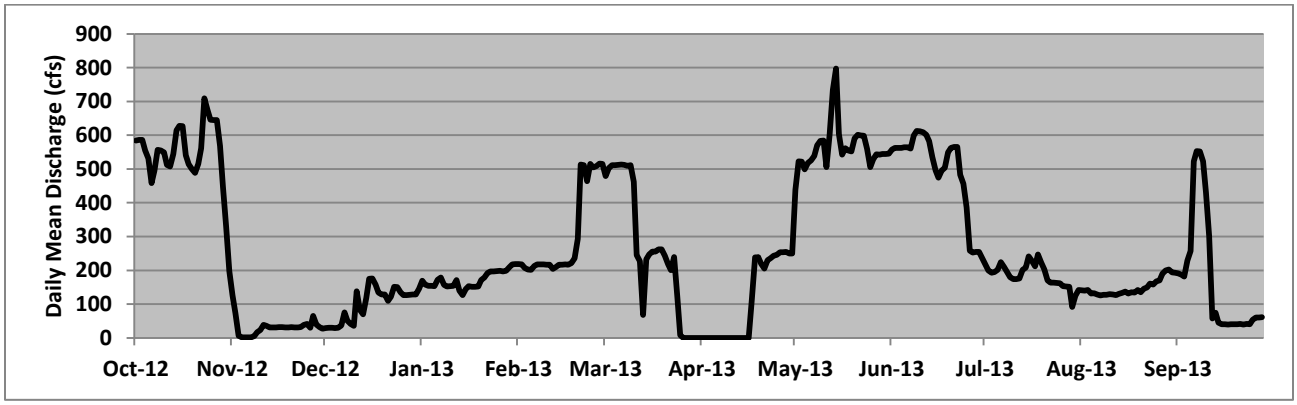


**Appendix A (Table 27 of 38)**
**Charles Hansen Feeder Canal 930 Section, CO**

**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 cubic feet per second. The canal is used to convey Colorado-Big Thompson Project water and diverted native water to the Big Thompson River and/or Horsetooth Reservoir. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. Data from this station has been questioned previously for its low accuracy, because of algae growth issues. But for WY 2013 the record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

**Flow, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 551 | 330 | 31 | 128 | 217 | 516 | 0 | 250 | 544 | 254 | 124 | 194 |
| 2 | 577 | 197 | 27 | 146 | 218 | 515 | 0 | 250 | 545 | 236 | 141 | 193 |
| 3 | 584 | 126 | 29 | 170 | 218 | 479 | 0 | 439 | 557 | 219 | 140 | 191 |
| 4 | 586 | 74 | 30 | 158 | 218 | 503 | 0 | 522 | 562 | 200 | 140 | 187 |
| 5 | 586 | 6 | 30 | 154 | 207 | 512 | 0 | 522 | 562 | 192 | 142 | 182 |
| 6 | 555 | 1 | 29 | 154 | 202 | 511 | 0 | 499 | 563 | 195 | 131 | 229 |
| 7 | 531 | 1 | 30 | 153 | 202 | 512 | 0 | 518 | 564 | 201 | 133 | 257 |
| 8 | 458 | 1 | 36 | 172 | 212 | 513 | 0 | 525 | 564 | 224 | 129 | 523 |
| 9 | 495 | 1 | 75 | 178 | 217 | 512 | 0 | 539 | 561 | 210 | 125 | 553 |
| 10 | 557 | 5 | 51 | 157 | 218 | 509 | 0 | 570 | 600 | 196 | 128 | 552 |
| 11 | 555 | 16 | 42 | 152 | 217 | 512 | 0 | 583 | 613 | 179 | 128 | 522 |
| 12 | 549 | 23 | 36 | 153 | 217 | 462 | 0 | 584 | 611 | 174 | 130 | 431 |
| 13 | 512 | 39 | 138 | 154 | 217 | 245 | 0 | 506 | 608 | 174 | 128 | 301 |
| 14 | 508 | 36 | 83 | 171 | 205 | 227 | 0 | 602 | 601 | 176 | 127 | 57 |
| 15 | 545 | 31 | 70 | 140 | 210 | 68 | 0 | 734 | 583 | 202 | 131 | 75 |
| 16 | 615 | 31 | 119 | 127 | 217 | 233 | 0 | 797 | 535 | 208 | 133 | 45 |
| 17 | 628 | 31 | 175 | 145 | 216 | 247 | 0 | 603 | 496 | 241 | 137 | 41 |
| 18 | 627 | 32 | 176 | 154 | 218 | 255 | 0 | 542 | 474 | 228 | 131 | 40 |
| 19 | 541 | 32 | 158 | 151 | 216 | 256 | 115 | 561 | 495 | 212 | 135 | 39 |
| 20 | 514 | 31 | 134 | 151 | 221 | 262 | 239 | 555 | 503 | 247 | 135 | 41 |
| 21 | 500 | 31 | 129 | 152 | 235 | 262 | 238 | 552 | 549 | 224 | 142 | 40 |
| 22 | 489 | 32 | 129 | 171 | 294 | 243 | 220 | 591 | 562 | 202 | 135 | 40 |
| 23 | 515 | 31 | 109 | 178 | 513 | 219 | 205 | 601 | 565 | 170 | 145 | 41 |
| 24 | 562 | 31 | 122 | 192 | 511 | 201 | 230 | 600 | 565 | 164 | 149 | 40 |
| 25 | 709 | 32 | 152 | 197 | 464 | 240 | 236 | 598 | 483 | 163 | 161 | 41 |
| 26 | 675 | 38 | 151 | 197 | 515 | 122 | 244 | 559 | 456 | 163 | 158 | 41 |
| 27 | 646 | 41 | 135 | 198 | 505 | 9 | 246 | 506 | 386 | 162 | 167 | 53 |
| 28 | 645 | 30 | 127 | 198 | 509 | 0 | 254 | 528 | 258 | 153 | 170 | 60 |
| 29 | 645 | 65 | 127 | 197 | | 0 | 253 | 544 | 253 | 152 | 190 | 61 |
| 30 | 568 | 40 | 128 | 198 | | 0 | 255 | 543 | 254 | 151 | 200 | 61 |
| 31 | 448 | | 128 | 209 | | 0 | | 544 | | 92 | 203 | |
| | | | | | | | | | | | | |
| Min | 448 | 1 | 27 | 127 | 202 | 0 | 0 | 250 | 253 | 92 | 124 | 39 |
| Max | 709 | 330 | 176 | 209 | 515 | 516 | 255 | 797 | 613 | 254 | 203 | 553 |
| Mean | 564 | 47 | 95 | 166 | 280 | 295 | 91 | 544 | 516 | 192 | 144 | 171 |
| ac-ft | 34604 | 2809 | 5812 | 10209 | 15507 | 18101 | 5413 | 33394 | 30643 | 11813 | 8847 | 10161 |

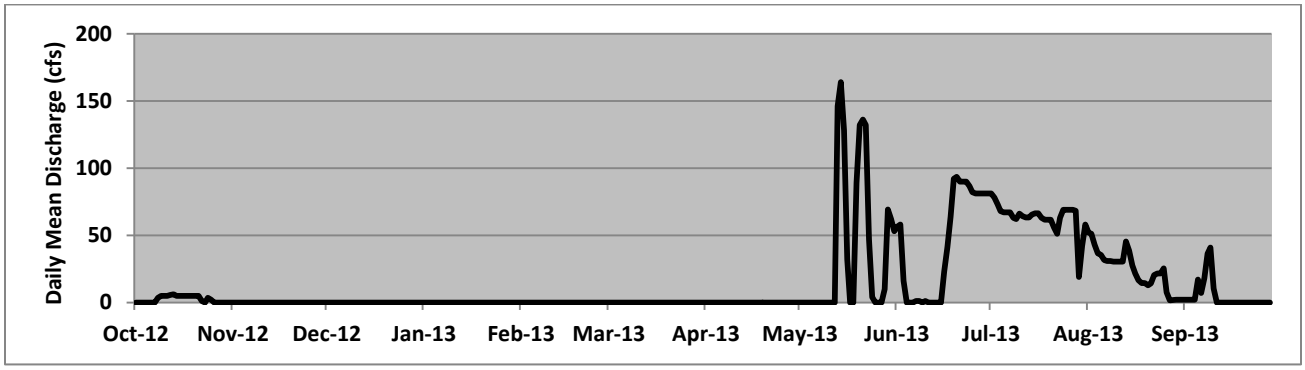


**Appendix A (Table 28 of 38)**
**Dille Tunnel near Drake, CO**

**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 from topographic map.
**Remarks.**-- Constructed in 1950. Maximum capacity is 600 cubic feet per second. 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 Power Plant, where the diverted water is returned to the river. The skim daily value is determined based on the data from the gage. Recorder was operated from 01-Oct-2012 to 13-Nov-2012, and from early 29-Mar-2013 to 30-Sep-2013. The tunnel and gage are winterized in between those two periods. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

**Hydropower Diversion Flow (Skim), Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 81 | 42 | 2 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 81 | 58 | 2 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | 81 | 52 | 2 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | 78 | 51 | 2 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 73 | 43 | 2 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 68 | 37 | 2 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 36 | 17 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 32 | 7 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 67 | 31 | 18 |
| 10 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 63 | 31 | 36 |
| 11 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 | 31 | 41 |
| 12 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 66 | 31 | 11 |
| 13 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 31 | 0 |
| 14 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 63 | 31 | 0 |
| 15 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 146 | 0 | 63 | 46 | 0 |
| 16 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 164 | 0 | 66 | 39 | 0 |
| 17 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 128 | 0 | 66 | 28 | 0 |
| 18 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 23 | 66 | 22 | 0 |
| 19 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 63 | 17 | 0 |
| 20 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 62 | 15 | 0 |
| 21 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 89 | 92 | 62 | 15 | 0 |
| 22 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 132 | 93 | 62 | 13 | 0 |
| 23 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 136 | 90 | 56 | 14 | 0 |
| 24 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 132 | 90 | 51 | 21 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 90 | 63 | 22 | 0 |
| 26 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 87 | 69 | 22 | 0 |
| 27 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 82 | 69 | 26 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 | 69 | 8 | 0 |
| 29 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 81 | 69 | 2 | 0 |
| 30 | 0 | 0 | 0 | 0 | | 0 | 0 | 10 | 81 | 68 | 2 | 0 |
| 31 | 0 | | 0 | 0 | | 0 | | 69 | | 19 | 2 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 2 | 0 |
| Max | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 164 | 93 | 81 | 58 | 41 |
| Mean | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 41 | 65 | 27 | 5 |
| ac-ft | 151 | 0 | 0 | 0 | 0 | 0 | 0 | 2156 | 2461 | 4008 | 1664 | 281 |

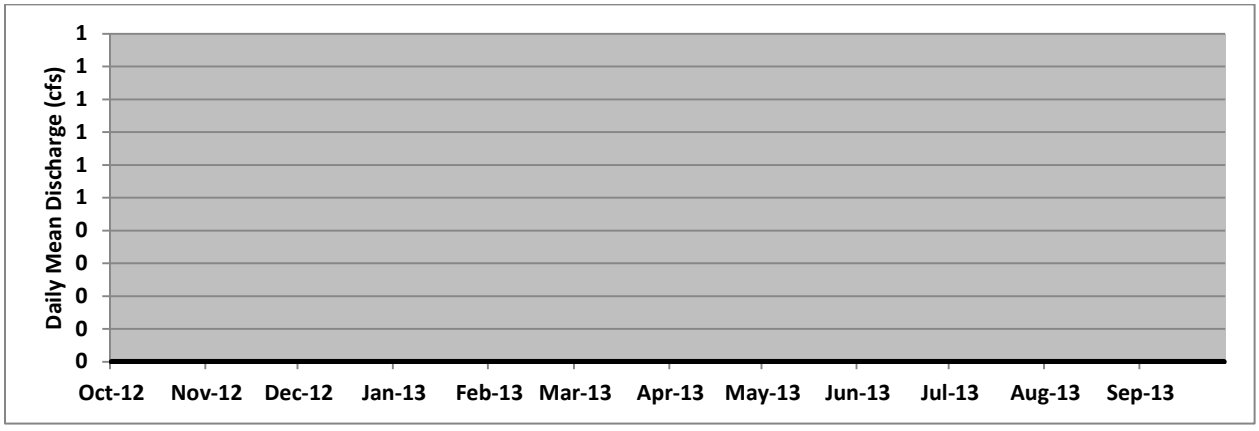


**Appendix A (Table 29 of 38)**
**Dille Tunnel near Drake, CO**

**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 cubic feet per second. 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. Recorder was operated from 01-Oct-2012 to 13-Nov-2012, and from 29-Mar-2013 to 30-Sep-2013. The tunnel and gage are winterized in between those two periods. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

**Priority Diversion Flow, Cubic Feet per Second, 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 |
| 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 |

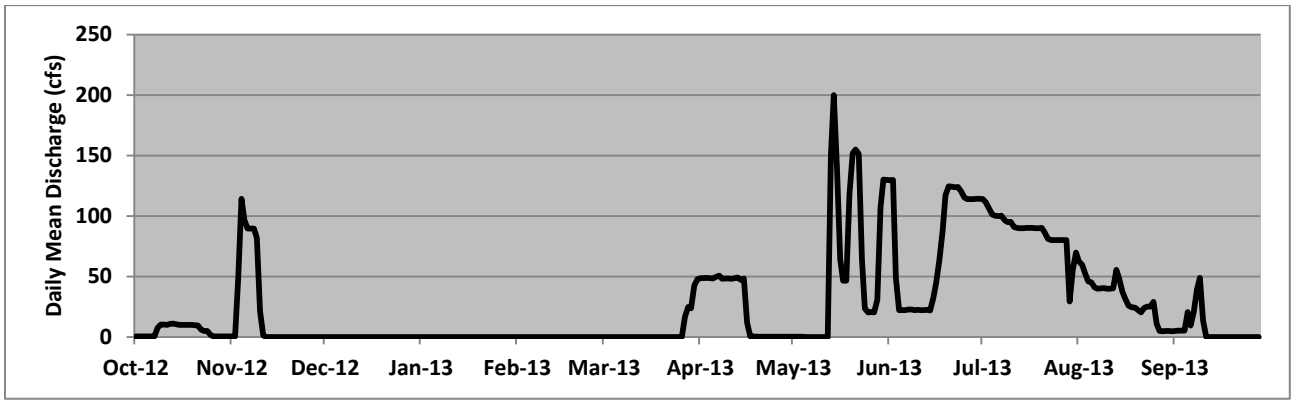


**Appendix A (30 of 38)**
**Dille Tunnel near Drake, CO**

**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. Maximum capacity is 600 cubic feet per second. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. Recorder was operated from 01-Oct-2012 to 13-Nov-2012, and from 29-Mar-2013 to 30-Sep-2013. The tunnel and gage are winterized in between those two periods. Record is complete and reliable, although data has not been revised. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 0 | 130 | 114 | 56 | 5 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 130 | 114 | 70 | 5 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 130 | 114 | 62 | 5 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 130 | 111 | 60 | 5 |
| 5 | 0 | 50 | 0 | 0 | 0 | 0 | 49 | 0 | 49 | 106 | 52 | 5 |
| 6 | 0 | 114 | 0 | 0 | 0 | 0 | 49 | 0 | 22 | 101 | 46 | 5 |
| 7 | 0 | 97 | 0 | 0 | 0 | 0 | 48 | 0 | 22 | 100 | 45 | 20 |
| 8 | 0 | 90 | 0 | 0 | 0 | 0 | 50 | 0 | 22 | 100 | 41 | 9 |
| 9 | 0 | 90 | 0 | 0 | 0 | 0 | 51 | 0 | 23 | 100 | 40 | 21 |
| 10 | 8 | 90 | 0 | 0 | 0 | 0 | 48 | 0 | 23 | 96 | 40 | 39 |
| 11 | 10 | 82 | 0 | 0 | 0 | 0 | 48 | 0 | 22 | 95 | 40 | 49 |
| 12 | 10 | 21 | 0 | 0 | 0 | 0 | 48 | 0 | 23 | 95 | 40 | 14 |
| 13 | 10 | 1 | 0 | 0 | 0 | 0 | 48 | 0 | 22 | 91 | 40 | 0 |
| 14 | 11 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 22 | 90 | 40 | 0 |
| 15 | 11 | 0 | 0 | 0 | 0 | 0 | 49 | 151 | 22 | 90 | 55 | 0 |
| 16 | 10 | 0 | 0 | 0 | 0 | 0 | 47 | 200 | 22 | 90 | 48 | 0 |
| 17 | 10 | 0 | 0 | 0 | 0 | 0 | 48 | 139 | 32 | 90 | 37 | 0 |
| 18 | 10 | 0 | 0 | 0 | 0 | 0 | 12 | 64 | 45 | 90 | 31 | 0 |
| 19 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 64 | 90 | 26 | 0 |
| 20 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 47 | 88 | 90 | 24 | 0 |
| 21 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 118 | 117 | 90 | 24 | 0 |
| 22 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 152 | 124 | 90 | 23 | 0 |
| 23 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 155 | 124 | 86 | 20 | 0 |
| 24 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 151 | 124 | 81 | 24 | 0 |
| 25 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 124 | 80 | 25 | 0 |
| 26 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 120 | 80 | 25 | 0 |
| 27 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 115 | 80 | 29 | 0 |
| 28 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 114 | 80 | 11 | 0 |
| 29 | 0 | 0 | 0 | 0 | | 17 | 0 | 20 | 114 | 80 | 5 | 0 |
| 30 | 0 | 0 | 0 | 0 | | 25 | 0 | 31 | 114 | 80 | 5 | 0 |
| 31 | 0 | | 0 | 0 | | 24 | | 107 | | 29 | 5 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 29 | 5 | 0 |
| Max | 11 | 114 | 0 | 0 | 0 | 25 | 51 | 200 | 130 | 114 | 70 | 49 |
| Mean | 5 | 21 | 0 | 0 | 0 | 2 | 28 | 49 | 74 | 91 | 35 | 6 |
| ac-ft | 323 | 1259 | 0 | 0 | 0 | 130 | 1651 | 2989 | 4420 | 5594 | 2158 | 362 |

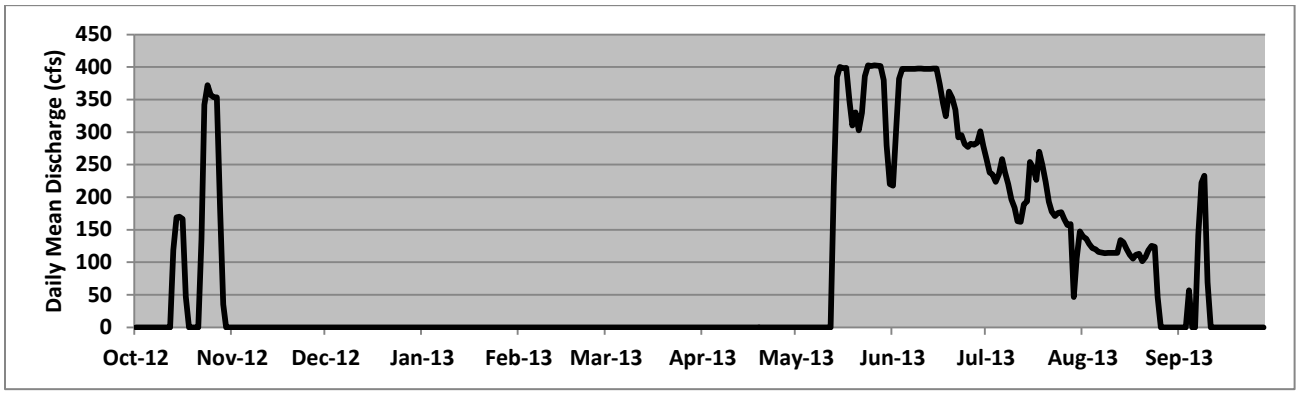


**Appendix A (Table 31 of 38)**
**Big Thompson Power Plant, CO**

**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 from topographic map.
**Remarks.**-- Initial operation in 1959. Maximum capacity is 400 cubic feet per second. 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 Colorado-Big Thompson project and Windy Gap Project water to the Big Thompson River. The plant is winterized from November through April each year. This record contains data recorded between 01-Oct-2012 and 30-Sep-2013. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

**Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 280 | 301 | 106 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 220 | 279 | 147 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 218 | 259 | 140 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 305 | 238 | 136 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 382 | 235 | 128 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 223 | 122 | 57 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 235 | 120 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 259 | 116 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 238 | 115 | 142 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 220 | 114 | 222 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 398 | 197 | 114 | 233 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 398 | 184 | 114 | 69 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 163 | 114 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 397 | 162 | 114 | 0 |
| 15 | 119 | 0 | 0 | 0 | 0 | 0 | 0 | 218 | 397 | 189 | 134 | 0 |
| 16 | 169 | 0 | 0 | 0 | 0 | 0 | 0 | 385 | 398 | 193 | 131 | 0 |
| 17 | 170 | 0 | 0 | 0 | 0 | 0 | 0 | 400 | 397 | 254 | 121 | 0 |
| 18 | 166 | 0 | 0 | 0 | 0 | 0 | 0 | 398 | 374 | 245 | 111 | 0 |
| 19 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 398 | 345 | 227 | 106 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 348 | 324 | 270 | 111 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 310 | 362 | 249 | 113 | 0 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 331 | 353 | 224 | 102 | 0 |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 303 | 334 | 193 | 108 | 0 |
| 24 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 330 | 292 | 178 | 118 | 0 |
| 25 | 342 | 0 | 0 | 0 | 0 | 0 | 0 | 386 | 295 | 171 | 125 | 0 |
| 26 | 372 | 0 | 0 | 0 | 0 | 0 | 0 | 402 | 282 | 176 | 124 | 0 |
| 27 | 357 | 0 | 0 | 0 | 0 | 0 | 0 | 402 | 277 | 177 | 47 | 0 |
| 28 | 353 | 0 | 0 | 0 | 0 | 0 | 0 | 402 | 282 | 166 | 0 | 0 |
| 29 | 354 | 0 | 0 | 0 | | 0 | 0 | 402 | 281 | 157 | 0 | 0 |
| 30 | 185 | 0 | 0 | 0 | | 0 | 0 | 402 | 283 | 159 | 0 | 0 |
| 31 | 35 | | 0 | 0 | | 0 | | 380 | | 47 | 0 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 218 | 47 | 0 | 0 |
| Max | 372 | 0 | 0 | 0 | 0 | 0 | 0 | 402 | 398 | 301 | 147 | 233 |
| Mean | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 200 | 342 | 209 | 102 | 24 |
| ac-ft | 5553 | 0 | 0 | 0 | 0 | 0 | 0 | 12271 | 20315 | 12809 | 6238 | 1432 |

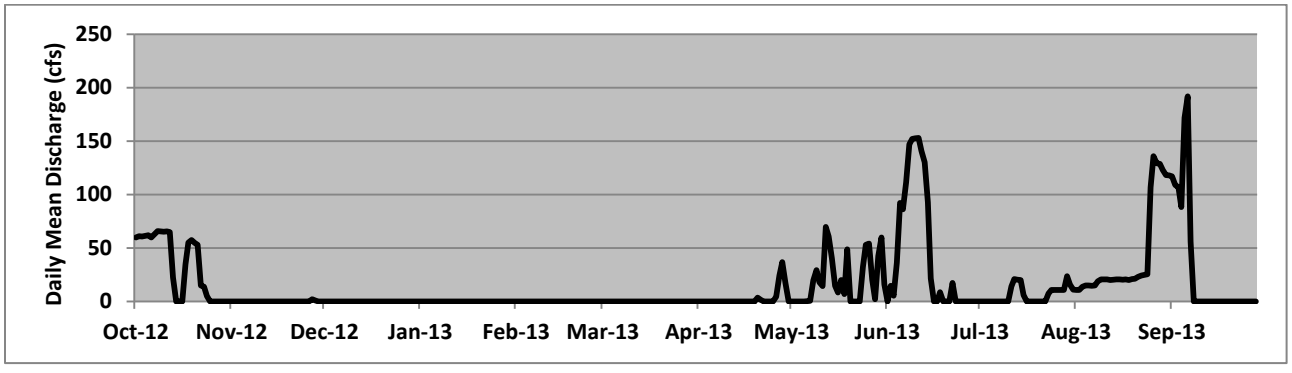


**Appendix A (Table 32 of 38)**
**Charles Hansen Feeder Canal Wasteway, CO**

**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 from Designer's Operating Criteria.
**Remarks.**-- Constructed between 1949 and 1953. Maximum capacity is 400 cubic feet per second. The structure is used to return diverted water and to deliver Colorado-Big Thompson Project and Windy Gap Project water to the Big Thompson River. The facility is winterized between late November and April. Recorder was operated in October and November, 2012, and between the middle of April and 30-Sep-2013. 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 60 | 0 | 16 | 118 |
| 2 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 11 | 118 |
| 3 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 117 |
| 4 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 11 | 109 |
| 5 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 14 | 107 |
| 6 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 0 | 15 | 88 |
| 7 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 0 | 15 | 172 |
| 8 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 15 | 192 |
| 9 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 111 | 0 | 15 | 56 |
| 10 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 147 | 0 | 19 | 0 |
| 11 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 152 | 0 | 20 | 0 |
| 12 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 153 | 0 | 21 | 0 |
| 13 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 153 | 14 | 20 | 0 |
| 14 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 70 | 141 | 21 | 20 | 0 |
| 15 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | 130 | 20 | 20 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 93 | 20 | 20 | 0 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 22 | 6 | 20 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 20 | 0 |
| 19 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 21 | 0 |
| 20 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 9 | 0 | 20 | 0 |
| 21 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 0 | 0 | 21 | 0 |
| 22 | 55 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 21 | 0 |
| 23 | 53 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 23 | 0 |
| 24 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 24 | 0 |
| 25 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 25 | 0 |
| 26 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 11 | 25 | 0 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 0 | 11 | 107 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 54 | 0 | 11 | 136 | 0 |
| 29 | 0 | 2 | 0 | 0 | | 0 | 24 | 20 | 0 | 11 | 129 | 0 |
| 30 | 0 | 1 | 0 | 0 | | 0 | 37 | 2 | 0 | 11 | 129 | 0 |
| 31 | 0 | | 0 | 0 | | 0 | | 42 | | 23 | 123 | |
| | | | | | | | | | | | | |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 |
| Max | 66 | 2 | 0 | 0 | 0 | 0 | 37 | 70 | 153 | 23 | 136 | 192 |
| Mean | 38 | 0 | 0 | 0 | 0 | 0 | 2 | 18 | 48 | 5 | 36 | 36 |
| ac-ft | 2309 | 5 | 0 | 0 | 0 | 0 | 139 | 1134 | 2844 | 328 | 2189 | 2131 |

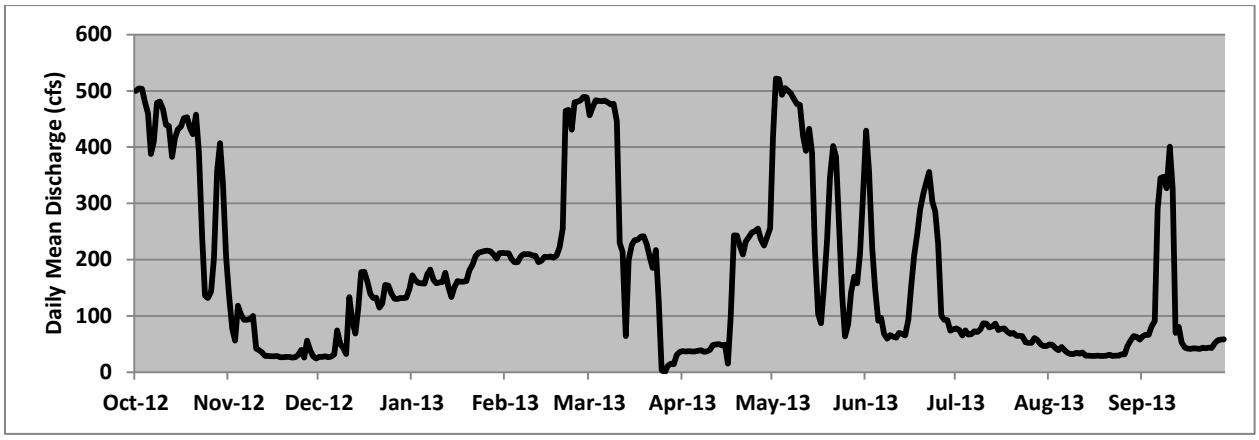


**Appendix A (Table 33 of 38)**
**Charles Hansen Feeder Canal 550 Section, CO**

**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 from topographic map.
**Remarks.**-- Constructed between 1949 and 1953. The canal is 9.4 miles long and has a maximum capacity of 550 cubic feet per second. The canal is used to convey Colorado-Big Thompson Project water and native runoff to Horsetooth Reservoir. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

**Discharge, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 484 | 336 | 29 | 132 | 211 | 490 | 31 | 239 | 212 | 74 | 46 | 63 |
| 2 | 494 | 205 | 25 | 148 | 212 | 489 | 36 | 256 | 322 | 76 | 47 | 58 |
| 3 | 500 | 137 | 27 | 172 | 211 | 457 | 37 | 418 | 429 | 78 | 49 | 64 |
| 4 | 504 | 78 | 27 | 163 | 211 | 470 | 37 | 522 | 358 | 75 | 49 | 66 |
| 5 | 504 | 56 | 28 | 158 | 201 | 483 | 37 | 521 | 221 | 65 | 42 | 66 |
| 6 | 481 | 118 | 27 | 158 | 196 | 482 | 37 | 493 | 149 | 74 | 39 | 81 |
| 7 | 459 | 102 | 28 | 157 | 196 | 481 | 37 | 505 | 91 | 67 | 45 | 91 |
| 8 | 387 | 93 | 32 | 174 | 205 | 482 | 38 | 500 | 97 | 67 | 39 | 290 |
| 9 | 410 | 93 | 74 | 182 | 210 | 480 | 39 | 495 | 68 | 73 | 34 | 345 |
| 10 | 479 | 94 | 50 | 164 | 210 | 476 | 36 | 485 | 60 | 72 | 32 | 347 |
| 11 | 481 | 100 | 43 | 158 | 209 | 477 | 37 | 476 | 66 | 76 | 32 | 327 |
| 12 | 467 | 42 | 32 | 160 | 208 | 446 | 40 | 475 | 63 | 87 | 34 | 401 |
| 13 | 439 | 39 | 133 | 160 | 207 | 230 | 48 | 420 | 61 | 86 | 33 | 326 |
| 14 | 438 | 35 | 91 | 177 | 195 | 214 | 49 | 394 | 70 | 80 | 35 | 70 |
| 15 | 382 | 29 | 68 | 150 | 198 | 64 | 50 | 433 | 68 | 82 | 30 | 81 |
| 16 | 415 | 29 | 113 | 134 | 205 | 199 | 47 | 390 | 65 | 86 | 30 | 53 |
| 17 | 431 | 28 | 178 | 151 | 204 | 227 | 49 | 218 | 94 | 75 | 29 | 44 |
| 18 | 436 | 28 | 178 | 162 | 206 | 235 | 15 | 104 | 153 | 77 | 29 | 42 |
| 19 | 451 | 29 | 162 | 161 | 204 | 235 | 100 | 87 | 207 | 78 | 29 | 41 |
| 20 | 453 | 27 | 138 | 161 | 208 | 241 | 243 | 158 | 247 | 72 | 29 | 43 |
| 21 | 434 | 27 | 132 | 162 | 222 | 242 | 243 | 235 | 290 | 68 | 29 | 42 |
| 22 | 423 | 27 | 132 | 181 | 255 | 226 | 224 | 346 | 318 | 70 | 30 | 42 |
| 23 | 458 | 27 | 115 | 191 | 465 | 204 | 209 | 402 | 337 | 65 | 31 | 43 |
| 24 | 391 | 26 | 122 | 205 | 466 | 185 | 233 | 383 | 356 | 65 | 29 | 43 |
| 25 | 242 | 27 | 155 | 213 | 431 | 217 | 240 | 254 | 303 | 64 | 29 | 43 |
| 26 | 136 | 30 | 154 | 214 | 480 | 125 | 248 | 137 | 285 | 53 | 29 | 43 |
| 27 | 131 | 40 | 140 | 216 | 481 | 4 | 251 | 63 | 229 | 52 | 32 | 51 |
| 28 | 143 | 26 | 131 | 216 | 483 | 0 | 255 | 86 | 100 | 52 | 31 | 57 |
| 29 | 203 | 56 | 130 | 215 | | 11 | 236 | 142 | 93 | 60 | 47 | 58 |
| 30 | 358 | 39 | 132 | 209 | | 15 | 225 | 170 | 93 | 57 | 57 | 58 |
| 31 | 407 | | 132 | 202 | | 14 | | 158 | | 50 | 64 | |
| | | | | | | | | | | | | |
| Min | 131 | 26 | 25 | 132 | 195 | 0 | 15 | 63 | 60 | 50 | 29 | 41 |
| Max | 504 | 336 | 178 | 216 | 483 | 490 | 255 | 522 | 429 | 87 | 64 | 401 |
| Mean | 401 | 67 | 95 | 174 | 264 | 277 | 114 | 321 | 183 | 70 | 37 | 113 |
| ac-ft | 24599 | 4003 | 5857 | 10703 | 14630 | 17027 | 6745 | 19728 | 10897 | 4308 | 2257 | 6687 |

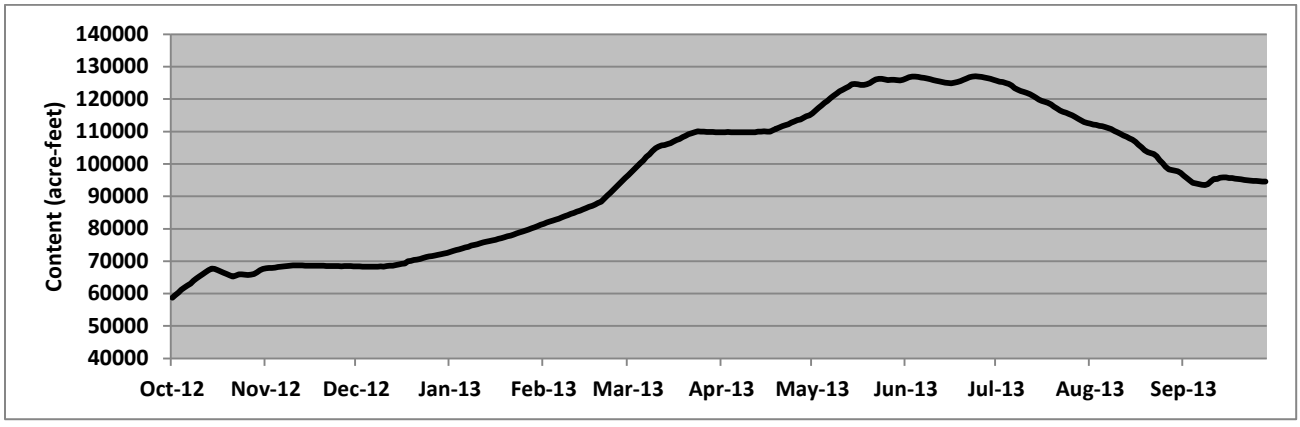


**Appendix A (34 of 38)**
**Horsetooth Reservoir near Fort Collins, CO**

**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 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 Colorado-Big Thompson Project diversions. Transmountain 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-2012 to 30-Sep-2013. 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 | 57349 | 67195 | 68500 | 72370 | 80799 | 94725 | 109797 | 114662 | 125744 | 126215 | 112892 | 97694 |
| 2 | 58077 | 67567 | 68393 | 72590 | 81190 | 95652 | 109764 | 115025 | 125961 | 125907 | 112600 | 97249 |
| 3 | 58748 | 67779 | 68393 | 72893 | 81510 | 96552 | 109764 | 115579 | 126342 | 125690 | 112412 | 96378 |
| 4 | 59535 | 67872 | 68406 | 73168 | 81889 | 97424 | 109764 | 116447 | 126741 | 125401 | 112157 | 95605 |
| 5 | 60353 | 67872 | 68339 | 73416 | 82253 | 98412 | 109865 | 117266 | 126923 | 125220 | 111986 | 94819 |
| 6 | 61163 | 68019 | 68312 | 73679 | 82502 | 99325 | 109781 | 118036 | 126923 | 124931 | 111781 | 94193 |
| 7 | 61914 | 68193 | 68339 | 73928 | 82809 | 100226 | 109781 | 118860 | 126832 | 124679 | 111610 | 93943 |
| 8 | 62503 | 68273 | 68352 | 74206 | 83117 | 101114 | 109713 | 119459 | 126650 | 124175 | 111322 | 93803 |
| 9 | 63120 | 68379 | 68326 | 74469 | 83500 | 102138 | 109730 | 120306 | 126504 | 123404 | 111015 | 93600 |
| 10 | 63920 | 68513 | 68352 | 74790 | 83867 | 102986 | 109713 | 121050 | 126306 | 122902 | 110727 | 93460 |
| 11 | 64635 | 68607 | 68393 | 75013 | 84222 | 103920 | 109730 | 121672 | 126106 | 122527 | 110202 | 93756 |
| 12 | 65365 | 68701 | 68273 | 75236 | 84547 | 104808 | 109764 | 122349 | 125816 | 122206 | 109713 | 94662 |
| 13 | 65981 | 68661 | 68473 | 75488 | 84918 | 105287 | 109747 | 122938 | 125617 | 121903 | 109274 | 95337 |
| 14 | 66640 | 68661 | 68594 | 75768 | 85274 | 105684 | 109747 | 123350 | 125419 | 121529 | 108820 | 95369 |
| 15 | 67182 | 68661 | 68634 | 76007 | 85587 | 105800 | 109916 | 123870 | 125274 | 120979 | 108333 | 95731 |
| 16 | 67753 | 68634 | 68808 | 76189 | 85944 | 106116 | 109950 | 124589 | 125040 | 120412 | 107898 | 95841 |
| 17 | 67660 | 68594 | 69035 | 76359 | 86362 | 106365 | 110051 | 124715 | 124986 | 119829 | 107446 | 95809 |
| 18 | 67195 | 68594 | 69143 | 76626 | 86736 | 106864 | 109950 | 124535 | 124895 | 119406 | 106797 | 95684 |
| 19 | 66812 | 68567 | 69277 | 76852 | 87096 | 107396 | 110000 | 124391 | 125058 | 119142 | 105900 | 95621 |
| 20 | 66429 | 68594 | 69950 | 77092 | 87472 | 107731 | 110439 | 124355 | 125274 | 118860 | 105106 | 95463 |
| 21 | 66061 | 68553 | 70099 | 77361 | 87910 | 108232 | 110879 | 124571 | 125527 | 118334 | 104232 | 95353 |
| 22 | 65601 | 68553 | 70342 | 77645 | 88348 | 108652 | 111287 | 124968 | 125925 | 117686 | 103608 | 95242 |
| 23 | 65208 | 68540 | 70477 | 77915 | 89258 | 109156 | 111593 | 125509 | 126378 | 117109 | 103312 | 95070 |
| 24 | 65549 | 68500 | 70667 | 78214 | 90235 | 109477 | 111951 | 126015 | 126722 | 116500 | 103019 | 94992 |
| 25 | 65955 | 68473 | 70939 | 78528 | 91047 | 109781 | 112259 | 126233 | 126941 | 116116 | 102333 | 94866 |
| 26 | 65942 | 68486 | 71265 | 78842 | 91956 | 110017 | 112686 | 126269 | 127050 | 115735 | 101196 | 94709 |
| 27 | 65863 | 68460 | 71428 | 79157 | 92884 | 109950 | 113080 | 126033 | 126977 | 115423 | 100177 | 94725 |
| 28 | 65759 | 68419 | 71578 | 79473 | 93756 | 109983 | 113526 | 125889 | 126868 | 114973 | 99068 | 94615 |
| 29 | 65863 | 68500 | 71796 | 79803 | | 109899 | 113750 | 125997 | 126650 | 114455 | 98348 | 94568 |
| 30 | 66008 | 68473 | 71973 | 80192 | | 109848 | 114162 | 125961 | 126450 | 113904 | 98093 | 94521 |
| 31 | 66548 | | 72179 | 80452 | | 109865 | | 125834 | | 113371 | 97886 | |
| | | | | | | | | | | | | |
| Min | 57349 | 67195 | 68273 | 72370 | 80799 | 94725 | 109713 | 114662 | 124895 | 113371 | 97886 | 93460 |
| Max | 67753 | 68701 | 72179 | 80452 | 93756 | 110017 | 114162 | 126269 | 127050 | 126215 | 112892 | 97694 |
| EOM | 66548 | 68473 | 72179 | 80452 | 93756 | 109865 | 114162 | 114162 | 126450 | 113371 | 97886 | 94521 |

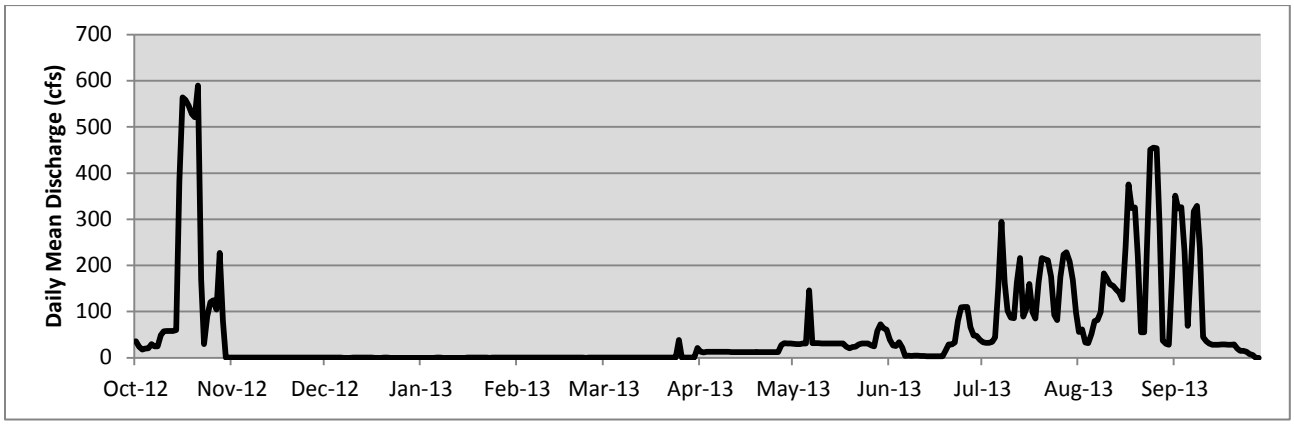


**Appendix A (35 of 38)**
**Charles Hansen Supply Canal below Horsetooth Reservoir, CO**

**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 conduits 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 cubic feet per second. The canal is used to deliver Colorado-Big Thompson Project and Windy Gap Project water stored at Horsetooth Reservoir. Recorder was operated from 01-Oct-2012 to 30-Sep-2013 by the Northern Colorado Water Conservancy District 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, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 64 | 47 | 168 | 28 |
| 2 | 29 | 0 | 0 | 0 | 0 | 0 | 21 | 31 | 61 | 40 | 97 | 175 |
| 3 | 36 | 0 | 0 | 0 | 0 | 0 | 13 | 30 | 39 | 33 | 56 | 351 |
| 4 | 24 | 0 | 0 | 0 | 0 | 0 | 12 | 30 | 27 | 33 | 62 | 323 |
| 5 | 18 | 0 | 0 | 0 | 0 | 0 | 13 | 30 | 25 | 33 | 33 | 326 |
| 6 | 20 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 34 | 35 | 31 | 231 |
| 7 | 21 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 22 | 44 | 51 | 69 |
| 8 | 29 | 0 | 0 | 0 | 0 | 0 | 13 | 146 | 4 | 153 | 80 | 184 |
| 9 | 25 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 5 | 294 | 81 | 318 |
| 10 | 25 | 0 | 0 | 0 | 0 | 0 | 13 | 32 | 4 | 163 | 99 | 329 |
| 11 | 49 | 0 | 0 | 0 | 0 | 0 | 13 | 32 | 5 | 102 | 183 | 236 |
| 12 | 57 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 4 | 87 | 172 | 45 |
| 13 | 58 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 4 | 86 | 159 | 36 |
| 14 | 58 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 4 | 163 | 156 | 31 |
| 15 | 58 | 0 | 0 | 0 | 0 | 0 | 12 | 31 | 3 | 216 | 147 | 28 |
| 16 | 60 | 0 | 0 | 0 | 0 | 0 | 12 | 31 | 3 | 89 | 141 | 28 |
| 17 | 385 | 0 | 0 | 0 | 0 | 0 | 12 | 31 | 3 | 105 | 126 | 28 |
| 18 | 564 | 0 | 0 | 0 | 0 | 0 | 12 | 31 | 3 | 160 | 242 | 29 |
| 19 | 558 | 0 | 0 | 0 | 0 | 0 | 12 | 31 | 3 | 99 | 376 | 29 |
| 20 | 546 | 0 | 0 | 0 | 0 | 0 | 12 | 24 | 3 | 85 | 324 | 28 |
| 21 | 528 | 0 | 0 | 0 | 0 | 0 | 12 | 21 | 15 | 163 | 326 | 28 |
| 22 | 521 | 0 | 0 | 0 | 0 | 0 | 12 | 23 | 29 | 216 | 220 | 29 |
| 23 | 589 | 0 | 0 | 0 | 0 | 0 | 12 | 24 | 29 | 214 | 55 | 20 |
| 24 | 170 | 0 | 0 | 0 | 0 | 0 | 12 | 29 | 33 | 211 | 55 | 15 |
| 25 | 30 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 80 | 176 | 248 | 15 |
| 26 | 90 | 0 | 0 | 0 | 0 | 0 | 13 | 31 | 109 | 93 | 451 | 13 |
| 27 | 121 | 0 | 0 | 0 | 0 | 38 | 13 | 31 | 110 | 82 | 455 | 8 |
| 28 | 125 | 0 | 0 | 0 | 0 | 0 | 13 | 27 | 110 | 175 | 453 | 6 |
| 29 | 105 | 0 | 0 | 0 | | 0 | 27 | 24 | 67 | 223 | 287 | 0 |
| 30 | 227 | 0 | 0 | 0 | | 0 | 31 | 58 | 49 | 229 | 37 | 0 |
| 31 | 80 | | 0 | 0 | | 0 | | 72 | | 208 | 30 | |
| | | | | | | | | | | | | |
| Min | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 3 | 33 | 30 | 0 |
| Max | 589 | 0 | 0 | 0 | 0 | 38 | 31 | 146 | 110 | 294 | 455 | 351 |
| Mean | 169 | 0 | 0 | 0 | 0 | 1 | 14 | 35 | 32 | 131 | 174 | 100 |
| ac-ft | 10367 | 15 | 8 | 7 | 10 | 91 | 805 | 2172 | 1884 | 8031 | 10698 | 5915 |

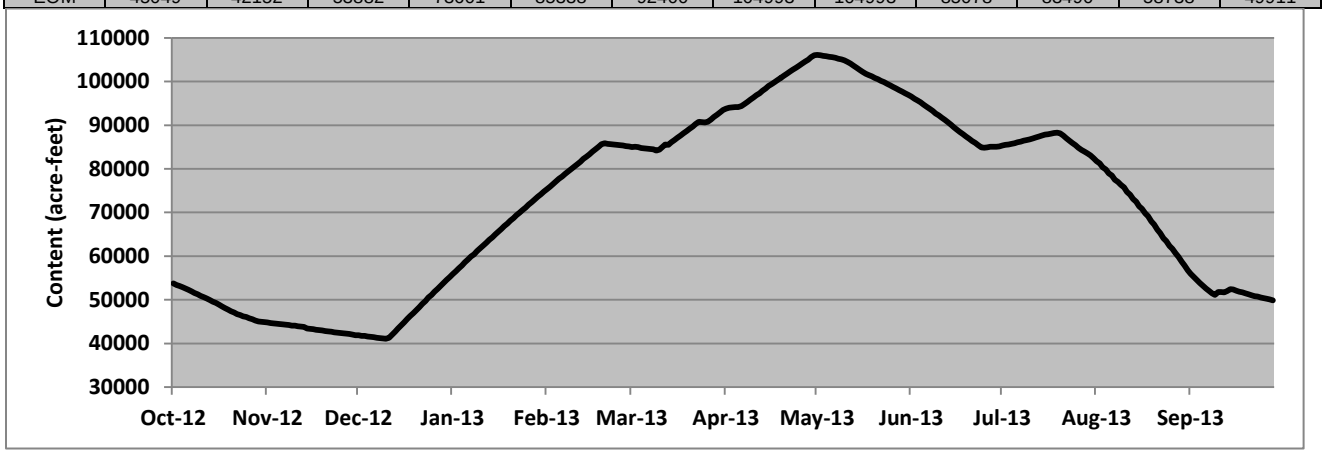


**Appendix A (36 of 38)**
**Carter Lake near Berthoud, Colorado, CO**

**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 from topographic map.
**Remarks.**--Reservoir is formed by three earth-fill dams. Construction completed in 1952. Carter Lake is one of two terminal reservoirs for Colorado-Big Thompson Project water diversions. Transmountain water diversions are stored at Carter Lake before final delivery. Maximum capacity is 112,200 AF at elevation 5759.00 ft, with 108,900 AF of active capacity. Recorder was operated from 01-Oct-2012 to 30-Sep-2013. 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 | 54334 | 44958 | 42038 | 54547 | 74138 | 85224 | 92914 | 105542 | 97314 | 85078 | 83055 | 57854 |
| 2 | 54042 | 44892 | 41852 | 55233 | 74776 | 85109 | 93451 | 106035 | 96932 | 85161 | 82414 | 56786 |
| 3 | 53732 | 44792 | 41860 | 55896 | 75326 | 84984 | 93794 | 106113 | 96552 | 85317 | 81776 | 55950 |
| 4 | 53396 | 44684 | 41732 | 56578 | 75927 | 85068 | 94020 | 106012 | 96085 | 85463 | 81251 | 55260 |
| 5 | 53158 | 44593 | 41740 | 57219 | 76510 | 84974 | 94096 | 105888 | 95662 | 85599 | 80389 | 54547 |
| 6 | 52859 | 44527 | 41578 | 57899 | 77125 | 84776 | 94139 | 105810 | 95218 | 85745 | 79888 | 53864 |
| 7 | 52570 | 44436 | 41489 | 58583 | 77701 | 84724 | 94160 | 105687 | 94732 | 85891 | 78970 | 53237 |
| 8 | 52324 | 44362 | 41425 | 59233 | 78238 | 84641 | 94354 | 105564 | 94225 | 86069 | 78462 | 52605 |
| 9 | 51956 | 44279 | 41320 | 59886 | 78828 | 84516 | 94840 | 105396 | 93794 | 86194 | 77529 | 52044 |
| 10 | 51599 | 44221 | 41208 | 60458 | 79377 | 84464 | 95337 | 105228 | 93236 | 86414 | 76964 | 51503 |
| 11 | 51251 | 44089 | 41135 | 61145 | 79939 | 84163 | 95845 | 105038 | 92700 | 86612 | 76370 | 51155 |
| 12 | 50895 | 44065 | 41047 | 61806 | 80533 | 84412 | 96356 | 104815 | 92229 | 86758 | 75767 | 51817 |
| 13 | 50592 | 43950 | 41329 | 62423 | 81056 | 84974 | 96834 | 104513 | 91759 | 86968 | 74716 | 51791 |
| 14 | 50280 | 43884 | 41974 | 63089 | 81611 | 85536 | 97281 | 104078 | 91205 | 87199 | 74098 | 51703 |
| 15 | 49954 | 43793 | 42688 | 63701 | 82260 | 85516 | 97848 | 103588 | 90673 | 87430 | 73076 | 52026 |
| 16 | 49592 | 43457 | 43457 | 64334 | 82807 | 86048 | 98361 | 103133 | 90078 | 87629 | 72454 | 52473 |
| 17 | 49267 | 43350 | 44131 | 64989 | 83334 | 86581 | 98963 | 102656 | 89496 | 87808 | 71421 | 52351 |
| 18 | 48916 | 43260 | 44842 | 65607 | 83935 | 87104 | 99434 | 102201 | 88914 | 87945 | 70842 | 52044 |
| 19 | 48489 | 43153 | 45590 | 66237 | 84506 | 87587 | 99896 | 101770 | 88408 | 88071 | 69778 | 51869 |
| 20 | 48123 | 43055 | 46258 | 66870 | 85078 | 88134 | 100357 | 101449 | 87903 | 88208 | 69186 | 51686 |
| 21 | 47750 | 42981 | 46947 | 67475 | 85651 | 88619 | 100820 | 101151 | 87409 | 88303 | 68015 | 51468 |
| 22 | 47420 | 42874 | 47623 | 68092 | 85829 | 89136 | 101294 | 100842 | 86873 | 88113 | 67254 | 51268 |
| 23 | 47057 | 42761 | 48370 | 68730 | 85734 | 89697 | 101781 | 100512 | 86403 | 87640 | 66075 | 51069 |
| 24 | 46720 | 42697 | 49061 | 69341 | 85672 | 90238 | 102268 | 100149 | 85912 | 87031 | 65302 | 50860 |
| 25 | 46485 | 42574 | 49764 | 69954 | 85599 | 90747 | 102723 | 99852 | 85421 | 86456 | 64126 | 50722 |
| 26 | 46233 | 42493 | 50523 | 70558 | 85474 | 90684 | 103166 | 99478 | 84880 | 85943 | 63456 | 50558 |
| 27 | 46033 | 42379 | 51155 | 71166 | 85390 | 90619 | 103633 | 99105 | 84808 | 85442 | 62367 | 50402 |
| 28 | 45773 | 42330 | 51861 | 71784 | 85338 | 90747 | 104089 | 98788 | 84932 | 84849 | 61704 | 50237 |
| 29 | 45548 | 42241 | 52534 | 72375 | | 91311 | 104558 | 98383 | 85026 | 84298 | 60643 | 50074 |
| 30 | 45257 | 42152 | 53185 | 72948 | | 91887 | 104993 | 98000 | 85078 | 83925 | 59812 | 49911 |
| 31 | 45049 | | 53882 | 73601 | | 92400 | | 97640 | | 83490 | 58738 | |
| | | | | | | | | | | | | |
| Min | 45049 | 42152 | 41047 | 54547 | 74138 | 84163 | 92914 | 97640 | 84808 | 83490 | 58738 | 49911 |
| Max | 54334 | 44958 | 53882 | 73601 | 85829 | 92400 | 104993 | 106113 | 97314 | 88303 | 83055 | 57854 |
| EOM | 45049 | 42152 | 53882 | 73601 | 85338 | 92400 | 104993 | 104993 | 85078 | 83490 | 58738 | 49911 |

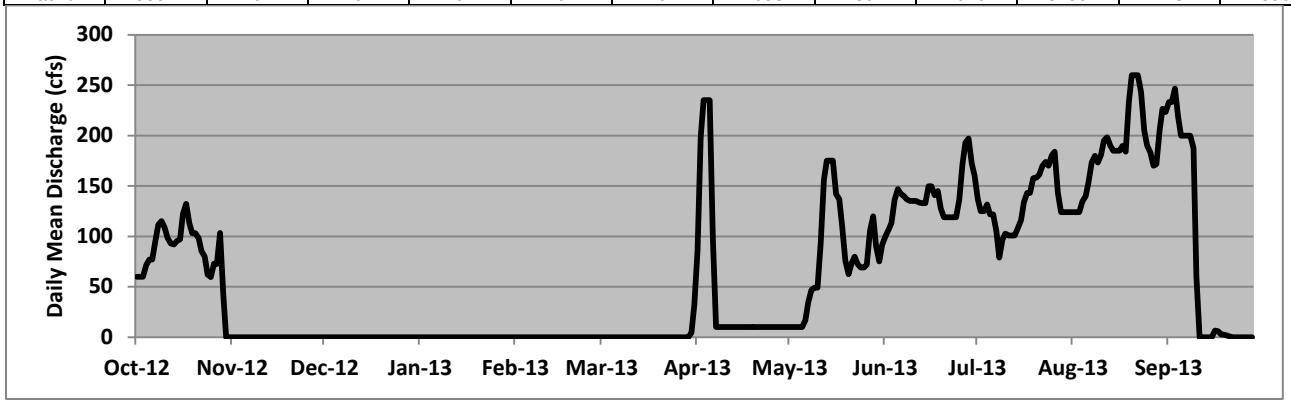


**Appendix A (37 of 38)**
**Saint Vrain Canal below Carter Reservoir, CO**

**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 Colorado Water Conservancy District. 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 cubic feet per second. The canal is used to deliver Colorado-Big Thompson Project and Windy Gap Project water as well as diverted native water from conveyance contract holders. Record was provided by the Northern Colorado Water Conservancy District for the period 01-Oct-2012 to 30-Sep-2013. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

**Flow, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 58 | 0 | 0 | 0 | 0 | 0 | 4 | 10 | 75 | 172 | 124 | 227 |
| 2 | 60 | 0 | 0 | 0 | 0 | 0 | 32 | 10 | 92 | 160 | 124 | 223 |
| 3 | 60 | 0 | 0 | 0 | 0 | 0 | 85 | 10 | 100 | 137 | 124 | 233 |
| 4 | 60 | 0 | 0 | 0 | 0 | 0 | 199 | 10 | 107 | 125 | 124 | 233 |
| 5 | 60 | 0 | 0 | 0 | 0 | 0 | 235 | 10 | 113 | 125 | 124 | 247 |
| 6 | 71 | 0 | 0 | 0 | 0 | 0 | 235 | 10 | 136 | 132 | 135 | 218 |
| 7 | 77 | 0 | 0 | 0 | 0 | 0 | 235 | 10 | 147 | 122 | 140 | 200 |
| 8 | 77 | 0 | 0 | 0 | 0 | 0 | 97 | 17 | 142 | 122 | 154 | 200 |
| 9 | 96 | 0 | 0 | 0 | 0 | 0 | 10 | 35 | 140 | 105 | 174 | 200 |
| 10 | 112 | 0 | 0 | 0 | 0 | 0 | 10 | 47 | 137 | 79 | 180 | 200 |
| 11 | 115 | 0 | 0 | 0 | 0 | 0 | 10 | 49 | 135 | 97 | 173 | 188 |
| 12 | 108 | 0 | 0 | 0 | 0 | 0 | 10 | 49 | 135 | 103 | 181 | 60 |
| 13 | 98 | 0 | 0 | 0 | 0 | 0 | 10 | 93 | 135 | 101 | 195 | 0 |
| 14 | 93 | 0 | 0 | 0 | 0 | 0 | 10 | 156 | 134 | 101 | 198 | 0 |
| 15 | 92 | 0 | 0 | 0 | 0 | 0 | 10 | 175 | 133 | 101 | 190 | 0 |
| 16 | 95 | 0 | 0 | 0 | 0 | 0 | 10 | 175 | 133 | 108 | 185 | 0 |
| 17 | 97 | 0 | 0 | 0 | 0 | 0 | 10 | 175 | 150 | 116 | 185 | 0 |
| 18 | 122 | 0 | 0 | 0 | 0 | 0 | 10 | 142 | 150 | 134 | 185 | 7 |
| 19 | 132 | 0 | 0 | 0 | 0 | 0 | 10 | 137 | 141 | 143 | 190 | 6 |
| 20 | 113 | 0 | 0 | 0 | 0 | 0 | 10 | 110 | 145 | 143 | 184 | 3 |
| 21 | 103 | 0 | 0 | 0 | 0 | 0 | 10 | 76 | 128 | 158 | 233 | 2 |
| 22 | 103 | 0 | 0 | 0 | 0 | 0 | 10 | 62 | 119 | 158 | 260 | 2 |
| 23 | 98 | 0 | 0 | 0 | 0 | 0 | 10 | 73 | 119 | 161 | 260 | 1 |
| 24 | 85 | 0 | 0 | 0 | 0 | 0 | 10 | 80 | 119 | 170 | 260 | 0 |
| 25 | 80 | 0 | 0 | 0 | 0 | 0 | 10 | 73 | 119 | 174 | 243 | 0 |
| 26 | 62 | 0 | 0 | 0 | 0 | 0 | 10 | 69 | 119 | 170 | 205 | 0 |
| 27 | 60 | 0 | 0 | 0 | 0 | 0 | 10 | 69 | 136 | 180 | 190 | 0 |
| 28 | 73 | 0 | 0 | 0 | 0 | 0 | 10 | 72 | 172 | 184 | 183 | 0 |
| 29 | 73 | 0 | 0 | 0 | | 0 | 10 | 106 | 193 | 143 | 170 | 0 |
| 30 | 103 | 0 | 0 | 0 | | 0 | 10 | 120 | 197 | 124 | 172 | 0 |
| 31 | 43 | | 0 | 0 | | 0 | | 90 | | 124 | 205 | |
| | | | | | | | | | | | | |
| Min | 43 | 0 | 0 | 0 | 0 | 0 | 4 | 10 | 75 | 79 | 124 | 0 |
| Max | 132 | 0 | 0 | 0 | 0 | 0 | 235 | 175 | 197 | 184 | 260 | 247 |
| Mean | 86 | 0 | 0 | 0 | 0 | 0 | 45 | 75 | 133 | 135 | 182 | 82 |
| ac-ft | 5307 | 0 | 0 | 0 | 0 | 0 | 2658 | 4592 | 7919 | 8259 | 11187 | 4850 |

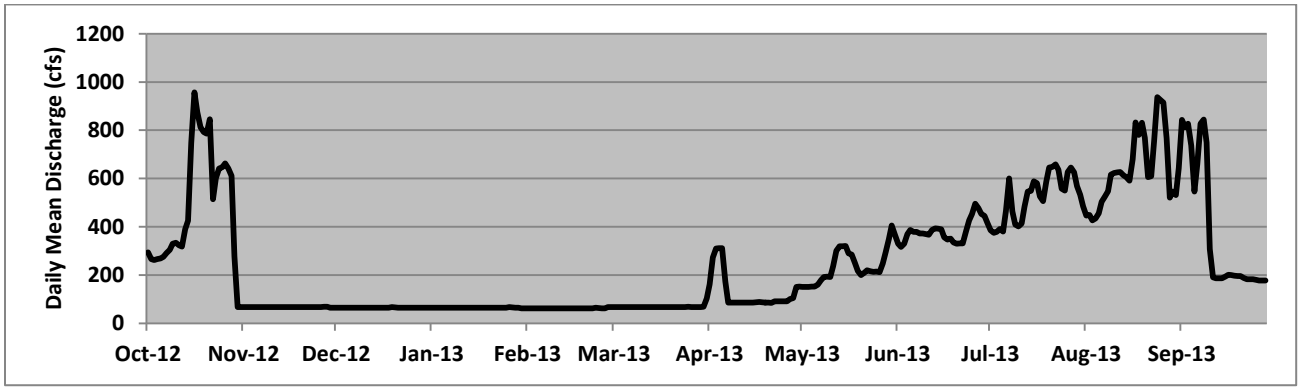


**Appendix A (38 of 38)**
**Colorado-Big Thompson Project, CO**

**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 Colorado-Big Thompson Project 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 Colorado-Big Thompson Project is a transmountain water diversion system. 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-2012 and 30-Sep-2013. Data was provided by the Northern Colorado Water Conservancy District. Record is complete and reliable.

**Total Daily Water Deliveries, Cubic Feet per Second, Daily Mean Values**

| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 318 | 67 | 65 | 64 | 62 | 67 | 68 | 151 | 405 | 445 | 532 | 531 |
| 2 | 308 | 67 | 65 | 64 | 62 | 67 | 103 | 152 | 367 | 416 | 485 | 643 |
| 3 | 294 | 67 | 65 | 64 | 62 | 67 | 161 | 151 | 329 | 385 | 446 | 842 |
| 4 | 266 | 67 | 65 | 64 | 62 | 67 | 273 | 151 | 316 | 375 | 449 | 813 |
| 5 | 262 | 67 | 65 | 64 | 62 | 67 | 310 | 151 | 330 | 379 | 427 | 826 |
| 6 | 266 | 67 | 65 | 64 | 62 | 67 | 311 | 152 | 370 | 390 | 435 | 737 |
| 7 | 269 | 67 | 65 | 64 | 62 | 67 | 311 | 153 | 387 | 380 | 455 | 546 |
| 8 | 275 | 67 | 65 | 64 | 62 | 67 | 173 | 160 | 378 | 467 | 504 | 660 |
| 9 | 291 | 67 | 65 | 64 | 62 | 67 | 86 | 179 | 379 | 601 | 524 | 826 |
| 10 | 305 | 67 | 65 | 64 | 62 | 67 | 86 | 191 | 372 | 464 | 547 | 844 |
| 11 | 330 | 67 | 65 | 64 | 62 | 67 | 86 | 193 | 372 | 409 | 616 | 749 |
| 12 | 333 | 67 | 65 | 64 | 62 | 67 | 86 | 192 | 369 | 401 | 623 | 308 |
| 13 | 323 | 67 | 65 | 64 | 62 | 67 | 86 | 237 | 367 | 413 | 626 | 190 |
| 14 | 318 | 67 | 65 | 64 | 62 | 67 | 86 | 301 | 387 | 484 | 627 | 186 |
| 15 | 389 | 67 | 65 | 64 | 62 | 67 | 86 | 319 | 394 | 545 | 614 | 186 |
| 16 | 425 | 67 | 65 | 64 | 62 | 67 | 86 | 319 | 392 | 548 | 605 | 187 |
| 17 | 747 | 67 | 65 | 64 | 62 | 67 | 86 | 320 | 390 | 588 | 591 | 194 |
| 18 | 957 | 67 | 65 | 64 | 62 | 67 | 87 | 289 | 356 | 580 | 680 | 202 |
| 19 | 874 | 67 | 65 | 64 | 62 | 67 | 88 | 285 | 347 | 526 | 833 | 200 |
| 20 | 813 | 67 | 65 | 64 | 62 | 67 | 87 | 251 | 351 | 506 | 780 | 197 |
| 21 | 792 | 67 | 67 | 64 | 62 | 67 | 86 | 216 | 335 | 587 | 831 | 196 |
| 22 | 786 | 67 | 66 | 64 | 62 | 67 | 86 | 200 | 329 | 645 | 769 | 196 |
| 23 | 845 | 67 | 65 | 64 | 62 | 67 | 85 | 209 | 331 | 649 | 606 | 187 |
| 24 | 514 | 67 | 65 | 64 | 62 | 67 | 91 | 220 | 331 | 659 | 610 | 182 |
| 25 | 601 | 67 | 65 | 64 | 64 | 67 | 91 | 215 | 380 | 636 | 755 | 182 |
| 26 | 642 | 67 | 65 | 64 | 63 | 67 | 91 | 213 | 427 | 558 | 937 | 182 |
| 27 | 647 | 67 | 65 | 64 | 62 | 69 | 91 | 214 | 453 | 550 | 925 | 179 |
| 28 | 663 | 67 | 65 | 67 | 62 | 68 | 91 | 212 | 495 | 627 | 915 | 177 |
| 29 | 642 | 69 | 65 | 65 | | 67 | 100 | 248 | 477 | 646 | 767 | 177 |
| 30 | 611 | 68 | 65 | 64 | | 67 | 104 | 294 | 453 | 625 | 521 | 177 |
| 31 | 276 | | 65 | 64 | | 67 | | 349 | | 569 | 546 | |
| | | | | | | | | | | | | |
| Min | 262 | 67 | 65 | 64 | 62 | 67 | 68 | 151 | 316 | 375 | 427 | 177 |
| Max | 957 | 69 | 67 | 67 | 64 | 69 | 311 | 349 | 495 | 659 | 937 | 844 |
| Mean | 496 | 67 | 65 | 65 | 62 | 67 | 122 | 222 | 379 | 518 | 632 | 390 |
| ac-ft | 30458 | 3993 | 3988 | 3961 | 3451 | 4108 | 7249 | 13636 | 22514 | 31786 | 38772 | 23173 |



# APPENDIX B – OPERATIONS DATA

**TABLE 1**

## WESTERN DIVISION – PICK-SLOAN MISSOURI BASIN PROGRAM

## PERTINENT RESERVOIR DATA

(Data in AF)

| 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 | 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 | 903,373 | 998,220 | 167,970 | |

1/ Storage capacity below elevation of lowest outlet
2/ Total storage minus dead storage
3/ Not determined

**TABLE 2**

**COLORADO-BIG THOMPSON PROJECT**

**MONTHLY SUMMARY**
**WATER YEAR 2013 OF BLUE RIVER OPERATIONS (AF)**

| | INI | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNDEPLETED RUNOFF ABOVE GREEN MTN. RESERVOIR | | 11,000 | 9,000 | 7,800 | 7,300 | 6,600 | 8,300 | 14,200 | 68,200 | 108,800 | 39,000 | 21,200 | 31,200 |
| UNDEPLETED RUNOFF ABOVE DILLON RES. | | 6,500 | 5,100 | 4,600 | 4,300 | 3,800 | 4,700 | 6,900 | 38,000 | 67,800 | 22,600 | 13,100 | 21,100 |
| PERCENT OF TOTAL UN-DEPLETED RUNOFF ORI-GINATING ABOVE DILLON | | 0.591 | 0.567 | 0.590 | 0.589 | 0.576 | 0.566 | 0.486 | 0.557 | 0.623 | 0.580 | 0.618 | 0.676 |
| DEPLETIONS BY 1929 COLORADO SPRINGS RIGHT | | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 182 | 538 | 136 | 54 | 254 |
| DEPLETIONS BY 1948 COLORADO SPRINGS RIGHT | | -505 | -512 | -11 | 0 | 0 | 0 | 39 | 1683 | 6136 | 1829 | 199 | 230 |
| INFLOW TO DILLON | | 7,000 | 5,600 | 4,600 | 4,300 | 3,800 | 4,700 | 6,800 | 36,100 | 61,100 | 20,600 | 12,800 | 20,600 |
| DILLON STORAGE (1000 AF) | 198.9 | 190.7 | 182.7 | 178.0 | 171.9 | 166.9 | 163.3 | 161.8 | 193.8 | 240.6 | 242.9 | 239.2 | 245.9 |
| ROBERTS TUNNEL DIVERSIONS | | 11,000 | 9,700 | 5,600 | 5,700 | 4,300 | 3,900 | 5,000 | 214 | 10,100 | 13,900 | 11,900 | 4,200 |
| DILLON OUTFLOW TO THE RIVER | | 3,300 | 3,200 | 3,600 | 4,700 | 4,500 | 4,400 | 3,300 | 3,400 | 3,400 | 3,500 | 3,700 | 8,800 |
| TOTAL DEPLETIONS BY DENVER | | 3,700 | 2,400 | 1,000 | -406 | -658 | 262 | 3,500 | 32,400 | 57,200 | 17,000 | 9,100 | 11,700 |
| RUNOFF ORIGINATING BETWEEN DILLON AND GREEN MTN RESERVOIR | | 4,600 | 3,900 | 3,300 | 3,000 | 2,800 | 3,800 | 7,500 | 30,800 | 41,900 | 16,700 | 8,300 | 10,400 |
| ACTUAL INFLOW TO GREEN MTN RESERVOIR | | 7,800 | 7,100 | 6,900 | 7,700 | 7,200 | 8,100 | 10,700 | 33,900 | 44,900 | 20,000 | 11,900 | 19,100 |
| GREEN MTN RESERVOIR STORAGE (1000 AF) | 76.7 | 69.4 | 67.4 | 64.8 | 171.9 | 60.6 | 60.4 | 65.8 | 95.1 | 134.8 | 137.4 | 109.8 | 107.1 |
| TOTAL GREEN MTN OUTFLOW | | 14,800 | 9,000 | 9,500 | 10,500 | 8,500 | 8,300 | 5,100 | 4,200 | 4,200 | 16,600 | 38,700 | 21,400 |

**PICK-SLOAN MISSOURI BASIN PROGRAM**
**WESTERN DIVISION WATER AND POWER SYSTEM**
**COLORADO-BIG THOMPSON PROJECT**

**2013 ACTUAL OPERATIONS**

| | WATER IN 1000 AF | | | | | | | | | | ENERGY IN GWH | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL OR TOTAL | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| GREEN MOUNTAIN RESERVOIR | | | | | | | | | | | | | |
| Depleted Watershed Inflow | 185.3 | 7.8 | 7.1 | 6.9 | 7.7 | 7.2 | 8.1 | 10.7 | 33.9 | 44.9 | 20.0 | 11.9 | 19.1 |
| Turbine Release | 137.6 | 14.8 | 9.0 | 9.5 | 10.5 | 8.5 | 8.1 | 1.2 | 00.0 | 00.0 | 15.9 | 38.7 | 21.4 |
| Bypass | 13.2 | 0.0 | 0.0 | 0.0 | 0.02 | 0.0 | 0.3 | 3.8 | 4.2 | 4.2 | 0.7 | 0.0 | 00.0 |
| Spill | 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 |
| End of Month Content | 76.7 | 69.4 | 67.4 | 64.8 | 61.9 | 60.6 | 60.4 | 65.8 | 95.1 | 134.8 | 137.4 | 109.8 | 107.1 |
| Kwh/AF | | 162.2 | 122.2 | 126.3 | 133.3 | 111.6 | 123.5 | 166.7 | 0.0 | 0.0 | 226.4 | 237.7 | 215.0 |
| Generation | 25.6 | 2.4 | 1.1 | 1.2 | 1.4 | 1.0 | 1.0 | 0.2 | 0.0 | 0.0 | 3.6 | 9.2 | 4.6 |
| WILLOW CREEK RESERVOIR | | | | | | | | | | | | | |
| Inflow | 55.4 | 1.1 | 0.9 | 0.9 | 0.7 | 0.6 | 0.9 | 2.8 | 29.8 | 11.8 | 2.9 | 1.4 | 1.6 |
| Release to River | 11.7 | 0.6 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 5.5 | 1.0 | 0.9 | 0.7 | 0.5 |
| Pumped to Granby | 42.4 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 22.2 | 11.2 | 3.4 | 0.0 | 0.0 |
| End of Month Content | 9.7 | 10.1 | 7.4 | 7.8 | 8.1 | 8.3 | 8.7 | 8.1 | 10.0 | 9.3 | 7.7 | 8.3 | 9.3 |
| Pump Energy | 8.9 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 4.8 | 2.3 | 0.7 | 0.0 | 0.0 |
| GRANBY - SHADOW MOUNTAIN - GRAND LAKE | | | | | | | | | | | | | |
| Natural Watershed Inflow | 238.6 | 6.1 | 2.6 | 3.4 | 3.1 | 2.6 | 3.5 | 10.0 | 63.8 | 86.8 | 25.7 | 9.7 | 21.3 |
| Total Inflow into Granby | 283.4 | 4.6 | 6.4 | 4.1 | 2.4 | 1.8 | 2.5 | 11.0 | 100.9 | 100.3 | 21.4 | 7.4 | 20.6 |
| Granby Fish Release | 33.2 | 1.8 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 3.8 | 5.2 | 5.6 | 4.7 | 4.7 |
| Granby Seepage | 1.9 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 |
| Granby Spill | 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 |
| Adams Tunnel | 236.3 | 34.0 | 2.5 | 22.6 | 34.0 | 29.7 | 28.2 | 25.6 | 18.0 | 13.2 | 20.7 | 1.8 | 6.0 |
| Granby End of Month content | 333.6 | 301.8 | 303.3 | 282.8 | 250.5 | 222.2 | 195.8 | 182.2 | 272.3 | 362.3 | 361.8 | 362.1 | 371.0 |
| SM-GL End of Month Content | 17.8 | 17.8 | 17.8 | 17.8 | 17.8 | 17.8 | 17.8 | 17.8 | 17.3 | 17.7 | 18.0 | 17.9 | 17.6 |
| Pumped from Granby | 197.7 | 32.9 | 3.4 | 23.2 | 33.3 | 28.9 | 27.3 | 22.5 | 5.3 | 1.6 | 13.9 | 00.0 | 5.4 |
| Granby Pump Kwh/AF | | 167.2 | 176.5 | 172.4 | 177.2 | 183.4 | 190.5 | 195.6 | 226.4 | 187.5 | 165.5 | 0.0 | 166.7 |
| Granby Pump Energy | 35.6 | 5.5 | 0.6 | 4.0 | 5.9 | 5.3 | 5.2 | 4.4 | 1.2 | 0.3 | 2.3 | 0.0 | 0.9 |

**PICK-SLOAN MISSOURI BASIN PROGRAM**
**WESTERN DIVISION WATER AND POWER SYSTEM**
**COLORADO-BIG THOMPSON PROJECT**

**2013 ACTUAL OPERATIONS**

WATER IN 1000 AF *** *** *** *** *** ENERGY IN GWH

| | INITIAL OR TOTAL | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARYS LAKE – ESTES – FLATIRON | | | | | | | | | | | | | |
| Adams Tunnel Water | 236.3 | 34.0 | 2.5 | 22.6 | 34.0 | 29.7 | 28.2 | 25.6 | 18.0 | 13.2 | 20.7 | 1.8 | 6.0 |
| Marys Lake Generation | 40.1 | 5.8 | 0.4 | 3.4 | 6.0 | 5.3 | 5.1 | 4.6 | 3.0 | 2.1 | 3.4 | 0.0 | 1.0 |
| Estes Generation | 104.4 | 15.2 | 1.0 | 10.0 | 15.2 | 13.3 | 12.5 | 10.9 | 7.8 | 5.7 | 9.4 | 0.6 | 2.8 |
| Divertible Big-Thompson | 70.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 12.6 | 20.4 | 5.1 | 0.0 | 32.3 |
| Diverted Big-Thompson Water | 37.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 11.1 | 20.1 | 5.6 | 0.0 | 0.5 |
| Olympus Tunnel | 272.2 | 33.8 | 2.5 | 21.1 | 33.6 | 29.6 | 27.9 | 24.4 | 31.3 | 32.8 | 25.9 | 1.8 | 7.5 |
| Pole Hill Generation | 177.3 | 23.9 | 1.6 | 9.7 | 21.1 | 21.0 | 19.5 | 16.4 | 22.4 | 23.6 | 14.0 | 0.0 | 4.1 |
| Flatiron 1 & 2 Generation | 243.2 | 30.2 | 1.7 | 18.5 | 30.4 | 26.9 | 24.4 | 21.4 | 29.1 | 29.8 | 22.2 | 0.6 | 8.0 |
| Flatiron 3 Turbine Release | 8.3 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.2 | 0.8 |
| Flatiron 3 Kwh/AF Gen. | | 0.0 | 333.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 194.4 | 250.0 |
| Flatiron 3 Generation | 1.7 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 0.2 |
| Flatiron 3 Pumping | 97.4 | 0.0 | 0.0 | 14.6 | 22.4 | 14.2 | 9.9 | 17.7 | 1.3 | 2.4 | 13.6 | 0.0 | 1.3 |
| Flatiron 3 Kwh/AF Pump | | 0.0 | 0.0 | 280.8 | 303.6 | 323.9 | 333.3 | 344.6 | 384.6 | 333.3 | 330.9 | 0.0 | 307.7 |
| Flatiron 3 Pump Energy | 31.1 | 0.0 | 0.0 | 4.1 | 6.8 | 4.6 | 3.3 | 6.1 | 0.5 | 0.8 | 4.5 | 0.0 | 0.4 |
| CARTER LAKE | | | | | | | | | | | | | |
| Pumped from Flatiron | 97.4 | 00.0 | 0.0 | 14.6 | 22.4 | 14.2 | 9.9 | 17.7 | 1.3 | 2.4 | 13.6 | 00.0 | 1.3 |
| Release to Flatiron | 8.3 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.2 | 0.8 |
| Irrigation Delivery | 80.2 | 8.3 | 1.5 | 1.4 | 1.3 | 1.1 | 1.4 | 4.4 | 7.6 | 13.7 | 13.7 | 16.6 | 9.2 |
| Evaporation & Seepage | 1.7 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.6 | 0.4 | 0.4 | -0.2 |
| End of Month Content | 54.6 | 45.0 | 42.2 | 53.9 | 73.6 | 85.3 | 92.4 | 105.0 | 97.6 | 85.1 | 83.5 | 58.7 | 49.9 |
| BIG THOMPSON POWERPLANT | | | | | | | | | | | | | |
| Diverted Dille Tunnel Water | 18.9 | 0.3 | 1.3 | 0.0 | 0.0 | 0.0 | 0.1 | 1.6 | 3.0 | 4.4 | 5.6 | 2.2 | 0.4 |
| Irrigation Delivery | 31.5 | 8.4 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.4 | 2.6 | 2.6 | 5.3 | 7.6 | 4.5 |
| Turbine Release | 58.7 | 5.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 12.3 | 20.4 | 12.8 | 6.2 | 1.4 |
| Generation | 8.2 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 3.0 | 1.7 | 0.7 | 0.2 |
| HORSETOOTH RESERVOIR | | | | | | | | | | | | | |
| Hansen Feeder Canal Inflow | 118.3 | 24.0 | 4.0 | 5.9 | 10.7 | 14.6 | 17.0 | 6.4 | 17.4 | 9.0 | 2.7 | 1.5 | 5.1 |
| Irrigation Delivery | 70.6 | 12.8 | 1.2 | 1.3 | 1.6 | 1.5 | 1.2 | 2.0 | 5.2 | 7.2 | 13.5 | 14.3 | 8.8 |
| Evaporation | 3.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.6 | 0.9 | 0.7 | 0.6 | 0.2 |
| End of Month Content | 56.6 | 66.5 | 68.5 | 72.2 | 80.5 | 93.8 | 109.9 | 114.2 | 125.8 | 126.4 | 113.4 | 97.9 | 94.5 |
| TOTAL CBT DELIVERY * | 182.3 | 29.5 | 2.71 | 2.72 | 2.92 | 2.61 | 2.62 | 6.8 | 15.4 | 23.5 | 32.5 | 38.5 | 22.5 |

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

PICK-SLOAN MISSOURI BASIN PROGRAM
WESTERN DIVISION WATER AND POWER SYSTEM
COLORADO-BIG THOMPSON PROJECT

2013 ACTUAL OPERATIONS

| | WATER IN 1000 AF | | | | * * * | * * * | * * * | * * * | * * * | ENERGY IN GWH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INITIAL OR TOTAL | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| BASE GENERATION | | | | | | | | | | | | | |
| Green Mountain | 25.6 | 2.4 | 1.1 | 1.2 | 1.4 | 1.0 | 1.0 | 0.2 | 0.0 | 0.0 | 3.6 | 9.2 | 4.6 |
| Flatiron 3 | 1.7 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 0.2 |
| Big Thompson | 8.2 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 3.0 | 1.7 | 0.7 | 0.2 |
| TOTAL | 35.5 | 3.2 | 1.2 | 1.2 | 1.4 | 1.0 | 1.0 | 0.2 | 1.8 | 3.0 | 5.3 | 11.3 | 5.0 |
| LOAD FOLLOWING GENERATION | | | | | | | | | | | | | |
| Marys Lake | 40.1 | 5.8 | 0.4 | 3.4 | 6.0 | 5.3 | 5.1 | 4.6 | 3.0 | 2.1 | 3.4 | 0.0 | 1.0 |
| Estes | 104.4 | 15.2 | 1.0 | 10.0 | 15.2 | 13.3 | 12.5 | 10.9 | 7.8 | 5.7 | 9.4 | 0.6 | 2.8 |
| Pole Hill | 177.3 | 23.9 | 1.6 | 9.7 | 21.1 | 21.0 | 19.5 | 16.4 | 22.4 | 23.6 | 14.0 | 0.0 | 4.1 |
| Flatiron 1 & 2 | 243.2 | 30.2 | 1.7 | 18.5 | 30.4 | 26.9 | 24.4 | 21.4 | 29.1 | 29.8 | 22.2 | 0.6 | 8.0 |
| TOTAL | 565.0 | 75.1 | 4.7 | 41.6 | 72.7 | 66.5 | 61.5 | 53.3 | 62.3 | 61.2 | 49.0 | 1.2 | 15.9 |
| PUMP ENERGY | | | | | | | | | | | | | |
| Willow Creek | 8.9 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 4.8 | 2.3 | 0.7 | 0.0 | 0.0 |
| Granby | 35.6 | 5.5 | 0.6 | 4.0 | 5.9 | 5.3 | 5.2 | 4.4 | 1.2 | 0.3 | 2.3 | 0.0 | 0.9 |
| Flatiron 3 | 31.1 | 0.0 | 0.0 | 4.1 | 6.8 | 4.6 | 3.3 | 6.1 | 0.5 | 0.8 | 4.5 | 0.0 | 0.4 |
| TOTAL | 75.6 | 5.5 | 1.2 | 8.1 | 12.7 | 9.9 | 8.5 | 11.0 | 6.5 | 3.4 | 7.5 | 0.0 | 1.3 |
| TOTAL GENERATION | 600.5 | 78.3 | 5.9 | 42.8 | 74.1 | 67.5 | 62.5 | 53.5 | 64.1 | 64.2 | 54.3 | 12.5 | 20.9 |
| TOTAL GENERATION MINUS PUMP | 524.9 | 72.8 | 4.7 | 34.7 | 61.4 | 57.6 | 54.0 | 42.5 | 57.6 | 60.8 | 46.8 | 12.5 | 19.6 |

**TABLE 4**

**COLORADO-BIG THOMPSON PROJECT**
**FLOOD DAMAGE PREVENTED IN WATER YEAR 2013**

| | Cumulative Total Prior to WY 2012 | WY 2013 | Cumulative Total Current |
|---|---|---|---|
| Granby, Willow Creek, Shadow Mountain and Grand Lake | $357,700 | $0.00 | $357,700 |
| Green Mountain | $152,600 | $0.00 | $152,600 |
| Total | $510,300 | $0.00 | $510,300 |

CBTAOP V2.06 Run: 05-Nov-2013 13:04
Most Probable Plan (70-Percent Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir — Initial Cont 107.1 kaf, Elev 7925.35 ft; Maximum Cont 154.6 kaf, Elev 7950.38 ft; Minimum Cont 8.0 kaf, Elev 7804.68 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dillon Inflow | kaf | 6.4 | 4.9 | 4.1 | 4.0 | 3.5 | 4.4 | 11.4 | 47.3 | 69.3 | 33.8 | 14.6 | 8.8 | 212.5 |
| Dillon-Grn Mtn Gain | kaf | 6.7 | 4.8 | 3.9 | 3.7 | 3.2 | 4.2 | 10.7 | 32.3 | 45.6 | 24.2 | 12.7 | 9.2 | 161.2 |
| Undepleted Inflow | kaf | 13.1 | 9.7 | 8.0 | 7.7 | 6.7 | 8.6 | 22.1 | 79.6 | 114.9 | 58.0 | 27.3 | 18.0 | 373.7 |
| Depletion | kaf | -6.5 | -6.2 | -2.0 | 0.0 | 0.0 | 1.0 | 8.4 | 40.0 | 45.0 | 20.0 | 10.0 | 0.0 | 109.7 |
| Depleted Inflow | kaf | 19.6 | 15.9 | 10.0 | 7.7 | 6.7 | 7.6 | 13.7 | 39.6 | 69.9 | 38.0 | 17.3 | 18.0 | 264.0 |
| Turbine Release | kaf | 23.8 | 20.2 | 20.0 | 14.5 | 11.9 | 13.4 | 6.0 | 6.5 | 29.0 | 42.2 | 41.7 | 32.5 | 261.7 |
| 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 | kaf | 23.8 | 20.2 | 20.0 | 14.5 | 11.9 | 13.4 | 6.0 | 6.5 | 29.0 | 42.2 | 41.7 | 32.5 | 261.7 |
| Min Release | cfs | 60 | 60 | 60 | 60 | 60 | 60 | 100 | 100 | 60 | 60 | 60 | 60 | |
| Total River Release | cfs | 387 | 339 | 325 | 236 | 214 | 218 | 101 | 106 | 487 | 686 | 678 | 546 | |
| Evaporation | kaf | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.5 | 0.9 | 0.8 | 0.6 | 0.5 | 4.4 |
| End-Month Targets | kaf | 102.5 | 98.0 | 88.0 | 81.2 | 76.0 | 70.0 | 90.0 | 110.0 | 150.0 | 145.0 | 120.0 | 105.0 | |
| End-Month Content | kaf | 102.5 | 98.0 | 88.0 | 81.2 | 76.0 | 70.0 | 77.4 | 110.0 | 150.0 | 145.0 | 120.0 | 105.0 | |
| End-Month Elevation | ft | 7922.53 | 7919.66 | 7912.92 | 7908.01 | 7904.05 | 7899.24 | 7905.13 | 7927.08 | 7948.20 | 7945.78 | 7932.79 | 7924.08 | |

Willow Crk Reservoir — Initial Cont 9.3 kaf, Elev 8125.63 ft; Maximum Cont 10.0 kaf, Elev 8128.14 ft; Minimum Cont 7.2 kaf, Elev 8116.90 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native Inflow | kaf | 1.0 | 0.8 | 0.8 | 0.8 | 0.7 | 1.0 | 3.9 | 22.1 | 17.7 | 4.4 | 1.7 | 1.3 | 56.2 |
| Min Release | kaf | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 1.5 | 2.6 | 2.2 | 0.5 | 0.4 | 10.0 |
| 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 | 1.5 | 2.6 | 2.2 | 0.5 | 0.4 | 10.0 |
| Pumped to Granby | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 18.7 | 14.0 | 3.1 | 1.0 | 0.9 | 45.8 |
| 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 | | 7.2 | | | | | 7.2 | 9.0 | 10.0 | 9.0 | | 9.0 | |
| End-Month Content | kaf | 8.3 | 7.2 | 7.6 | 8.0 | 8.3 | 8.9 | 7.2 | 9.0 | 10.0 | 9.0 | 9.1 | 9.0 | |
| End-Month Elevation | ft | 8121.73 | 8116.90 | 8118.74 | 8120.48 | 8121.73 | 8124.12 | 8116.90 | 8124.50 | 8128.14 | 8124.50 | 8124.88 | 8124.50 | |

Lake Granby — Initial Cont 371.0 kaf, Elev 8254.70 ft; Maximum Cont 539.8 kaf, Elev 8280.01 ft; Minimum Cont 76.5 kaf, Elev 8186.91 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native inflow | kaf | 1.9 | 1.2 | 1.2 | 1.6 | 1.3 | 1.7 | 5.3 | 22.7 | 37.0 | 12.6 | 4.8 | 2.3 | 93.6 |



| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rels frm Shadow Mtn | kaf | 2.4 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 8.0 | 45.0 | 4.1 | 2.5 | 2.1 | 74.3 |
| Pump frm Windy Gap | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 | 10.0 | 5.0 | 0.0 | 0.0 | 0.0 | 20.0 |
| Pump frm Willow Crk | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 18.7 | 14.0 | 3.1 | 1.0 | 0.9 | 45.8 |
| Total Inflow | kaf | 5.8 | 5.4 | 4.0 | 2.8 | 2.4 | 2.9 | 16.6 | 59.4 | 101.0 | 19.8 | 8.3 | 5.3 | 233.7 |
| | | | | | | | | | | | | | | |
| Min River Release | kaf | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.2 | 1.2 | 3.5 | 4.5 | 5.3 | 5.0 | 4.5 | 31.1 |
| 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 | 3.5 | 4.5 | 5.3 | 5.0 | 4.5 | 31.1 |
| | | | | | | | | | | | | | | |
| Pumped to Shadow Mtn | kaf | 0.0 | 6.9 | 33.0 | 32.7 | 29.6 | 32.7 | 19.7 | 0.0 | 0.0 | 0.0 | 10.0 | 16.5 | 181.1 |
| Evaporation | kaf | 1.4 | 0.6 | 0.2 | 0.0 | 0.0 | 0.7 | 1.1 | 1.9 | 2.6 | 2.5 | 2.0 | 1.8 | 14.8 |
| Seepage loss | kaf | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 3.7 |
| End-Month Content | kaf | 373.9 | 370.3 | 339.6 | 308.2 | 279.7 | 247.7 | 242.1 | 295.8 | 389.4 | 401.0 | 391.9 | 374.0 | |
| End-Month Elevation | ft | 8255.18 | 8254.58 | 8249.39 | 8243.85 | 8238.58 | 8232.30 | 8231.15 | 8241.59 | 8257.71 | 8259.57 | 8258.11 | 8255.19 | |

| Shadow Mtn | | Initial Cont | | 17.6 kaf | | Maximum Cont | | 18.4 kaf | | Minimum Cont | | 16.6 kaf | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Elev | 8366.57 ft | | | Elev | 8367.00 ft | | | Elev | 8366.02 ft | |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Native inflow | kaf | 2.9 | 1.8 | 1.9 | 2.3 | 2.0 | 2.6 | 7.9 | 34.0 | 55.6 | 19.0 | 7.2 | 3.5 | 140.7 |
| Pumped from Granby | kaf | 0.0 | 6.9 | 33.0 | 32.7 | 29.6 | 32.7 | 19.7 | 0.0 | 0.0 | 0.0 | 10.0 | 16.5 | 181.1 |
| Total Inflow | kaf | 2.9 | 8.7 | 34.9 | 35.0 | 31.6 | 35.3 | 27.6 | 34.0 | 55.6 | 19.0 | 17.2 | 20.0 | 321.8 |
| | | | | | | | | | | | | | | |
| Min River Release | kaf | 2.2 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 3.0 | 3.1 | 2.5 | 2.1 | 24.3 |
| Spill/Bypass | kaf | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.8 | 42.0 | 1.0 | 0.0 | 0.0 | 50.0 |
| Total River Release | kaf | 2.4 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 8.0 | 45.0 | 4.1 | 2.5 | 2.1 | 74.3 |
| | | | | | | | | | | | | | | |
| Adams Tunnel Flow | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 25.3 | 9.8 | 14.2 | 14.1 | 17.4 | 242.8 |
| Evaporation | kaf | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.3 | 0.4 | 0.7 | 0.8 | 0.7 | 0.6 | 0.5 | 4.7 |
| End-Month Content | kaf | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | |
| End-Month Elevation | ft | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | |

| Adams Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Tunnel Capacity | kaf | 0.1 | 32.7 | 33.8 | 33.8 | 30.5 | 33.8 | 32.7 | 33.8 | 32.7 | 33.8 | 33.8 | 32.7 | 364.2 |
| Actual delivery | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 25.3 | 9.8 | 14.2 | 14.1 | 17.4 | 242.8 |
| % max delivery | % | 100 | 18 | 95 | 100 | 100 | 100 | 80 | 75 | 30 | 42 | 42 | 53 | |

| Big T @ Lake Estes | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Big Thompson inflow | kaf | 2.2 | 1.4 | 1.3 | 1.2 | 1.0 | 1.2 | 3.3 | 13.4 | 30.2 | 20.2 | 7.8 | 4.4 | 87.6 |
| Min river release | kaf | 3.1 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | 2.2 | 6.9 | 7.4 | 7.7 | 6.9 | 3.7 | 45.3 |
| Act river release | kaf | 2.2 | 1.4 | 1.3 | 1.2 | 1.0 | 1.2 | 2.2 | 6.9 | 7.4 | 7.7 | 6.9 | 3.7 | 43.1 |
| Max div available | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 6.5 | 22.8 | 12.5 | 0.9 | 0.7 | 44.5 |
| Priority water div | 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 | 1.1 | 6.5 | 22.8 | 12.5 | 0.9 | 0.7 | 44.5 |
| % max diverted | % | | | | | | | 100 | 100 | 100 | 100 | 100 | 100 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Irrigation delivery | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| Total river release | kaf | 2.3 | 1.4 | 1.4 | 1.3 | 1.0 | 1.2 | 2.3 | 7.0 | 7.5 | 7.8 | 7.0 | 3.8 | 44.0 |



| Olympus Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max 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 | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 27.0 | 31.7 | 32.5 | 26.6 | 14.9 | 18.0 | 286.4 |
| % max delivery | % | 0 | 18 | 94 | 100 | 100 | 100 | 83 | 94 | 99 | 79 | 44 | 55 | |
| | | | | | | | | | | | | | | |
| Seepage and Evap | kaf | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 2.0 |
| Inflow to Flatiron | kaf | 0.0 | 5.8 | 31.7 | 33.5 | 30.3 | 33.6 | 26.8 | 31.5 | 32.3 | 26.4 | 14.7 | 17.8 | 284.4 |

| Carter Lake | | Initial Cont | | 49.9 kaf | | Maximum Cont | | 112.2 kaf | | Minimum Cont | | 6.0 kaf | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Elev | 5697.35 ft | | | Elev | 5758.98 ft | | | Elev | 5626.80 ft | |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Pump from Flatiron | kaf | 0.0 | 0.0 | 11.7 | 22.4 | 18.1 | 18.1 | 16.3 | 1.1 | 0.0 | 0.0 | 0.0 | 7.2 | 94.9 |
| Carter to Flatiron | kaf | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| | | | | | | | | | | | | | | |
| Evaporation loss | kaf | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.2 | 2.1 |
| Seepage loss | kaf | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 1.7 |
| End-Month Targets | kaf | 36.9 | 33.6 | 44.3 | 64.8 | 80.8 | 96.3 | 107.9 | 101.4 | 91.3 | 74.9 | 56.1 | 49.0 | |
| End-Month Content | kaf | 37.4 | 34.9 | 44.3 | 64.2 | 79.8 | 95.0 | 106.7 | 101.4 | 91.5 | 75.0 | 56.2 | 49.0 | |
| End-Month Elevation | ft | 5682.08 | 5678.81 | 5690.71 | 5713.18 | 5729.03 | 5743.51 | 5754.12 | 5749.37 | 5740.25 | 5724.28 | 5704.51 | 5696.30 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 6.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.6 | 4.2 | 6.0 | 7.4 | 13.7 | 16.3 | 12.0 | 77.7 |
| Metered delivery | 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 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.2 | 2.1 | 2.1 | 8.4 |
| Total demand | kaf | 6.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.6 | 4.2 | 6.0 | 9.4 | 15.9 | 18.4 | 14.1 | 86.1 |
| Total delivery | kaf | 6.4 | 2.3 | 2.2 | 2.3 | 2.3 | 2.6 | 4.2 | 6.0 | 9.4 | 15.9 | 18.4 | 14.1 | 86.1 |
| % 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 |

| Hansen Canal 930 | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 | 27.7 | 57.2 | 55.3 | 57.2 | 57.2 | 55.3 | 645.6 |
| Actual flow | kaf | 5.9 | 5.8 | 20.0 | 11.1 | 12.2 | 15.5 | 10.5 | 30.4 | 32.3 | 26.4 | 14.7 | 10.6 | 195.4 |

| Dille Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Big T @ Canyon Mouth | kaf | 3.2 | 2.2 | 1.8 | 1.7 | 1.4 | 2.0 | 4.8 | 18.6 | 36.8 | 24.1 | 10.2 | 5.8 | 112.6 |
| Less Estes skim | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 6.5 | 22.8 | 12.5 | 0.9 | 0.7 | 44.5 |
| Big T irr (Estes) | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| Handy Ditch release | kaf | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 1.2 | 1.2 | 1.8 | 2.9 | 1.7 | 11.2 |
| Water available | kaf | 2.1 | 2.2 | 1.9 | 1.8 | 1.4 | 2.0 | 2.6 | 11.0 | 12.9 | 9.9 | 6.5 | 3.5 | 57.8 |
| Water diverted | kaf | 2.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 11.0 | 0.7 | 9.9 | 6.5 | 3.5 | 38.5 |
| % diverted | % | 100 | 100 | | | | | 100 | 100 | 5 | 100 | 100 | 100 | |

| Trifurcation Works | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rels from Flatiron | kaf | 5.9 | 5.8 | 20.0 | 11.1 | 12.2 | 15.5 | 10.5 | 30.4 | 32.3 | 26.4 | 14.7 | 10.6 | 195.4 |
| Rels to 550 Canal | kaf | 3.5 | 5.8 | 20.0 | 11.1 | 12.2 | 15.5 | 9.3 | 23.2 | 9.1 | 12.3 | 10.4 | 4.8 | 137.2 |



| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Big T irrigation | kaf | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 0.4 | 1.6 | 3.4 | 5.1 | 13.7 |
| Dille Tunnel | kaf | 2.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 11.0 | 0.7 | 9.9 | 6.5 | 3.5 | 38.5 |
| Tot rels to river | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | 18.2 | 23.9 | 24.0 | 10.8 | 9.3 | 96.7 |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 0.4 | 1.6 | 3.4 | 5.1 | 13.7 |
| Big T irr (Estes) | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| 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 | 0.0 | 0.0 |
| Total requirement | kaf | 2.5 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 0.8 | 0.5 | 1.7 | 3.5 | 5.2 | 14.6 |
| Total delivery | kaf | 2.5 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 0.8 | 0.5 | 1.7 | 3.5 | 5.2 | 14.6 |
| % required delivery | % | 100 | 0 | 100 | 100 | 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 |

| Hansen Canal 550 | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow from Flatiron | kaf | 3.5 | 5.8 | 20.0 | 11.1 | 12.2 | 15.5 | 9.3 | 23.2 | 9.1 | 12.3 | 10.4 | 4.8 | 137.2 |
| Maximum 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 |
| Seepage loss | kaf | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 2.4 |
| Irrigation demand | kaf | 0.8 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 0.7 | 0.5 | 1.1 | 0.9 | 1.0 | 7.4 |
| Irrigation delivery | kaf | 0.8 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 0.7 | 0.5 | 1.1 | 0.9 | 1.0 | 7.4 |
| Minimum flow | kaf | 2.5 | 2.4 | 6.1 | 6.1 | 5.6 | 6.1 | 2.4 | 2.5 | 2.4 | 2.5 | 2.5 | 2.4 | 43.5 |
| Rels to Horsetooth | kaf | 2.5 | 5.2 | 19.4 | 10.5 | 11.7 | 14.9 | 8.6 | 22.3 | 8.4 | 11.0 | 9.3 | 3.6 | 127.4 |

| Horsetooth Reservoir | | Initial Cont Elev | 94.5 kaf 5395.36 ft | | | Maximum Cont Elev | 152.0 kaf 5427.66 ft | | | Minimum Cont Elev | 13.0 kaf 5316.81 ft | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Inflow | kaf | 2.5 | 5.2 | 19.4 | 10.5 | 11.7 | 14.9 | 8.6 | 22.3 | 8.4 | 11.0 | 9.3 | 3.6 | 127.4 |
| Priority water div | 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 irr delivery | kaf | 14.7 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.7 | 8.4 | 10.6 | 20.9 | 21.4 | 10.8 | 100.9 |
| | | | | | | | | | | | | | | |
| Evaporation loss | kaf | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.6 | 0.7 | 0.6 | 0.4 | 3.6 |
| Seepage loss | kaf | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 1.8 |
| End-Month Targets | kaf | 82.3 | 85.2 | 102.4 | 110.4 | 119.9 | 132.3 | 136.6 | 150.0 | 147.0 | 136.2 | 123.4 | 115.7 | |
| End-Month Content | kaf | 82.0 | 85.2 | 102.4 | 110.3 | 119.7 | 132.2 | 136.6 | 150.0 | 147.0 | 136.2 | 123.4 | 115.6 | |
| End-Month Elevation | ft | 5387.09 | 5389.26 | 5400.30 | 5405.06 | 5410.50 | 5417.40 | 5419.75 | 5426.66 | 5425.14 | 5419.54 | 5412.58 | 5408.15 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 13.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 2.9 | 2.7 | 10.1 | 12.3 | 4.7 | 46.5 |
| Metered delivery | kaf | 1.6 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.0 | 5.5 | 5.8 | 9.3 | 7.6 | 5.0 | 48.2 |
| Windy Gap demand | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 1.5 | 1.5 | 1.1 | 6.2 |
| Total demand | kaf | 14.7 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.7 | 8.4 | 10.6 | 20.9 | 21.4 | 10.8 | 100.9 |
| Total irr delivery | kaf | 14.7 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.7 | 8.4 | 10.6 | 20.9 | 21.4 | 10.8 | 100.9 |
| % 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 |
| | | | | | | | | | | | | | | |
| Total CBT Delivery | kaf | 24.4 | 4.5 | 4.7 | 5.1 | 4.7 | 5.2 | 8.6 | 15.9 | 16.9 | 35.9 | 40.6 | 27.9 | 194.4 |

| Windy Gap Ownership 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accrual | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 | 9.0 | 4.5 | 0.0 | 0.0 | 0.0 | 18.0 |



| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total release | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.1 | 3.7 | 3.6 | 3.2 | 14.6 |
| Spill | 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 |
| End-month Ownership | kaf | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 28.8 | 37.8 | 38.2 | 34.5 | 30.9 | 27.7 | |

PUMPING AND GENERATION OPERATIONS

| Green Mtn Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Generation | gwh | 18.600 | 18.000 | 18.600 | 18.600 | 8.400 | 9.300 | 18.000 | 18.600 | 18.000 | 18.600 | 18.600 | 18.000 | 201.300 |
| Generation | gwh | 4.495 | 3.760 | 3.636 | 2.553 | 2.044 | 2.247 | 1.009 | 1.184 | 5.858 | 8.837 | 8.468 | 6.281 | 50.372 |
| % Max Generation | % | 24 | 21 | 20 | 14 | 24 | 24 | 6 | 6 | 33 | 48 | 46 | 35 | |
| Ave kwh/af | | 189 | 186 | 182 | 176 | 172 | 168 | 168 | 182 | 202 | 209 | 203 | 193 | |

| Willow Crk Pumping | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum pumping | kaf | 27.7 | 26.8 | 0.0 | 0.0 | 0.0 | 0.0 | 26.8 | 27.7 | 26.8 | 27.7 | 27.7 | 26.8 | 218.0 |
| Actual pumping | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 18.7 | 14.0 | 3.1 | 1.0 | 0.9 | 45.8 |
| Pump energy | gwh | 0.320 | 0.320 | 0.000 | 0.000 | 0.000 | 0.000 | 1.086 | 3.983 | 2.982 | 0.660 | 0.213 | 0.192 | 9.756 |
| % max pumping | % | 5 | 6 | | | | | 19 | 68 | 52 | 11 | 4 | 3 | |
| Average kwh/af | | 213 | 213 | | | | | 213 | 213 | 213 | 213 | 213 | 213 | |

| Lake Granby Pumping | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 | 0.0 | 6.9 | 33.0 | 32.7 | 29.6 | 32.7 | 19.7 | 0.0 | 0.0 | 0.0 | 10.0 | 16.5 | 181.1 |
| Pump energy | gwh | 0.000 | 1.028 | 4.983 | 5.036 | 4.677 | 5.330 | 3.310 | 0.000 | 0.000 | 0.000 | 1.470 | 2.459 | 28.293 |
| % max pumping | % | | 19 | 89 | 89 | 89 | 89 | 55 | | | | 27 | 46 | |
| Average kwh/af | | | 149 | 151 | 154 | 158 | 163 | 168 | | | | 147 | 149 | |

| Marys Lake Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel Flow | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 25.3 | 9.8 | 14.2 | 14.1 | 17.4 | |
| Max generation | gwh | 6.060 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 5.840 | 6.060 | 5.840 | 6.060 | 6.060 | 5.840 | 62.260 |
| Generation | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.530 | 1.660 | 2.520 | 2.510 | 3.080 | 39.400 |
| % Max Generation | % | | | 100 | 100 | 100 | 100 | 79 | 75 | 28 | 42 | 41 | 53 | |
| Ave kwh/af | | | | 176 | 179 | 177 | 179 | 177 | 179 | 169 | 177 | 178 | 177 | |

| Lake Estes Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel Flow | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 25.3 | 9.8 | 14.2 | 14.1 | 17.4 | |
| Max generation | gwh | 9.980 | 9.660 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 9.660 | 14.920 | 14.920 | 14.450 | 132.270 |
| Generation | gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 4.300 | 6.600 | 6.550 | 7.960 | 86.510 |
| % Max Generation | % | | 25 | 100 | 100 | 100 | 100 | 100 | 100 | 45 | 44 | 44 | 55 | |
| Ave kwh/af | | | 417 | 440 | 440 | 444 | 440 | 441 | 440 | 439 | 465 | 465 | 457 | |

| Pole Hill Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Olympus Tunnel flow | kaf | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 27.0 | 31.7 | 32.5 | 26.6 | 14.9 | 18.0 | 286.4 |
| Max generation | gwh | 25.260 | 0.000 | 12.910 | 25.260 | 22.800 | 25.260 | 24.460 | 25.260 | 24.460 | 25.260 | 25.260 | 24.460 | 260.650 |
| Generation | gwh | 0.000 | 3.860 | 23.690 | 25.050 | 11.540 | 12.910 | 20.040 | 23.550 | 24.140 | 19.720 | 11.090 | 12.460 | 188.050 |



| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % Max Generation | % | | 184 | 99 | 51 | 51 | 82 | 93 | 99 | 78 | 44 | 51 | |
| Ave kwh/af | | | 1402 | 743 | 378 | 382 | 742 | 743 | 743 | 741 | 744 | 692 | |

| Flatiron 1&2 Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow to Flatiron | kaf | 0.0 | 5.8 | 31.7 | 33.5 | 30.3 | 33.6 | 26.8 | 31.5 | 32.3 | 26.4 | 14.7 | 17.8 | 284.4 |
| Max generation | gwh | 15.100 | 28.130 | 29.040 | 29.040 | 13.640 | 15.100 | 28.130 | 29.040 | 28.130 | 29.040 | 15.100 | 14.600 | 274.090 |
| Generation | gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.480 | 27.100 | 27.770 | 23.240 | 13.130 | 14.600 | 218.660 |
| % Max Generation | % | | 16 | 94 | 99 | 100 | 100 | 83 | 93 | 99 | 80 | 87 | 100 | |
| Ave kwh/af | | | 783 | 860 | 860 | 892 | 893 | 876 | 860 | 860 | 880 | 893 | 890 | |

| Flatiron 3 Pump/Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum pumping | kaf | 24.5 | 24.7 | 25.0 | 23.0 | 18.5 | 18.5 | 16.3 | 16.5 | 16.8 | 19.0 | 21.4 | 22.4 | 246.6 |
| Pump from Flatiron | kaf | 0.0 | 0.0 | 11.7 | 22.4 | 18.1 | 18.1 | 16.3 | 1.1 | 0.0 | 0.0 | 0.0 | 7.2 | 94.9 |
| Pump energy | gwh | 0.000 | 0.000 | 3.077 | 6.294 | 5.629 | 6.190 | 6.064 | 0.418 | 0.000 | 0.000 | 0.000 | 2.009 | 29.681 |
| % max pumping | % | | | 47 | 97 | 98 | 98 | 100 | 7 | | | | 32 | |
| Average kwh/af | | | | 263 | 281 | 311 | 342 | 372 | 380 | | | | 279 | |
| | | | | | | | | | | | | | | |
| Max turbine rels | kaf | 22.0 | 20.5 | 21.6 | 22.9 | 21.9 | 25.2 | 25.3 | 26.4 | 25.0 | 25.0 | 23.8 | 22.0 | 281.6 |
| Carter to Flatiron | kaf | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| Maximum generation | gwh | 3.938 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 3.938 |
| Actual generation | gwh | 1.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 |
| % max generation | % | 27 | | | | | | | | | | | | |
| Average kwh/af | | 179 | | | | | | | | | | | | |

| Big Thompson Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total release | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | 18.2 | 23.9 | 24.0 | 10.8 | 9.3 | 96.7 |
| Turbine release | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 | 18.2 | 23.9 | 24.0 | 10.8 | 9.3 | 96.7 |
| 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 |
| Max generation | gwh | 3.940 | 1.700 | 0.000 | 0.000 | 0.000 | 0.000 | 1.700 | 3.940 | 3.800 | 3.940 | 3.940 | 3.800 | 26.760 |
| Generation | gwh | 0.500 | 0.189 | 0.000 | 0.000 | 0.000 | 0.000 | 0.360 | 2.800 | 3.800 | 3.800 | 1.460 | 1.160 | 14.069 |
| % Max Generation | % | 13 | 11 | | | | | 21 | 71 | 100 | 96 | 37 | 31 | |
| Ave kwh/af | | 111 | 86 | | | | | 95 | 154 | 159 | 158 | 135 | 125 | |

PROJECT GENERATION AND PUMPING SUMMARY

| Project Generation | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Generation: | | | | | | | | | | | | | | |
| Big Thompson | gwh | 0.500 | 0.189 | 0.000 | 0.000 | 0.000 | 0.000 | 0.360 | 2.800 | 3.800 | 3.800 | 1.460 | 1.160 | 14.069 |
| Green Mtn | gwh | 4.495 | 3.760 | 3.636 | 2.553 | 2.044 | 2.247 | 1.009 | 1.184 | 5.858 | 8.837 | 8.468 | 6.281 | 50.372 |
| Flatiron 3 | gwh | 1.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 |
| Total | gwh | 6.051 | 3.949 | 3.636 | 2.553 | 2.044 | 2.247 | 1.369 | 3.984 | 9.658 | 12.637 | 9.928 | 7.441 | 65.497 |
| | | | | | | | | | | | | | | |
| Load Following Generation: | | | | | | | | | | | | | | |
| Marys Lake | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.530 | 1.660 | 2.520 | 2.510 | 3.080 | 39.400 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lake Estes | | gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 4.300 | 6.600 | 6.550 | 7.960 | 86.510 |
| Pole Hill | | gwh | 0.000 | 3.860 | 23.690 | 25.050 | 11.540 | 12.910 | 20.040 | 23.550 | 24.140 | 19.720 | 11.090 | 12.460 | 188.050 |
| Flatiron 1,2 | | gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.480 | 27.100 | 27.770 | 23.240 | 13.130 | 14.600 | 218.660 |



| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | | gwh | 0.000 | 10.820 | 63.910 | 69.890 | 39.680 | 44.050 | 57.780 | 65.160 | 57.870 | 52.080 | 33.280 | 38.100 | 532.620 |
| Total generation | | gwh | 6.051 | 14.769 | 67.546 | 72.443 | 41.724 | 46.297 | 59.149 | 69.144 | 67.528 | 64.717 | 43.208 | 45.541 | 598.117 |
| Total max generation | | gwh | 82.878 | 57.490 | 73.510 | 88.940 | 59.340 | 65.700 | 87.790 | 92.880 | 89.890 | 97.820 | 83.880 | 81.150 | 961.268 |

| Project Pump Energy 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Granby | gwh | 0.000 | 1.028 | 4.983 | 5.036 | 4.677 | 5.330 | 3.310 | 0.000 | 0.000 | 0.000 | 1.470 | 2.459 | 28.293 |
| Willow Creek | gwh | 0.320 | 0.320 | 0.000 | 0.000 | 0.000 | 0.000 | 1.086 | 3.983 | 2.982 | 0.660 | 0.213 | 0.192 | 9.756 |
| Flatiron 3 | gwh | 0.000 | 0.000 | 3.077 | 6.294 | 5.629 | 6.190 | 6.064 | 0.418 | 0.000 | 0.000 | 0.000 | 2.009 | 29.681 |
| Total pump energy | gwh | 0.320 | 1.348 | 8.060 | 11.330 | 10.306 | 11.520 | 10.460 | 4.401 | 2.982 | 0.660 | 1.683 | 4.660 | 67.730 |
| Total net generation | gwh | 5.731 | 13.421 | 59.486 | 61.113 | 31.418 | 34.777 | 48.689 | 64.743 | 64.546 | 64.057 | 41.525 | 40.881 | 530.387 |

| Release Flexibility 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel | Min kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 25.3 | 9.8 | 14.2 | 14.1 | 17.4 | |
| Adams Tunnel | Max kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 25.3 | 9.8 | 14.2 | 14.1 | 17.4 | |
| Marys Lake | Min gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.530 | 1.660 | 2.520 | 2.510 | 3.080 | |
| Marys Lake | Max gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.530 | 1.660 | 2.520 | 2.510 | 3.080 | |
| Lake Estes | Min gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 4.300 | 6.600 | 6.550 | 7.960 | |
| Lake Estes | Max gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 4.300 | 6.600 | 6.550 | 7.960 | |
| Olympus Tunnel | Min kaf | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 27.0 | 31.7 | 32.5 | 26.6 | 14.9 | 18.0 | |
| Olympus Tunnel | Max kaf | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 27.0 | 31.7 | 32.5 | 26.6 | 14.9 | 18.0 | |
| Pole Hill | Min gwh | 0.000 | 0.000 | 12.910 | 25.190 | 22.800 | 25.260 | 20.200 | 23.690 | 24.300 | 19.880 | 11.230 | 13.800 | |
| Pole Hill | Max gwh | 0.000 | 0.000 | 12.910 | 25.190 | 22.800 | 25.260 | 20.200 | 23.690 | 24.300 | 19.880 | 11.230 | 13.800 | |
| Flatiron 1&2 | Min gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.480 | 27.100 | 27.770 | 23.240 | 13.130 | 14.600 | |
| Flatiron 1&2 | Max gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.480 | 27.100 | 27.770 | 23.240 | 13.130 | 14.600 | |
| Load following | Min gwh | 0.000 | 6.960 | 53.130 | 70.030 | 50.940 | 56.400 | 57.940 | 65.300 | 58.030 | 52.240 | 33.420 | 39.440 | |
| Load following | Max gwh | 0.000 | 6.960 | 53.130 | 70.030 | 50.940 | 56.400 | 57.940 | 65.300 | 58.030 | 52.240 | 33.420 | 39.440 | |
| Total project | Min gwh | 6.051 | 10.909 | 56.766 | 72.583 | 52.984 | 58.647 | 59.309 | 69.284 | 67.688 | 64.877 | 43.348 | 46.881 | |
| Total project | Max gwh | 6.051 | 10.909 | 56.766 | 72.583 | 52.984 | 58.647 | 59.309 | 69.284 | 67.688 | 64.877 | 43.348 | 46.881 | |

GENERATION CAPACITY AND DURATION

| Project Generation 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Generation: | | | | | | | | | | | | | | |
| Green Mtn | mw | 6.0 | 5.2 | 4.9 | 3.4 | 3.0 | 3.0 | 1.4 | 1.6 | 8.1 | 11.9 | 11.4 | 8.7 | |
| Flatiron 3 | mw | 1.4 | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Big Thompson | mw | 0.7 | 0.3 | | | | | 0.5 | 3.8 | 5.3 | 5.1 | 2.0 | 1.6 |
| Total base load | mw | 8.1 | 5.5 | 4.9 | 3.4 | 3.0 | 3.0 | 1.9 | 5.4 | 13.4 | 17.0 | 13.4 | 10.3 |



| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Following Generation: | | | | | | | | | | | | | |
| Marys Lake | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 2.7 | 8.1 | 1.4 | 8.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 1.0 | 12.0 | 1.6 | 12.0 | 4.3 | 4.8 | 11.4 | 10.9 | 10.9 | 10.6 |
| Max Capacity | mw | 0.0 | 2.7 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 4.7 | 6.7 | 6.7 | 8.1 |
| Duration | hr/d | 12.0 | 11.6 | 23.0 | 12.0 | 22.0 | 12.0 | 18.7 | 18.2 | 11.6 | 12.1 | 12.1 | 12.4 |
| Lake Estes | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 11.0 | 11.0 | 12.4 | 11.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| Max Capacity | mw | 0.0 | 7.0 | 45.0 | 45.0 | 40.1 | 45.0 | 32.4 | 31.4 | 12.4 | 17.0 | 16.8 | 21.3 |
| Duration | hr/d | 12.0 | 11.6 | 10.0 | 10.0 | 11.7 | 10.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| Pole Hill | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 34.0 | 0.0 | 34.0 | 0.0 | 0.0 | 34.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 0.6 | 12.0 | 1.8 | 12.0 | 4.2 | 0.7 | 12.0 | 4.5 | 12.0 | 10.8 |
| Max Capacity | mw | 0.0 | 11.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 31.8 | 34.0 |
| Duration | hr/d | 12.0 | 11.6 | 23.4 | 12.0 | 22.4 | 12.0 | 19.8 | 23.3 | 12.0 | 19.5 | 12.0 | 13.2 |
| Flatiron 1&2 | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 10.3 | 8.9 | 11.5 | 8.8 | 12.0 | 10.6 | 9.7 | 12.0 | 12.0 | 11.8 |
| Max Capacity | mw | 0.0 | 13.0 | 83.4 | 86.0 | 79.2 | 86.0 | 66.4 | 83.0 | 84.6 | 65.2 | 36.4 | 43.8 |
| Duration | hr/d | 12.0 | 11.6 | 10.3 | 10.0 | 11.4 | 10.0 | 12.0 | 10.5 | 10.1 | 12.0 | 12.0 | 12.2 |
| Total Load Following | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 2.7 | 42.1 | 1.4 | 42.1 | 0.0 | 0.0 | 34.0 | 0.0 | 0.0 | 0.0 |
| Max Capacity | mw | 0.0 | 33.7 | 170.5 | 173.1 | 161.4 | 173.1 | 140.9 | 156.5 | 135.7 | 122.9 | 91.7 | 107.2 |
| Total Project Capacity | | | | | | | | | | | | | |
| Min Capacity | mw | 8.1 | 5.5 | 7.6 | 45.5 | 4.4 | 45.1 | 1.9 | 5.4 | 47.4 | 17.0 | 13.4 | 10.3 |
| Max Capacity | mw | 8.1 | 39.2 | 175.4 | 176.5 | 164.4 | 176.1 | 142.8 | 161.9 | 149.1 | 139.9 | 105.1 | 117.5 |

CBTAOP V2.06 Run: 05-Nov-2013 16:40
Minimum Reasonable Plan (80-Percent Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir — Initial Cont 107.1 kaf, Elev 7925.35 ft; Maximum Cont 154.6 kaf, Elev 7950.38 ft; Minimum Cont 8.0 kaf, Elev 7804.68 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dillon Inflow | kaf | 6.4 | 4.9 | 4.1 | 4.0 | 3.5 | 4.4 | 7.8 | 26.7 | 34.0 | 14.1 | 8.6 | 6.7 | 125.2 |
| Dillon-Grn Mtn Gain | kaf | 6.7 | 4.8 | 3.9 | 3.7 | 3.2 | 4.2 | 8.5 | 19.9 | 24.4 | 12.4 | 9.1 | 7.1 | 107.9 |
| Undepleted Inflow | kaf | 13.1 | 9.7 | 8.0 | 7.7 | 6.7 | 8.6 | 16.3 | 46.6 | 58.4 | 26.5 | 17.7 | 13.8 | 233.1 |
| Depletion | kaf | -6.5 | -6.2 | -2.0 | 0.0 | 0.0 | 1.0 | 4.8 | 23.5 | 31.0 | 10.0 | 5.0 | 0.0 | 60.6 |
| Depleted Inflow | kaf | 19.6 | 15.9 | 10.0 | 7.7 | 6.7 | 7.6 | 11.5 | 23.1 | 27.4 | 16.5 | 12.7 | 13.8 | 172.5 |
| Turbine Release | kaf | 23.8 | 20.2 | 20.0 | 14.5 | 11.9 | 13.4 | 3.6 | 3.7 | 7.4 | 27.7 | 27.7 | 26.8 | 200.7 |
| 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 | kaf | 23.8 | 20.2 | 20.0 | 14.5 | 11.9 | 13.4 | 3.6 | 3.7 | 7.4 | 27.7 | 27.7 | 26.8 | 200.7 |
| Min Release | cfs | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 125 | 450 | 450 | 450 | |
| Total River Release | cfs | 387 | 339 | 325 | 236 | 214 | 218 | 61 | 60 | 124 | 450 | 450 | 450 | |
| Evaporation | kaf | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.5 | 0.7 | 0.7 | 0.5 | 0.4 | 3.9 |
| End-Month Targets | kaf | 102.5 | 98.0 | 88.0 | 81.2 | 76.0 | 70.0 | 90.0 | 110.0 | 150.0 | 145.0 | 120.0 | 105.0 | |
| End-Month Content | kaf | 102.5 | 98.0 | 88.0 | 81.2 | 76.0 | 70.0 | 77.6 | 96.5 | 115.8 | 103.9 | 88.4 | 75.0 | |
| End-Month Elevation | ft | 7922.53 | 7919.66 | 7912.92 | 7908.01 | 7904.05 | 7899.24 | 7905.29 | 7918.69 | 7930.44 | 7923.40 | 7913.20 | 7903.27 | |

Willow Crk Reservoir — Initial Cont 9.3 kaf, Elev 8125.63 ft; Maximum Cont 10.0 kaf, Elev 8128.14 ft; Minimum Cont 7.2 kaf, Elev 8116.90 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native Inflow | kaf | 1.0 | 0.8 | 0.8 | 0.8 | 0.7 | 1.0 | 3.7 | 11.7 | 6.8 | 2.6 | 1.0 | 0.8 | 31.7 |
| Min Release | kaf | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 1.5 | 2.6 | 2.2 | 0.5 | 0.4 | 10.0 |
| 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 | 1.5 | 2.6 | 2.2 | 0.5 | 0.4 | 10.0 |
| Pumped to Granby | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 8.3 | 3.1 | 1.3 | 0.4 | 0.3 | 21.3 |
| 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 | | 7.2 | | | | | 7.2 | 9.0 | 10.0 | 9.0 | | 9.0 | |
| End-Month Content | kaf | 8.3 | 7.2 | 7.6 | 8.0 | 8.3 | 8.9 | 7.2 | 9.0 | 10.0 | 9.0 | 9.0 | 9.0 | |
| End-Month Elevation | ft | 8121.73 | 8116.90 | 8118.74 | 8120.48 | 8121.73 | 8124.12 | 8116.90 | 8124.50 | 8128.14 | 8124.50 | 8124.50 | 8124.50 | |

Lake Granby — Initial Cont 371.0 kaf, Elev 8254.70 ft; Maximum Cont 539.8 kaf, Elev 8280.01 ft; Minimum Cont 76.5 kaf, Elev 8186.91 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native inflow | kaf | 1.9 | 1.2 | 1.2 | 1.6 | 1.3 | 1.7 | 6.1 | 16.9 | 20.4 | 7.7 | 2.4 | 1.7 | 64.1 |
| Rels frm Shadow Mtn | kaf | 2.4 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 16.1 | 3.1 | 2.5 | 2.1 | 37.6 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pump frm Windy Gap | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 |
| Pump frm Willow Crk | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 8.3 | 3.1 | 1.3 | 0.4 | 0.3 | 21.3 |
| Total Inflow | kaf | 5.8 | 5.4 | 4.0 | 2.8 | 2.4 | 2.9 | 12.2 | 31.4 | 39.6 | 12.1 | 5.3 | 4.1 | 128.0 |
| | | | | | | | | | | | | | | |
| Min River Release | kaf | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.2 | 1.2 | 3.5 | 4.5 | 5.3 | 5.0 | 4.5 | 31.1 |
| 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 | 3.5 | 4.5 | 5.3 | 5.0 | 4.5 | 31.1 |
| | | | | | | | | | | | | | | |
| Pumped to Shadow Mtn | kaf | 0.0 | 6.9 | 33.0 | 32.7 | 29.6 | 32.7 | 18.5 | 3.2 | 0.0 | 17.7 | 12.7 | 10.1 | 197.1 |
| Evaporation | kaf | 1.4 | 0.6 | 0.2 | 0.0 | 0.0 | 0.7 | 1.1 | 1.8 | 2.3 | 2.2 | 1.7 | 1.5 | 13.5 |
| Seepage loss | kaf | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 3.4 |
| End-Month Content | kaf | 373.9 | 370.3 | 339.6 | 308.2 | 279.7 | 247.7 | 238.9 | 261.5 | 294.0 | 280.6 | 266.2 | 253.9 | |
| End-Month Elevation | ft | 8255.18 | 8254.58 | 8249.39 | 8243.85 | 8238.58 | 8232.30 | 8230.49 | 8235.06 | 8241.26 | 8238.75 | 8235.98 | 8233.55 | |

| Shadow Mtn | | Initial Cont | | 17.6 kaf | | Maximum Cont | | 18.4 kaf | | Minimum Cont | | 16.6 kaf | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Elev | 8366.57 ft | | | Elev | 8367.00 ft | | | Elev | 8366.02 ft | | |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Native inflow | kaf | 2.9 | 1.8 | 1.9 | 2.3 | 2.0 | 2.6 | 9.1 | 25.3 | 30.5 | 11.5 | 3.7 | 2.5 | 96.1 |
| Pumped from Granby | kaf | 0.0 | 6.9 | 33.0 | 32.7 | 29.6 | 32.7 | 18.5 | 3.2 | 0.0 | 17.7 | 12.7 | 10.1 | 197.1 |
| Total Inflow | kaf | 2.9 | 8.7 | 34.9 | 35.0 | 31.6 | 35.3 | 27.6 | 28.5 | 30.5 | 29.2 | 16.4 | 12.6 | 293.2 |
| | | | | | | | | | | | | | | |
| Min River Release | kaf | 2.2 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 3.0 | 3.1 | 2.5 | 2.1 | 24.3 |
| Spill/Bypass | kaf | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 13.3 |
| Total River Release | kaf | 2.4 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 16.1 | 3.1 | 2.5 | 2.1 | 37.6 |
| | | | | | | | | | | | | | | |
| Adams Tunnel Flow | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 26.6 | 13.6 | 25.4 | 13.3 | 10.0 | 250.9 |
| Evaporation | kaf | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.3 | 0.4 | 0.7 | 0.8 | 0.7 | 0.6 | 0.5 | 4.7 |
| End-Month Content | kaf | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | |
| End-Month Elevation | ft | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | |

| Adams Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Tunnel Capacity | kaf | 0.1 | 32.7 | 33.8 | 33.8 | 30.5 | 33.8 | 32.7 | 33.8 | 32.7 | 33.8 | 33.8 | 32.7 | 364.2 |
| Actual delivery | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 26.6 | 13.6 | 25.4 | 13.3 | 10.0 | 250.9 |
| % max delivery | % | 100 | 18 | 95 | 100 | 100 | 100 | 80 | 79 | 42 | 75 | 39 | 31 | |

| Big T @ Lake Estes | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Big Thompson inflow | kaf | 2.2 | 1.4 | 1.3 | 1.2 | 1.0 | 1.2 | 2.8 | 12.8 | 18.5 | 10.8 | 5.5 | 3.1 | 61.8 |
| Min river release | kaf | 3.1 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | 2.2 | 6.9 | 7.4 | 7.7 | 6.9 | 3.7 | 45.3 |
| Act river release | kaf | 2.2 | 1.4 | 1.3 | 1.2 | 1.0 | 1.2 | 2.2 | 6.9 | 7.4 | 7.7 | 5.5 | 3.1 | 41.1 |
| Max div available | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 5.9 | 11.1 | 3.1 | 0.0 | 0.0 | 20.7 |
| Priority water div | 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 | 0.6 | 5.9 | 11.1 | 3.1 | 0.0 | 0.0 | 20.7 |
| % max diverted | % | | | | | | | 100 | 100 | 100 | 100 | | | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| Irrigation delivery | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| Total river release | kaf | 2.3 | 1.4 | 1.4 | 1.3 | 1.0 | 1.2 | 2.3 | 7.0 | 7.5 | 7.8 | 5.6 | 3.2 | 42.0 |

| Olympus Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max 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 | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 26.5 | 32.4 | 24.6 | 28.4 | 13.2 | 9.9 | 270.7 |
| % max delivery | % | 0 | 18 | 94 | 100 | 100 | 100 | 81 | 96 | 75 | 84 | 39 | 30 | |
| | | | | | | | | | | | | | | |
| Seepage and Evap | kaf | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 2.0 |
| Inflow to Flatiron | kaf | 0.0 | 5.8 | 31.7 | 33.5 | 30.3 | 33.6 | 26.3 | 32.2 | 24.4 | 28.2 | 13.0 | 9.7 | 268.7 |
| | | | | | | | | | | | | | | |
| Carter Lake | | Initial Cont | | 49.9 kaf | | | Maximum Cont | | 112.2 kaf | | | Minimum Cont | | 6.0 kaf |
| | | | Elev | 5697.35 ft | | | | Elev | 5758.98 ft | | | | Elev | 5626.80 ft |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Pump from Flatiron | kaf | 0.0 | 0.0 | 11.7 | 22.4 | 18.1 | 18.2 | 16.3 | 1.1 | 0.0 | 10.5 | 4.3 | 0.0 | 102.6 |
| Carter to Flatiron | kaf | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| | | | | | | | | | | | | | | |
| Evaporation loss | kaf | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.2 | 2.1 |
| Seepage loss | kaf | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 1.7 |
| End-Month Targets | kaf | 36.9 | 33.6 | 44.2 | 64.6 | 80.6 | 96.0 | 107.5 | 100.5 | 89.9 | 82.2 | 65.3 | 49.0 | |
| End-Month Content | kaf | 37.4 | 34.9 | 44.2 | 64.0 | 79.5 | 94.7 | 106.2 | 100.5 | 90.0 | 82.2 | 65.3 | 49.3 | |
| End-Month Elevation | ft | 5682.08 | 5678.81 | 5690.58 | 5712.97 | 5728.74 | 5743.23 | 5753.68 | 5748.55 | 5738.84 | 5731.37 | 5714.34 | 5696.65 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 6.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.7 | 4.4 | 6.4 | 8.0 | 15.5 | 18.7 | 13.6 | 85.1 |
| Metered delivery | 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 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.2 | 2.1 | 2.1 | 8.4 |
| Total demand | kaf | 6.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.7 | 4.4 | 6.4 | 10.0 | 17.7 | 20.8 | 15.7 | 93.5 |
| Total delivery | kaf | 6.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.7 | 4.4 | 6.4 | 10.0 | 17.7 | 20.8 | 15.7 | 93.5 |
| % 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 |
| | | | | | | | | | | | | | | |
| Hansen Canal 930 | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 | 27.7 | 57.2 | 55.3 | 57.2 | 57.2 | 55.3 | 645.6 |
| Actual flow | kaf | 5.9 | 5.8 | 20.0 | 11.1 | 12.2 | 15.4 | 10.0 | 31.1 | 24.4 | 17.7 | 8.7 | 9.7 | 172.0 |
| | | | | | | | | | | | | | | |
| Dille Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Big T @ Canyon Mouth | kaf | 3.2 | 2.2 | 1.8 | 1.7 | 1.4 | 2.0 | 3.6 | 15.6 | 22.5 | 13.4 | 7.0 | 4.0 | 78.4 |
| Less Estes skim | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 5.9 | 11.1 | 3.1 | 0.0 | 0.0 | 20.7 |
| Big T irr (Estes) | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| Handy Ditch release | kaf | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 1.2 | 1.2 | 1.8 | 2.9 | 1.7 | 11.2 |
| Water available | kaf | 2.1 | 2.2 | 1.9 | 1.8 | 1.4 | 2.0 | 1.9 | 8.6 | 10.3 | 8.6 | 4.2 | 2.4 | 47.4 |
| Water diverted | kaf | 2.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 8.6 | 10.3 | 8.6 | 4.2 | 2.4 | 40.3 |
| % diverted | % | 100 | 100 | | | | | 100 | 100 | 100 | 100 | 100 | 100 | |
| | | | | | | | | | | | | | | |
| Trifurcation Works | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Rels from Flatiron | kaf | 5.9 | 5.8 | 20.0 | 11.1 | 12.2 | 15.4 | 10.0 | 31.1 | 24.4 | 17.7 | 8.7 | 9.7 | 172.0 |
| Rels to 550 Canal | kaf | 3.5 | 5.8 | 20.0 | 11.1 | 12.2 | 15.4 | 9.3 | 24.3 | 12.8 | 12.8 | 4.6 | 3.7 | 135.5 |
| | | | | | | | | | | | | | | |
| Big T irrigation | kaf | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 0.5 | 1.8 | 4.1 | 6.0 | 15.8 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dille Tunnel | kaf | 2.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 8.6 | 10.3 | 8.6 | 4.2 | 2.4 | 40.3 |
| Tot rels to river | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 15.4 | 21.9 | 13.5 | 8.3 | 8.4 | 76.8 |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 0.5 | 1.8 | 4.1 | 6.0 | 15.8 |
| Big T irr (Estes) | kaf | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 |
| 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 | 0.0 | 0.0 |
| Total requirement | kaf | 2.5 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 1.0 | 0.6 | 1.9 | 4.2 | 6.1 | 16.7 |
| Total delivery | kaf | 2.5 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.2 | 1.0 | 0.6 | 1.9 | 4.2 | 6.1 | 16.7 |
| % required delivery | % | 100 | 0 | 100 | 100 | 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 |
| | | | | | | | | | | | | | | |
| Hansen Canal 550 | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Inflow from Flatiron | kaf | 3.5 | 5.8 | 20.0 | 11.1 | 12.2 | 15.4 | 9.3 | 24.3 | 12.8 | 12.8 | 4.6 | 3.7 | 135.5 |
| Maximum 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 |
| Seepage loss | kaf | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 2.4 |
| Irrigation demand | kaf | 0.8 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.7 | 0.5 | 1.1 | 1.0 | 1.1 | 7.7 |
| Irrigation delivery | kaf | 0.8 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.7 | 0.5 | 1.1 | 1.0 | 1.1 | 7.7 |
| Minimum flow | kaf | 2.5 | 2.4 | 6.1 | 6.1 | 5.6 | 6.1 | 2.4 | 2.5 | 2.4 | 2.5 | 2.5 | 2.4 | 43.5 |
| Rels to Horsetooth | kaf | 2.5 | 5.2 | 19.4 | 10.5 | 11.6 | 14.8 | 8.6 | 23.4 | 12.1 | 11.5 | 3.4 | 2.4 | 125.4 |
| | | | | | | | | | | | | | | |
| Horsetooth Reservoir | | Initial Cont | | 94.5 kaf | | Maximum Cont | | 152.0 kaf | | Minimum Cont | | 13.0 kaf | | |
| | | | Elev | 5395.36 ft | | | Elev | 5427.66 ft | | | Elev | 5316.81 ft | | |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Inflow | kaf | 2.5 | 5.2 | 19.4 | 10.5 | 11.6 | 14.8 | 8.6 | 23.4 | 12.1 | 11.5 | 3.4 | 2.4 | 125.4 |
| Priority water div | 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 irr delivery | kaf | 14.7 | 1.8 | 2.1 | 2.3 | 2.1 | 2.2 | 3.8 | 9.1 | 11.3 | 24.0 | 25.2 | 12.1 | 110.7 |
| | | | | | | | | | | | | | | |
| Evaporation loss | kaf | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.6 | 0.7 | 0.6 | 0.4 | 3.6 |
| Seepage loss | kaf | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 1.7 |
| End-Month Targets | kaf | 82.3 | 85.2 | 102.3 | 110.3 | 119.6 | 132.0 | 136.2 | 150.0 | 150.0 | 136.6 | 114.1 | 102.0 | |
| End-Month Content | kaf | 82.0 | 85.2 | 102.3 | 110.2 | 119.5 | 131.9 | 136.2 | 150.0 | 150.0 | 136.6 | 114.1 | 103.9 | |
| End-Month Elevation | ft | 5387.09 | 5389.26 | 5400.24 | 5405.00 | 5410.38 | 5417.24 | 5419.54 | 5426.66 | 5426.66 | 5419.75 | 5407.28 | 5401.22 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 13.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 3.5 | 3.2 | 13.0 | 15.9 | 5.9 | 55.3 |
| Metered delivery | kaf | 1.6 | 1.8 | 2.1 | 2.3 | 2.1 | 2.2 | 3.1 | 5.6 | 6.0 | 9.5 | 7.8 | 5.1 | 49.2 |
| Windy Gap demand | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 1.5 | 1.5 | 1.1 | 6.2 |
| Total demand | kaf | 14.7 | 1.8 | 2.1 | 2.3 | 2.1 | 2.2 | 3.8 | 9.1 | 11.3 | 24.0 | 25.2 | 12.1 | 110.7 |
| Total irr delivery | kaf | 14.7 | 1.8 | 2.1 | 2.3 | 2.1 | 2.2 | 3.8 | 9.1 | 11.3 | 24.0 | 25.2 | 12.1 | 110.7 |
| % 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 |
| | | | | | | | | | | | | | | |
| Total CBT Delivery | kaf | 24.4 | 4.5 | 4.9 | 5.2 | 4.9 | 5.3 | 8.9 | 17.2 | 18.3 | 41.0 | 47.6 | 31.8 | 214.0 |
| | | | | | | | | | | | | | | |
| Windy Gap Ownership | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Accrual | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 |
| Total release | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.1 | 3.7 | 3.6 | 3.2 | 14.6 |
| Spill | 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 |
| End-month Ownership | kaf | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 28.8 | 24.7 | 21.0 | 17.4 | 14.2 | |

PUMPING AND GENERATION OPERATIONS

| Green Mtn Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Generation | gwh | 18.600 | 18.000 | 18.600 | 18.600 | 8.400 | 9.300 | 18.000 | 18.600 | 18.000 | 18.600 | 18.600 | 18.000 | 201.300 |
| Generation | gwh | 4.495 | 3.760 | 3.636 | 2.553 | 2.044 | 2.247 | 0.606 | 0.658 | 1.404 | 5.316 | 5.088 | 4.663 | 36.470 |
| % Max Generation | % | 24 | 21 | 20 | 14 | 24 | 24 | 3 | 4 | 8 | 29 | 27 | 26 | |
| Ave kwh/af | | 189 | 186 | 182 | 176 | 172 | 168 | 168 | 178 | 190 | 192 | 184 | 174 | |

| Willow Crk Pumping | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum pumping | kaf | 27.7 | 26.8 | 0.0 | 0.0 | 0.0 | 0.0 | 26.8 | 27.7 | 26.8 | 27.7 | 27.7 | 26.8 | 218.0 |
| Actual pumping | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 8.3 | 3.1 | 1.3 | 0.4 | 0.3 | 21.3 |
| Pump energy | gwh | 0.320 | 0.320 | 0.000 | 0.000 | 0.000 | 0.000 | 1.044 | 1.768 | 0.660 | 0.277 | 0.085 | 0.064 | 4.538 |
| % max pumping | % | 5 | 6 | | | | | 18 | 30 | 12 | 5 | 1 | 1 | |
| Average kwh/af | | 213 | 213 | | | | | 213 | 213 | 213 | 213 | 213 | 213 | |

| Lake Granby Pumping | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 | 0.0 | 6.9 | 33.0 | 32.7 | 29.6 | 32.7 | 18.5 | 3.2 | 0.0 | 17.7 | 12.7 | 10.1 | 197.1 |
| Pump energy | gwh | 0.000 | 1.028 | 4.983 | 5.036 | 4.677 | 5.330 | 3.108 | 0.534 | 0.000 | 2.814 | 2.045 | 1.656 | 31.211 |
| % max pumping | % | | 19 | 89 | 89 | 89 | 89 | 52 | 9 | | 48 | 34 | 28 | |
| Average kwh/af | | | 149 | 151 | 154 | 158 | 163 | 168 | 167 | | 159 | 161 | 164 | |

| Marys Lake Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel Flow | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 26.6 | 13.6 | 25.4 | 13.3 | 10.0 | |
| Max generation | gwh | 6.060 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 5.840 | 6.060 | 5.840 | 6.060 | 6.060 | 5.840 | 62.260 |
| Generation | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.720 | 2.420 | 4.540 | 2.360 | 1.700 | 40.840 |
| % Max Generation | % | | | 100 | 100 | 100 | 100 | 79 | 78 | 41 | 75 | 39 | 29 | |
| Ave kwh/af | | | | 176 | 179 | 177 | 179 | 177 | 177 | 178 | 179 | 177 | 170 | |

| Lake Estes Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel Flow | kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 26.6 | 13.6 | 25.4 | 13.3 | 10.0 | |
| Max generation | gwh | 9.980 | 9.660 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 9.660 | 14.920 | 14.920 | 14.450 | 132.270 |
| Generation | gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 6.300 | 11.200 | 6.150 | 4.400 | 89.150 |
| % Max Generation | % | | 25 | 100 | 100 | 100 | 100 | 100 | 100 | 65 | 75 | 41 | 30 | |
| Ave kwh/af | | | 417 | 440 | 440 | 444 | 440 | 441 | 440 | 463 | 441 | 462 | 440 | |

| Pole Hill Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Olympus Tunnel flow | kaf | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 26.5 | 32.4 | 24.6 | 28.4 | 13.2 | 9.9 | 270.7 |
| Max generation | gwh | 25.260 | 0.000 | 12.910 | 25.260 | 22.800 | 25.260 | 24.460 | 25.260 | 24.460 | 25.260 | 25.260 | 24.460 | 260.650 |
| Generation | gwh | 0.000 | 3.860 | 23.690 | 25.050 | 11.540 | 12.910 | 19.640 | 24.060 | 18.280 | 21.060 | 9.800 | 6.590 | 176.480 |
| % Max Generation | % | | | 184 | 99 | 51 | 51 | 80 | 95 | 75 | 83 | 39 | 27 | |
| Ave kwh/af | | | | 1402 | 743 | 378 | 382 | 741 | 743 | 743 | 742 | 742 | 666 | |

| Flatiron 1&2 Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow to Flatiron | kaf | 0.0 | 5.8 | 31.7 | 33.5 | 30.3 | 33.6 | 26.3 | 32.2 | 24.4 | 28.2 | 13.0 | 9.7 | 268.7 |
| Max generation | gwh | 15.100 | 28.130 | 29.040 | 29.040 | 13.640 | 15.100 | 28.130 | 29.040 | 28.130 | 29.040 | 15.100 | 14.600 | 274.090 |
| Generation | gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.180 | 27.680 | 21.860 | 24.360 | 11.600 | 8.030 | 206.050 |
| % Max Generation | % | | 16 | 94 | 99 | 100 | 100 | 82 | 95 | 78 | 84 | 77 | 55 | |
| Ave kwh/af | | | 783 | 860 | 860 | 892 | 893 | 881 | 860 | 896 | 864 | 892 | 828 | |

| Flatiron 3 Pump/Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum pumping | kaf | 24.5 | 24.7 | 25.0 | 23.0 | 18.6 | 18.6 | 16.4 | 16.6 | 17.0 | 18.7 | 20.3 | 21.8 | 245.2 |
| Pump from Flatiron | kaf | 0.0 | 0.0 | 11.7 | 22.4 | 18.1 | 18.2 | 16.3 | 1.1 | 0.0 | 10.5 | 4.3 | 0.0 | 102.6 |
| Pump energy | gwh | 0.000 | 0.000 | 3.077 | 6.294 | 5.611 | 6.206 | 6.047 | 0.416 | 0.000 | 3.560 | 1.350 | 0.000 | 32.561 |
| % max pumping | % | | | 47 | 97 | 97 | 98 | 99 | 7 | | 56 | 21 | | |
| Average kwh/af | | | | 263 | 281 | 310 | 341 | 371 | 378 | | 339 | 314 | | |
| | | | | | | | | | | | | | | |
| Max turbine rels | kaf | 22.0 | 20.5 | 21.6 | 22.9 | 21.9 | 25.2 | 25.3 | 26.3 | 24.9 | 25.2 | 24.4 | 22.4 | 282.6 |
| Carter to Flatiron | kaf | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| Maximum generation | gwh | 3.938 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 3.938 |
| Actual generation | gwh | 1.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 |
| % max generation | % | 27 | | | | | | | | | | | | |
| Average kwh/af | | 179 | | | | | | | | | | | | |

| Big Thompson Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total release | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 15.4 | 21.9 | 13.5 | 8.3 | 8.4 | 76.8 |
| Turbine release | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 2.6 | 15.4 | 21.9 | 13.5 | 8.3 | 8.4 | 76.8 |
| 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 |
| Max generation | gwh | 3.940 | 1.700 | 0.000 | 0.000 | 0.000 | 0.000 | 1.700 | 3.940 | 3.800 | 3.940 | 3.940 | 3.800 | 26.760 |
| Generation | gwh | 0.500 | 0.189 | 0.000 | 0.000 | 0.000 | 0.000 | 0.223 | 2.280 | 3.480 | 2.000 | 0.960 | 0.980 | 10.612 |
| % Max Generation | % | 13 | 11 | | | | | 13 | 58 | 92 | 51 | 24 | 26 | |
| Ave kwh/af | | 111 | 86 | | | | | 86 | 148 | 159 | 148 | 116 | 117 | |

PROJECT GENERATION AND PUMPING SUMMARY

| Project Generation | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Generation: | | | | | | | | | | | | | | |
| Big Thompson | gwh | 0.500 | 0.189 | 0.000 | 0.000 | 0.000 | 0.000 | 0.223 | 2.280 | 3.480 | 2.000 | 0.960 | 0.980 | 10.612 |
| Green Mtn | gwh | 4.495 | 3.760 | 3.636 | 2.553 | 2.044 | 2.247 | 0.606 | 0.658 | 1.404 | 5.316 | 5.088 | 4.663 | 36.470 |
| Flatiron 3 | gwh | 1.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 |
| Total | gwh | 6.051 | 3.949 | 3.636 | 2.553 | 2.044 | 2.247 | 0.829 | 2.938 | 4.884 | 7.316 | 6.048 | 5.643 | 48.138 |
| | | | | | | | | | | | | | | |
| Load Following Generation: | | | | | | | | | | | | | | |
| Marys Lake | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.720 | 2.420 | 4.540 | 2.360 | 1.700 | 40.840 |
| Lake Estes | gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 6.300 | 11.200 | 6.150 | 4.400 | 89.150 |
| Pole Hill | gwh | 0.000 | 3.860 | 23.690 | 25.050 | 11.540 | 12.910 | 19.640 | 24.060 | 18.280 | 21.060 | 9.800 | 6.590 | 176.480 |
| Flatiron 1,2 | gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.180 | 27.680 | 21.860 | 24.360 | 11.600 | 8.030 | 206.050 |
| Total | gwh | 0.000 | 10.820 | 63.910 | 69.890 | 39.680 | 44.050 | 57.080 | 66.440 | 48.860 | 61.160 | 29.910 | 20.720 | 512.520 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total generation | gwh | 6.051 | 14.769 | 67.546 | 72.443 | 41.724 | 46.297 | 57.909 | 69.378 | 53.744 | 68.476 | 35.958 | 26.363 | 560.658 |
| Total max generation | gwh | 82.878 | 57.490 | 73.510 | 88.940 | 59.340 | 65.700 | 87.790 | 92.880 | 89.890 | 97.820 | 83.880 | 81.150 | 961.268 |

| Project Pump Energy 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Granby | gwh | 0.000 | 1.028 | 4.983 | 5.036 | 4.677 | 5.330 | 3.108 | 0.534 | 0.000 | 2.814 | 2.045 | 1.656 | 31.211 |
| Willow Creek | gwh | 0.320 | 0.320 | 0.000 | 0.000 | 0.000 | 0.000 | 1.044 | 1.768 | 0.660 | 0.277 | 0.085 | 0.064 | 4.538 |
| Flatiron 3 | gwh | 0.000 | 0.000 | 3.077 | 6.294 | 5.611 | 6.206 | 6.047 | 0.416 | 0.000 | 3.560 | 1.350 | 0.000 | 32.561 |
| Total pump energy | gwh | 0.320 | 1.348 | 8.060 | 11.330 | 10.288 | 11.536 | 10.199 | 2.718 | 0.660 | 6.651 | 3.480 | 1.720 | 68.310 |
| Total net generation | gwh | 5.731 | 13.421 | 59.486 | 61.113 | 31.436 | 34.761 | 47.710 | 66.660 | 53.084 | 61.825 | 32.478 | 24.643 | 492.348 |

| Release Flexibility 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel | Min kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 26.6 | 13.6 | 25.4 | 13.3 | 10.0 | |
| Adams Tunnel | Max kaf | 0.1 | 5.8 | 32.0 | 33.8 | 30.5 | 33.8 | 26.0 | 26.6 | 13.6 | 25.4 | 13.3 | 10.0 | |
| Marys Lake | Min gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.720 | 2.420 | 4.540 | 2.360 | 1.700 | |
| Marys Lake | Max gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.600 | 4.720 | 2.420 | 4.540 | 2.360 | 1.700 | |
| Lake Estes | Min gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 6.300 | 11.200 | 6.150 | 4.400 | |
| Lake Estes | Max gwh | 0.000 | 2.420 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 6.300 | 11.200 | 6.150 | 4.400 | |
| Olympus Tunnel | Min kaf | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 26.5 | 32.4 | 24.6 | 28.4 | 13.2 | 9.9 | |
| Olympus Tunnel | Max kaf | 0.0 | 5.8 | 31.9 | 33.7 | 30.5 | 33.8 | 26.5 | 32.4 | 24.6 | 28.4 | 13.2 | 9.9 | |
| Pole Hill | Min gwh | 0.000 | 0.000 | 12.910 | 25.190 | 22.800 | 25.260 | 19.800 | 24.220 | 18.420 | 21.220 | 9.960 | 6.730 | |
| Pole Hill | Max gwh | 0.000 | 0.000 | 12.910 | 25.190 | 22.800 | 25.260 | 19.800 | 24.220 | 18.420 | 21.220 | 9.960 | 6.730 | |
| Flatiron 1&2 | Min gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.180 | 27.680 | 21.860 | 24.360 | 11.600 | 8.030 | |
| Flatiron 1&2 | Max gwh | 0.000 | 4.540 | 27.260 | 28.800 | 13.640 | 15.100 | 23.180 | 27.680 | 21.860 | 24.360 | 11.600 | 8.030 | |
| Load following | Min gwh | 0.000 | 6.960 | 53.130 | 70.030 | 50.940 | 56.400 | 57.240 | 66.600 | 49.000 | 61.320 | 30.070 | 20.860 | |
| Load following | Max gwh | 0.000 | 6.960 | 53.130 | 70.030 | 50.940 | 56.400 | 57.240 | 66.600 | 49.000 | 61.320 | 30.070 | 20.860 | |
| Total project | Min gwh | 6.051 | 10.909 | 56.766 | 72.583 | 52.984 | 58.647 | 58.069 | 69.538 | 53.884 | 68.636 | 36.118 | 26.503 | |
| Total project | Max gwh | 6.051 | 10.909 | 56.766 | 72.583 | 52.984 | 58.647 | 58.069 | 69.538 | 53.884 | 68.636 | 36.118 | 26.503 | |

GENERATION CAPACITY AND DURATION

| Project Generation 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Generation: | | | | | | | | | | | | | | |
| Green Mtn | mw | 6.0 | 5.2 | 4.9 | 3.4 | 3.0 | 3.0 | 0.8 | 0.9 | 2.0 | 7.1 | 6.8 | 6.5 | |
| Flatiron 3 | mw | 1.4 | | | | | | | | | | | | |
| Big Thompson | mw | 0.7 | 0.3 | | | | | 0.3 | 3.1 | 4.8 | 2.7 | 1.3 | 1.4 | |
| Total base load | mw | 8.1 | 5.5 | 4.9 | 3.4 | 3.0 | 3.0 | 1.1 | 4.0 | 6.8 | 9.8 | 8.1 | 7.9 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load Following Generation: | | | | | | | | | | | | | |
| Marys Lake | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 2.7 | 8.1 | 1.4 | 8.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 1.0 | 12.0 | 1.6 | 12.0 | 4.3 | 3.9 | 10.7 | 4.7 | 10.6 | 12.0 |
| Max Capacity | mw | 0.0 | 2.7 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 6.3 | 8.1 | 6.0 | 5.0 |
| Duration | hr/d | 12.0 | 11.6 | 23.0 | 12.0 | 22.0 | 12.0 | 18.7 | 19.1 | 12.3 | 18.3 | 12.5 | 11.0 |
| Lake Estes | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 11.0 | 11.0 | 12.4 | 11.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| Max Capacity | mw | 0.0 | 7.0 | 45.0 | 45.0 | 40.1 | 45.0 | 32.4 | 33.1 | 16.1 | 31.5 | 15.7 | 12.7 |
| Duration | hr/d | 12.0 | 11.6 | 10.0 | 10.0 | 11.7 | 10.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 | 12.0 |
| Pole Hill | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 34.0 | 0.0 | 34.0 | 0.0 | 34.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 0.6 | 12.0 | 1.8 | 12.0 | 4.6 | 12.0 | 6.0 | 3.2 | 12.0 | 12.0 |
| Max Capacity | mw | 0.0 | 11.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 27.6 | 19.7 |
| Duration | hr/d | 12.0 | 11.6 | 23.4 | 12.0 | 22.4 | 12.0 | 19.5 | 12.0 | 18.0 | 20.8 | 12.0 | 12.0 |
| Flatiron 1&2 | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.4 | 10.3 | 8.9 | 11.5 | 8.8 | 12.0 | 9.8 | 12.0 | 12.0 | 12.0 | 12.0 |
| Max Capacity | mw | 0.0 | 13.0 | 83.4 | 86.0 | 79.2 | 86.0 | 64.9 | 84.4 | 60.2 | 70.8 | 32.0 | 23.4 |
| Duration | hr/d | 12.0 | 11.6 | 10.3 | 10.0 | 11.4 | 10.0 | 12.0 | 10.1 | 12.0 | 12.0 | 12.0 | 12.0 |
| Total Load Following | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 2.7 | 42.1 | 1.4 | 42.1 | 0.0 | 34.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Max Capacity | mw | 0.0 | 33.7 | 170.5 | 173.1 | 161.4 | 173.1 | 139.4 | 159.6 | 116.6 | 144.4 | 81.3 | 60.8 |
| Total Project Capacity | | | | | | | | | | | | | |
| Min Capacity | mw | 8.1 | 5.5 | 7.6 | 45.5 | 4.4 | 45.1 | 1.1 | 38.0 | 6.8 | 9.8 | 8.1 | 7.9 |
| Max Capacity | mw | 8.1 | 39.2 | 175.4 | 176.5 | 164.4 | 176.1 | 140.5 | 163.6 | 123.4 | 154.2 | 89.4 | 68.7 |

CBTAOP V2.06 Run: 05-Nov-2013 13:04
Maximum Reasonable Plan (60-Percent Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir — Initial Cont 107.1 kaf, Elev 7925.35 ft; Maximum Cont 154.6 kaf, Elev 7950.38 ft; Minimum Cont 8.0 kaf, Elev 7804.68 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dillon Inflow | kaf | 6.4 | 4.9 | 4.1 | 4.0 | 3.5 | 4.4 | 7.9 | 43.8 | 108.4 | 72.2 | 27.1 | 12.0 | 298.7 |
| Dillon-Grn Mtn Gain | kaf | 6.7 | 4.8 | 3.9 | 3.7 | 3.2 | 4.2 | 8.6 | 30.2 | 69.2 | 47.3 | 20.2 | 11.1 | 213.1 |
| Undepleted Inflow | kaf | 13.1 | 9.7 | 8.0 | 7.7 | 6.7 | 8.6 | 16.5 | 74.0 | 177.6 | 119.5 | 47.3 | 23.1 | 511.8 |
| Depletion | kaf | -6.5 | -6.2 | -2.0 | 0.0 | 0.0 | 1.0 | 8.4 | 25.0 | 35.0 | 15.0 | 10.0 | 0.0 | 79.7 |
| Depleted Inflow | kaf | 19.6 | 15.9 | 10.0 | 7.7 | 6.7 | 7.6 | 8.1 | 49.0 | 142.6 | 104.5 | 37.3 | 23.1 | 432.1 |
| Turbine Release | kaf | 23.8 | 20.2 | 20.0 | 14.5 | 11.9 | 18.4 | 12.8 | 28.6 | 86.9 | 88.7 | 51.7 | 42.6 | 420.1 |
| 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 | kaf | 23.8 | 20.2 | 20.0 | 14.5 | 11.9 | 18.4 | 12.8 | 28.6 | 86.9 | 88.7 | 51.7 | 42.6 | 420.1 |
| Min Release | cfs | 60 | 60 | 60 | 60 | 60 | 60 | 100 | 100 | 60 | 60 | 60 | 60 | |
| Total River Release | cfs | 387 | 339 | 325 | 236 | 214 | 299 | 215 | 465 | 1460 | 1443 | 841 | 716 | |
| Evaporation | kaf | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.4 | 0.7 | 0.8 | 0.6 | 0.5 | 4.1 |
| End-Month Targets | kaf | 102.5 | 98.0 | 88.0 | 81.2 | 76.0 | 65.0 | 60.0 | 80.0 | 135.0 | 150.0 | 135.0 | 115.0 | |
| End-Month Content | kaf | 102.5 | 98.0 | 88.0 | 81.2 | 76.0 | 65.0 | 60.0 | 80.0 | 135.0 | 150.0 | 135.0 | 115.0 | |
| End-Month Elevation | ft | 7922.53 | 7919.66 | 7912.92 | 7908.01 | 7904.05 | 7894.98 | 7890.45 | 7907.11 | 7940.78 | 7948.20 | 7940.78 | 7929.98 | |

Willow Crk Reservoir — Initial Cont 9.3 kaf, Elev 8125.63 ft; Maximum Cont 10.0 kaf, Elev 8128.14 ft; Minimum Cont 7.2 kaf, Elev 8116.90 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native Inflow | kaf | 1.0 | 0.8 | 0.8 | 0.8 | 0.7 | 1.0 | 3.4 | 30.6 | 33.2 | 7.8 | 2.8 | 1.7 | 84.6 |
| Min Release | kaf | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 1.5 | 2.6 | 2.2 | 0.5 | 0.4 | 10.0 |
| Spill/Bypass | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.7 | 0.0 | 0.0 | 0.0 | 2.7 |
| Total River Release | kaf | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 1.5 | 5.3 | 2.2 | 0.5 | 0.4 | 12.7 |
| Pumped to Granby | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 | 27.2 | 26.8 | 6.5 | 1.7 | 1.7 | 71.5 |
| 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 | | 7.2 | | | | | 7.2 | 9.0 | 10.0 | 9.0 | | 9.0 | |
| End-Month Content | kaf | 8.3 | 7.2 | 7.6 | 8.0 | 8.3 | 8.9 | 7.2 | 9.0 | 10.0 | 9.0 | 9.5 | 9.0 | |
| End-Month Elevation | ft | 8121.73 | 8116.90 | 8118.74 | 8120.48 | 8121.73 | 8124.12 | 8116.90 | 8124.50 | 8128.14 | 8124.50 | 8126.37 | 8124.50 | |

Lake Granby — Initial Cont 371.0 kaf, Elev 8254.70 ft; Maximum Cont 539.8 kaf, Elev 8280.01 ft; Minimum Cont 76.5 kaf, Elev 8186.91 ft

| 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Native inflow | kaf | 1.9 | 1.2 | 1.2 | 1.6 | 1.3 | 1.7 | 5.1 | 27.0 | 53.8 | 23.5 | 7.6 | 4.3 | 130.2 |
| Rels frm Shadow Mtn | kaf | 2.4 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 14.8 | 77.4 | 30.5 | 5.5 | 2.1 | 142.9 |
| Pump frm Windy Gap | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 | 10.0 | 5.0 | 0.0 | 0.0 | 0.0 | 20.0 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pump frm Willow Crk | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 | 27.2 | 26.8 | 6.5 | 1.7 | 1.7 | 71.5 |
| Total Inflow | kaf | 5.8 | 5.4 | 4.0 | 2.8 | 2.4 | 2.9 | 15.9 | 79.0 | 163.0 | 60.5 | 14.8 | 8.1 | 364.6 |
| | | | | | | | | | | | | | | |
| Min River Release | kaf | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.2 | 1.2 | 3.5 | 4.5 | 5.3 | 5.0 | 4.5 | 31.1 |
| 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 | 3.5 | 4.5 | 5.3 | 5.0 | 4.5 | 31.1 |
| | | | | | | | | | | | | | | |
| Pumped to Shadow Mtn | kaf | 0.0 | 6.8 | 32.8 | 32.7 | 29.6 | 32.7 | 19.8 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 159.3 |
| Evaporation | kaf | 1.4 | 0.6 | 0.2 | 0.0 | 0.0 | 0.7 | 1.1 | 1.9 | 2.8 | 2.8 | 2.3 | 2.1 | 15.9 |
| Seepage loss | kaf | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 4.0 |
| End-Month Content | kaf | 373.9 | 370.4 | 339.9 | 308.5 | 280.0 | 248.0 | 241.6 | 314.9 | 470.2 | 522.2 | 529.2 | 525.3 | |
| End-Month Elevation | ft | 8255.18 | 8254.60 | 8249.44 | 8243.91 | 8238.64 | 8232.36 | 8231.05 | 8245.06 | 8270.13 | 8277.56 | 8278.54 | 8278.00 | |

| Shadow Mtn | | Initial Cont | | 17.6 kaf | | Maximum Cont | | 18.4 kaf | | Minimum Cont | | 16.6 kaf | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Elev | 8366.57 ft | | | Elev | 8367.00 ft | | | Elev | 8366.02 ft | | |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Native inflow | kaf | 2.9 | 1.8 | 1.9 | 2.3 | 2.0 | 2.6 | 7.7 | 40.5 | 80.7 | 35.3 | 11.5 | 6.5 | 195.7 |
| Pumped from Granby | kaf | 0.0 | 6.8 | 32.8 | 32.7 | 29.6 | 32.7 | 19.8 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 159.3 |
| Total Inflow | kaf | 2.9 | 8.6 | 34.7 | 35.0 | 31.6 | 35.3 | 27.5 | 40.5 | 80.7 | 35.3 | 11.5 | 11.4 | 355.0 |
| | | | | | | | | | | | | | | |
| Min River Release | kaf | 2.2 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 3.0 | 3.1 | 2.5 | 2.1 | 24.3 |
| Spill/Bypass | kaf | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 13.6 | 74.4 | 27.4 | 3.0 | 0.0 | 118.6 |
| Total River Release | kaf | 2.4 | 2.7 | 2.8 | 1.2 | 1.1 | 1.2 | 1.2 | 14.8 | 77.4 | 30.5 | 5.5 | 2.1 | 142.9 |
| | | | | | | | | | | | | | | |
| Adams Tunnel Flow | kaf | 0.1 | 5.7 | 31.8 | 33.8 | 30.5 | 33.8 | 25.9 | 25.0 | 2.5 | 4.1 | 5.4 | 8.8 | 207.4 |
| Evaporation | kaf | 0.4 | 0.2 | 0.1 | 0.0 | 0.0 | 0.3 | 0.4 | 0.7 | 0.8 | 0.7 | 0.6 | 0.5 | 4.7 |
| End-Month Content | kaf | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | 17.6 | |
| End-Month Elevation | ft | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | 8366.57 | |

| Adams Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Tunnel Capacity | kaf | 0.1 | 32.7 | 33.8 | 33.8 | 30.5 | 33.8 | 32.7 | 33.8 | 32.7 | 33.8 | 33.8 | 32.7 | 364.2 |
| Actual delivery | kaf | 0.1 | 5.7 | 31.8 | 33.8 | 30.5 | 33.8 | 25.9 | 25.0 | 2.5 | 4.1 | 5.4 | 8.8 | 207.4 |
| % max delivery | % | 100 | 17 | 94 | 100 | 100 | 100 | 79 | 74 | 8 | 12 | 16 | 27 | |

| Big T @ Lake Estes | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Big Thompson inflow | kaf | 2.2 | 1.4 | 1.3 | 1.2 | 1.0 | 1.2 | 3.7 | 19.3 | 47.5 | 26.5 | 13.8 | 5.8 | 124.9 |
| Min river release | kaf | 3.1 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | 2.2 | 6.9 | 7.4 | 7.7 | 6.9 | 3.7 | 45.3 |
| Act river release | kaf | 2.2 | 1.4 | 1.3 | 1.2 | 1.0 | 1.2 | 2.2 | 10.4 | 17.2 | 7.7 | 6.9 | 3.7 | 56.4 |
| Max div available | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 12.4 | 40.1 | 18.8 | 6.9 | 2.1 | 81.8 |
| Priority water div | 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 | 1.5 | 8.9 | 30.3 | 18.8 | 6.9 | 2.1 | 68.5 |
| % max diverted | % | | | | | | | 100 | 72 | 76 | 100 | 100 | 100 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 |
| Irrigation delivery | kaf | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 |
| Total river release | kaf | 2.3 | 1.4 | 1.3 | 1.3 | 1.0 | 1.2 | 2.3 | 10.5 | 17.3 | 7.8 | 7.0 | 3.8 | 57.2 |

| Olympus Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max 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 | 0.0 | 5.7 | 31.8 | 33.7 | 30.5 | 33.8 | 27.3 | 33.8 | 32.7 | 22.8 | 12.2 | 10.8 | 275.1 |
| % max delivery | % | 0 | 17 | 94 | 100 | 100 | 100 | 83 | 100 | 100 | 67 | 36 | 33 | |
| | | | | | | | | | | | | | | |
| Seepage and Evap | kaf | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 2.0 |
| Inflow to Flatiron | kaf | 0.0 | 5.7 | 31.6 | 33.5 | 30.3 | 33.6 | 27.1 | 33.6 | 32.5 | 22.6 | 12.0 | 10.6 | 273.1 |
| | | | | | | | | | | | | | | |
| Carter Lake | | Initial Cont | | 49.9 kaf | | | Maximum Cont | | 112.2 kaf | | | Minimum Cont | | 6.0 kaf |
| | | | Elev | 5697.35 ft | | | | Elev | 5758.98 ft | | | | Elev | 5626.80 ft |
| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Pump from Flatiron | kaf | 0.0 | 0.0 | 11.6 | 22.3 | 18.1 | 18.1 | 16.2 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 88.3 |
| Carter to Flatiron | kaf | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| | | | | | | | | | | | | | | |
| Evaporation loss | kaf | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.2 | 2.1 |
| Seepage loss | kaf | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 1.7 |
| End-Month Targets | kaf | 36.9 | 33.7 | 44.4 | 65.0 | 81.0 | 96.6 | 108.3 | 103.1 | 92.6 | 77.7 | 60.8 | 49.0 | |
| End-Month Content | kaf | 37.4 | 35.0 | 44.4 | 64.3 | 80.0 | 95.3 | 107.1 | 103.1 | 93.7 | 78.7 | 62.0 | 49.0 | |
| End-Month Elevation | ft | 5682.08 | 5678.94 | 5690.83 | 5713.28 | 5729.23 | 5743.79 | 5754.48 | 5750.90 | 5742.30 | 5727.95 | 5710.84 | 5696.30 | |
| | | | | | | | | | | | | | | |
| Irrigation demand | kaf | 6.4 | 2.2 | 2.1 | 2.2 | 2.2 | 2.5 | 4.0 | 5.6 | 6.9 | 12.2 | 14.2 | 10.6 | 71.1 |
| Metered delivery | 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 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.2 | 2.1 | 2.1 | 8.4 |
| Total demand | kaf | 6.4 | 2.2 | 2.1 | 2.2 | 2.2 | 2.5 | 4.0 | 5.6 | 8.9 | 14.4 | 16.3 | 12.7 | 79.5 |
| Total delivery | kaf | 6.4 | 2.2 | 2.1 | 2.2 | 2.2 | 2.5 | 4.0 | 5.6 | 8.9 | 14.4 | 16.3 | 12.7 | 79.5 |
| % 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 |
| | | | | | | | | | | | | | | |
| Hansen Canal 930 | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 | 27.7 | 57.2 | 55.3 | 57.2 | 57.2 | 55.3 | 645.6 |
| Actual flow | kaf | 5.9 | 5.7 | 20.0 | 11.2 | 12.2 | 15.5 | 10.9 | 31.6 | 32.5 | 22.6 | 12.0 | 10.6 | 190.7 |
| | | | | | | | | | | | | | | |
| Dille Tunnel | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Big T @ Canyon Mouth | kaf | 3.2 | 2.2 | 1.8 | 1.7 | 1.4 | 2.0 | 5.9 | 30.8 | 64.4 | 34.2 | 19.2 | 8.5 | 175.3 |
| Less Estes skim | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 8.9 | 30.3 | 18.8 | 6.9 | 2.1 | 68.5 |
| Big T irr (Estes) | kaf | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 |
| Handy Ditch release | kaf | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 1.2 | 1.2 | 1.8 | 2.9 | 1.7 | 11.2 |
| Water available | kaf | 2.1 | 2.2 | 1.8 | 1.8 | 1.4 | 2.0 | 3.3 | 20.8 | 33.0 | 13.7 | 9.5 | 4.8 | 96.4 |
| Water diverted | kaf | 2.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 3.3 | 15.3 | 0.0 | 4.5 | 9.5 | 4.8 | 41.7 |
| % diverted | % | 100 | 100 | | | | | 100 | 74 | | 33 | 100 | 100 | |
| | | | | | | | | | | | | | | |
| Trifurcation Works | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
| Rels from Flatiron | kaf | 5.9 | 5.7 | 20.0 | 11.2 | 12.2 | 15.5 | 10.9 | 31.6 | 32.5 | 22.6 | 12.0 | 10.6 | 190.7 |
| Rels to 550 Canal | kaf | 3.5 | 5.7 | 20.0 | 11.2 | 12.2 | 15.5 | 9.3 | 22.2 | 1.9 | 2.4 | 2.2 | 4.1 | 110.2 |
| | | | | | | | | | | | | | | |
| Big T irrigation | kaf | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.3 | 1.4 | 2.9 | 4.4 | 12.0 |
| Dille Tunnel | kaf | 2.1 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 3.3 | 15.3 | 0.0 | 4.5 | 9.5 | 4.8 | 41.7 |
| Tot rels to river | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 24.7 | 30.6 | 24.7 | 19.3 | 11.3 | 122.2 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Irrigation demand | kaf | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.5 | 0.3 | 1.4 | 2.9 | 4.4 | 12.0 |
| Big T irr (Estes) | kaf | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.8 |
| 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 | 0.0 | 0.0 |
| Total requirement | kaf | 2.5 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.6 | 0.4 | 1.5 | 3.0 | 4.5 | 12.8 |
| Total delivery | kaf | 2.5 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.6 | 0.4 | 1.5 | 3.0 | 4.5 | 12.8 |
| % required delivery | % | 100 | 0 | 0 | 100 | 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 |

| Hansen Canal 550 | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow from Flatiron | kaf | 3.5 | 5.7 | 20.0 | 11.2 | 12.2 | 15.5 | 9.3 | 22.2 | 1.9 | 2.4 | 2.2 | 4.1 | 110.2 |
| Maximum 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 |
| Seepage loss | kaf | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 2.4 |
| Irrigation demand | kaf | 0.8 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.7 | 0.5 | 1.0 | 0.8 | 0.9 | 6.9 |
| Irrigation delivery | kaf | 0.8 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.7 | 0.5 | 1.0 | 0.8 | 0.9 | 6.9 |
| Minimum flow | kaf | 2.5 | 2.4 | 6.1 | 6.1 | 5.6 | 6.1 | 2.4 | 2.5 | 1.2 | 1.2 | 1.2 | 1.2 | 38.5 |
| Rels to Horsetooth | kaf | 2.5 | 5.2 | 19.4 | 10.6 | 11.7 | 14.9 | 8.7 | 21.3 | 1.2 | 1.2 | 1.2 | 3.0 | 100.9 |

Horsetooth Reservoir — Initial Cont 94.5 kaf, Elev 5395.36 ft; Maximum Cont 152.0 kaf, Elev 5427.66 ft; Minimum Cont 13.0 kaf, Elev 5316.81 ft

| | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow | kaf | 2.5 | 5.2 | 19.4 | 10.6 | 11.7 | 14.9 | 8.7 | 21.3 | 1.2 | 1.2 | 1.2 | 3.0 | 100.9 |
| Priority water div | 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 irr delivery | kaf | 14.7 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.6 | 7.7 | 10.2 | 18.5 | 18.3 | 9.7 | 93.1 |
| Evaporation loss | kaf | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.6 | 0.6 | 0.5 | 0.4 | 3.4 |
| Seepage loss | kaf | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 1.7 |
| End-Month Targets | kaf | 82.3 | 85.2 | 102.4 | 110.5 | 120.0 | 132.5 | 136.9 | 150.0 | 139.6 | 120.9 | 102.5 | 97.2 | |
| End-Month Content | kaf | 82.0 | 85.2 | 102.4 | 110.4 | 119.8 | 132.3 | 136.9 | 150.0 | 140.2 | 122.1 | 104.4 | 97.2 | |
| End-Month Elevation | ft | 5387.09 | 5389.26 | 5400.30 | 5405.12 | 5410.55 | 5417.46 | 5419.91 | 5426.66 | 5421.64 | 5411.85 | 5401.52 | 5397.07 | |
| Irrigation demand | kaf | 13.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 2.3 | 2.3 | 7.8 | 9.3 | 3.7 | 39.1 |
| Metered delivery | kaf | 1.6 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.0 | 5.4 | 5.8 | 9.2 | 7.5 | 4.9 | 47.8 |
| Windy Gap demand | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 1.5 | 1.5 | 1.1 | 6.2 |
| Total demand | kaf | 14.7 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.6 | 7.7 | 10.2 | 18.5 | 18.3 | 9.7 | 93.1 |
| Total irr delivery | kaf | 14.7 | 1.8 | 2.0 | 2.3 | 2.1 | 2.2 | 3.6 | 7.7 | 10.2 | 18.5 | 18.3 | 9.7 | 93.1 |
| % 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 |
| Total CBT Delivery | kaf | 24.4 | 4.3 | 4.5 | 5.0 | 4.6 | 5.1 | 8.2 | 14.6 | 15.9 | 31.7 | 34.8 | 24.6 | 177.7 |

| Windy Gap Ownership | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Accrual | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 | 9.0 | 4.5 | 0.0 | 0.0 | 0.0 | 18.0 |
| Total release | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.1 | 3.7 | 3.6 | 3.2 | 14.6 |
| Spill | 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 |
| End-month Ownership | kaf | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 24.3 | 28.8 | 37.8 | 38.2 | 34.5 | 30.9 | 27.7 | |

PUMPING AND GENERATION OPERATIONS

| Green Mtn Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max Generation | gwh | 18.600 | 18.000 | 18.600 | 18.600 | 8.400 | 9.300 | 17.440 | 18.600 | 18.000 | 18.600 | 18.600 | 18.000 | 200.740 |
| Generation | gwh | 4.495 | 3.760 | 3.636 | 2.553 | 2.044 | 3.052 | 2.049 | 4.733 | 16.554 | 18.387 | 10.717 | 8.499 | 80.479 |
| % Max Generation | % | 24 | 21 | 20 | 14 | 24 | 33 | 12 | 25 | 92 | 99 | 58 | 47 | |
| Ave kwh/af | | 189 | 186 | 182 | 176 | 172 | 166 | 160 | 165 | 190 | 207 | 207 | 200 | |

| Willow Crk Pumping | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum pumping | kaf | 27.7 | 26.8 | 0.0 | 0.0 | 0.0 | 0.0 | 26.8 | 27.7 | 26.8 | 27.7 | 27.7 | 26.8 | 218.0 |
| Actual pumping | kaf | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 | 27.2 | 26.8 | 6.5 | 1.7 | 1.7 | 71.5 |
| Pump energy | gwh | 0.320 | 0.320 | 0.000 | 0.000 | 0.000 | 0.000 | 0.980 | 5.794 | 5.708 | 1.385 | 0.362 | 0.362 | 15.231 |
| % max pumping | % | 5 | 6 | | | | | 17 | 98 | 100 | 23 | 6 | 6 | |
| Average kwh/af | | 213 | 213 | | | | | 213 | 213 | 213 | 213 | 213 | 213 | |

| Lake Granby Pumping | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 | 0.0 | 6.8 | 32.8 | 32.7 | 29.6 | 32.7 | 19.8 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 159.3 |
| Pump energy | gwh | 0.000 | 1.013 | 4.920 | 5.036 | 4.677 | 5.330 | 3.326 | 0.000 | 0.000 | 0.000 | 0.000 | 0.686 | 24.988 |
| % max pumping | % | | 19 | 89 | 89 | 89 | 89 | 55 | | | | | 14 | |
| Average kwh/af | | | 149 | 150 | 154 | 158 | 163 | 168 | | | | | 140 | |

| Marys Lake Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel Flow | kaf | 0.1 | 5.7 | 31.8 | 33.8 | 30.5 | 33.8 | 25.9 | 25.0 | 2.5 | 4.1 | 5.4 | 8.8 | |
| Max generation | gwh | 6.060 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 5.840 | 6.060 | 5.840 | 6.060 | 6.060 | 5.840 | 62.260 |
| Generation | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.590 | 4.500 | 0.400 | 0.710 | 0.880 | 1.460 | 33.040 |
| % Max Generation | % | | | 100 | 100 | 100 | 100 | 79 | 74 | 7 | 12 | 15 | 25 | |
| Ave kwh/af | | | | 176 | 179 | 177 | 179 | 177 | 180 | 160 | 173 | 163 | 166 | |

| Lake Estes Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel Flow | kaf | 0.1 | 5.7 | 31.8 | 33.8 | 30.5 | 33.8 | 25.9 | 25.0 | 2.5 | 4.1 | 5.4 | 8.8 | |
| Max generation | gwh | 9.980 | 9.660 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 9.660 | 14.920 | 14.920 | 14.450 | 132.270 |
| Generation | gwh | 0.000 | 2.380 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 1.050 | 1.740 | 2.260 | 3.800 | 69.910 |
| % Max Generation | % | | 25 | 100 | 100 | 100 | 100 | 100 | 100 | 11 | 12 | 15 | 26 | |
| Ave kwh/af | | | 418 | 440 | 440 | 444 | 440 | 441 | 440 | 420 | 424 | 419 | 432 | |

| Pole Hill Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Olympus Tunnel flow | kaf | 0.0 | 5.7 | 31.8 | 33.7 | 30.5 | 33.8 | 27.3 | 33.8 | 32.7 | 22.8 | 12.2 | 10.8 | 275.1 |
| Max generation | gwh | 25.260 | 0.000 | 12.910 | 25.260 | 22.800 | 25.260 | 24.460 | 25.260 | 24.460 | 25.260 | 25.260 | 24.460 | 260.650 |
| Generation | gwh | 0.000 | 3.790 | 23.620 | 25.050 | 11.540 | 12.910 | 20.270 | 25.120 | 24.300 | 16.920 | 9.100 | 7.700 | 180.320 |
| % Max Generation | % | | | 183 | 99 | 51 | 51 | 83 | 99 | 99 | 67 | 36 | 31 | |
| Ave kwh/af | | | | 1398 | 743 | 378 | 382 | 742 | 743 | 743 | 742 | 746 | 713 | |

| Flatiron 1&2 Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflow to Flatiron | kaf | 0.0 | 5.7 | 31.6 | 33.5 | 30.3 | 33.6 | 27.1 | 33.6 | 32.5 | 22.6 | 12.0 | 10.6 | 273.1 |
| Max generation | gwh | 15.100 | 28.130 | 29.040 | 29.040 | 13.640 | 15.100 | 28.130 | 29.040 | 28.130 | 29.040 | 15.100 | 14.600 | 274.090 |
| Generation | gwh | 0.000 | 4.460 | 27.180 | 28.800 | 13.640 | 15.100 | 23.660 | 28.880 | 27.950 | 20.240 | 10.700 | 9.200 | 209.810 |
| % Max Generation | % | | 16 | 94 | 99 | 100 | 100 | 84 | 99 | 99 | 70 | 71 | 63 | |
| Ave kwh/af | | | 782 | 860 | 860 | 892 | 893 | 873 | 860 | 860 | 896 | 892 | 868 | |

| Flatiron 3 Pump/Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum pumping | kaf | 24.5 | 24.7 | 25.0 | 23.0 | 18.5 | 18.5 | 16.3 | 16.3 | 16.6 | 18.7 | 20.7 | 22.1 | 244.9 |
| Pump from Flatiron | kaf | 0.0 | 0.0 | 11.6 | 22.3 | 18.1 | 18.1 | 16.2 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 88.3 |
| Pump energy | gwh | 0.000 | 0.000 | 3.051 | 6.266 | 5.629 | 6.190 | 6.043 | 0.764 | 0.000 | 0.000 | 0.000 | 0.000 | 27.943 |
| % max pumping | % | | | 46 | 97 | 98 | 98 | 99 | 12 | | | | | |
| Average kwh/af | | | | 263 | 281 | 311 | 342 | 373 | 382 | | | | | |
| | | | | | | | | | | | | | | |
| Max turbine rels | kaf | 22.0 | 20.5 | 21.6 | 22.9 | 21.9 | 25.2 | 25.3 | 26.4 | 25.1 | 25.2 | 24.1 | 22.2 | 282.4 |
| Carter to Flatiron | kaf | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.9 |
| Maximum generation | gwh | 3.938 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 3.938 |
| Actual generation | gwh | 1.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 |
| % max generation | % | 27 | | | | | | | | | | | | |
| Average kwh/af | | 179 | | | | | | | | | | | | |

| Big Thompson Gen | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total release | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 24.7 | 30.6 | 24.7 | 19.3 | 11.3 | 122.2 |
| Turbine release | kaf | 4.5 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 24.7 | 23.9 | 24.7 | 19.3 | 11.3 | 115.5 |
| Wasteway release | kaf | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 | 0.0 | 0.0 | 0.0 | 6.7 |
| Max generation | gwh | 3.940 | 1.700 | 0.000 | 0.000 | 0.000 | 0.000 | 1.700 | 3.940 | 3.800 | 3.940 | 3.940 | 3.800 | 26.760 |
| Generation | gwh | 0.500 | 0.189 | 0.000 | 0.000 | 0.000 | 0.000 | 0.500 | 3.940 | 3.800 | 3.940 | 2.960 | 1.560 | 17.389 |
| % Max Generation | % | 13 | 11 | | | | | 29 | 100 | 100 | 100 | 75 | 41 | |
| Ave kwh/af | | 111 | 86 | | | | | 102 | 160 | 159 | 160 | 153 | 138 | |

PROJECT GENERATION AND PUMPING SUMMARY

| Project Generation | 2013 | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Generation: | | | | | | | | | | | | | | |
| Big Thompson | gwh | 0.500 | 0.189 | 0.000 | 0.000 | 0.000 | 0.000 | 0.500 | 3.940 | 3.800 | 3.940 | 2.960 | 1.560 | 17.389 |
| Green Mtn | gwh | 4.495 | 3.760 | 3.636 | 2.553 | 2.044 | 3.052 | 2.049 | 4.733 | 16.554 | 18.387 | 10.717 | 8.499 | 80.479 |
| Flatiron 3 | gwh | 1.056 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 |
| Total | gwh | 6.051 | 3.949 | 3.636 | 2.553 | 2.044 | 3.052 | 2.549 | 8.673 | 20.354 | 22.327 | 13.677 | 10.059 | 98.924 |
| | | | | | | | | | | | | | | |
| Load Following Generation: | | | | | | | | | | | | | | |
| Marys Lake | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.590 | 4.500 | 0.400 | 0.710 | 0.880 | 1.460 | 33.040 |
| Lake Estes | gwh | 0.000 | 2.380 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 1.050 | 1.740 | 2.260 | 3.800 | 69.910 |
| Pole Hill | gwh | 0.000 | 3.790 | 23.620 | 25.050 | 11.540 | 12.910 | 20.270 | 25.120 | 24.300 | 16.920 | 9.100 | 7.700 | 180.320 |
| Flatiron 1,2 | gwh | 0.000 | 4.460 | 27.180 | 28.800 | 13.640 | 15.100 | 23.660 | 28.880 | 27.950 | 20.240 | 10.700 | 9.200 | 209.810 |
| Total | gwh | 0.000 | 10.630 | 63.760 | 69.890 | 39.680 | 44.050 | 58.180 | 68.480 | 53.700 | 39.610 | 22.940 | 22.160 | 493.080 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total generation | gwh | 6.051 | 14.579 | 67.396 | 72.443 | 41.724 | 47.102 | 60.729 | 77.153 | 74.054 | 61.937 | 36.617 | 32.219 | 592.004 |
| Total max generation | gwh | 82.878 | 57.490 | 73.510 | 88.940 | 59.340 | 65.700 | 87.230 | 92.880 | 89.890 | 97.820 | 83.880 | 81.150 | 960.708 |

| Project Pump Energy 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Granby | gwh | 0.000 | 1.013 | 4.920 | 5.036 | 4.677 | 5.330 | 3.326 | 0.000 | 0.000 | 0.000 | 0.000 | 0.686 | 24.988 |
| Willow Creek | gwh | 0.320 | 0.320 | 0.000 | 0.000 | 0.000 | 0.000 | 0.980 | 5.794 | 5.708 | 1.385 | 0.362 | 0.362 | 15.231 |
| Flatiron 3 | gwh | 0.000 | 0.000 | 3.051 | 6.266 | 5.629 | 6.190 | 6.043 | 0.764 | 0.000 | 0.000 | 0.000 | 0.000 | 27.943 |
| Total pump energy | gwh | 0.320 | 1.333 | 7.971 | 11.302 | 10.306 | 11.520 | 10.349 | 6.558 | 5.708 | 1.385 | 0.362 | 1.048 | 68.162 |
| Total net generation | gwh | 5.731 | 13.246 | 59.425 | 61.141 | 31.418 | 35.582 | 50.380 | 70.595 | 68.346 | 60.552 | 36.255 | 31.171 | 523.842 |

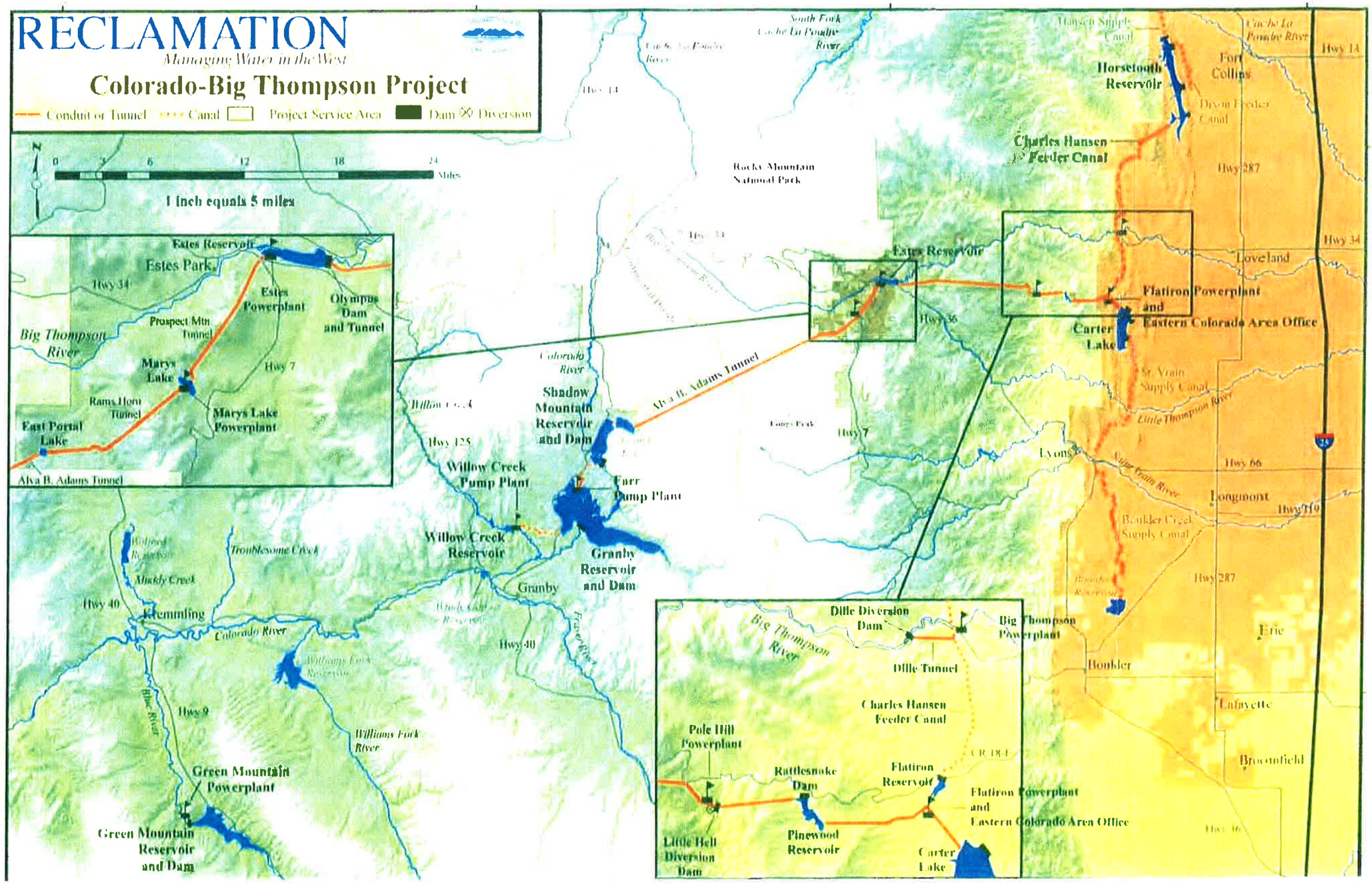
| Release Flexibility 2013 | | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adams Tunnel | Min | kaf | 0.1 | 5.7 | 31.8 | 33.8 | 30.5 | 33.8 | 25.9 | 25.0 | 2.5 | 4.1 | 5.4 | 8.8 | |
| Adams Tunnel | Max | kaf | 0.1 | 5.7 | 31.8 | 33.8 | 30.5 | 33.8 | 25.9 | 25.0 | 2.5 | 4.1 | 5.4 | 8.8 | |
| Marys Lake | Min | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.590 | 4.500 | 0.400 | 0.710 | 0.880 | 1.460 | |
| Marys Lake | Max | gwh | 0.000 | 0.000 | 2.980 | 6.060 | 5.400 | 6.060 | 4.590 | 4.500 | 0.400 | 0.710 | 0.880 | 1.460 | |
| Lake Estes | Min | gwh | 0.000 | 2.380 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 1.050 | 1.740 | 2.260 | 3.800 | |
| Lake Estes | Max | gwh | 0.000 | 2.380 | 9.980 | 9.980 | 9.100 | 9.980 | 9.660 | 9.980 | 1.050 | 1.740 | 2.260 | 3.800 | |
| Olympus Tunnel | Min | kaf | 0.0 | 5.7 | 31.8 | 33.7 | 30.5 | 33.8 | 27.3 | 33.8 | 32.7 | 22.8 | 12.2 | 10.8 | |
| Olympus Tunnel | Max | kaf | 0.0 | 5.7 | 31.8 | 33.7 | 30.5 | 33.8 | 27.3 | 33.8 | 32.7 | 22.8 | 12.2 | 10.8 | |
| Pole Hill | Min | gwh | 0.000 | 0.000 | 12.910 | 25.190 | 22.800 | 25.260 | 20.410 | 25.260 | 24.460 | 17.060 | 9.240 | 8.000 | |
| Pole Hill | Max | gwh | 0.000 | 0.000 | 12.910 | 25.190 | 22.800 | 25.260 | 20.410 | 25.260 | 24.460 | 17.060 | 9.240 | 8.000 | |
| Flatiron 1&2 | Min | gwh | 0.000 | 4.460 | 27.180 | 28.800 | 13.640 | 15.100 | 23.660 | 28.880 | 27.950 | 20.240 | 10.700 | 9.200 | |
| Flatiron 1&2 | Max | gwh | 0.000 | 4.460 | 27.180 | 28.800 | 13.640 | 15.100 | 23.660 | 28.880 | 27.950 | 20.240 | 10.700 | 9.200 | |
| Load following | Min | gwh | 0.000 | 6.840 | 53.050 | 70.030 | 50.940 | 56.400 | 58.320 | 68.620 | 53.860 | 39.750 | 23.080 | 22.460 | |
| Load following | Max | gwh | 0.000 | 6.840 | 53.050 | 70.030 | 50.940 | 56.400 | 58.320 | 68.620 | 53.860 | 39.750 | 23.080 | 22.460 | |
| Total project | Min | gwh | 6.051 | 10.789 | 56.686 | 72.583 | 52.984 | 59.452 | 60.869 | 77.293 | 74.214 | 62.077 | 36.757 | 32.519 | |
| Total project | Max | gwh | 6.051 | 10.789 | 56.686 | 72.583 | 52.984 | 59.452 | 60.869 | 77.293 | 74.214 | 62.077 | 36.757 | 32.519 | |

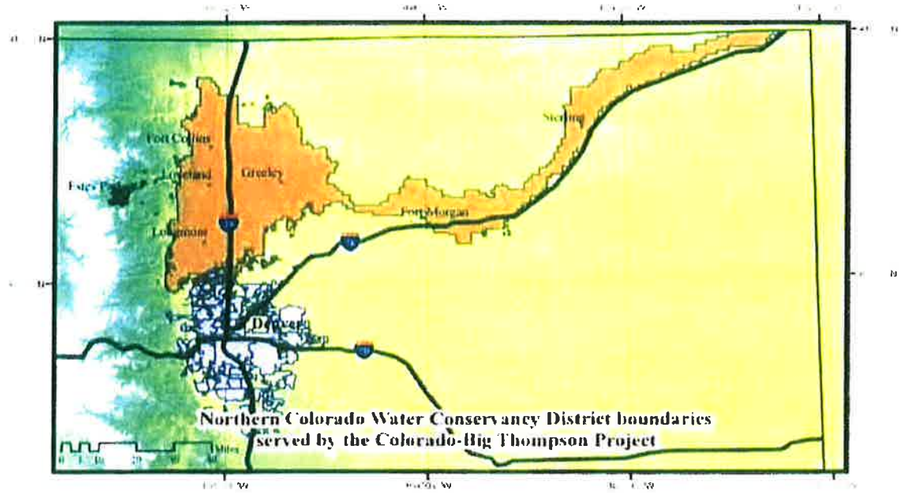
GENERATION CAPACITY AND DURATION

| Project Generation 2013 | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Generation: | | | | | | | | | | | | | | |
| Green Mtn | mw | 6.0 | 5.2 | 4.9 | 3.4 | 3.0 | 4.1 | 2.8 | 6.4 | 23.0 | 24.7 | 14.4 | 11.8 | |
| Flatiron 3 | mw | 1.4 | | | | | | | | | | | | |
| Big Thompson | mw | 0.7 | 0.3 | | | | | 0.7 | 5.3 | 5.3 | 5.3 | 4.0 | 2.2 | |
| Total base load | mw | 8.1 | 5.5 | 4.9 | 3.4 | 3.0 | 4.1 | 3.5 | 11.7 | 28.3 | 30.0 | 18.4 | 14.0 | |
| Load Following Generation: | | | | | | | | | | | | | | |
| Marys Lake | | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 2.7 | 8.1 | 1.4 | 8.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Duration | hr/d | 12.0 | 12.6 | 1.1 | 12.0 | 1.6 | 12.0 | 4.4 | 5.0 | 18.5 | 15.8 | 13.2 | 9.4 |
| Max Capacity | mw | 0.0 | 2.7 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 2.7 | 2.7 | 2.7 | 3.5 |
| Duration | hr/d | 12.0 | 11.4 | 22.9 | 12.0 | 22.0 | 12.0 | 18.6 | 18.0 | 5.5 | 8.2 | 10.8 | 13.6 |
| Lake Estes | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.6 | 11.3 | 11.0 | 12.4 | 11.0 | 12.0 | 12.0 | 18.5 | 15.8 | 13.2 | 12.0 |
| Max Capacity | mw | 0.0 | 7.0 | 44.4 | 45.0 | 40.1 | 45.0 | 32.3 | 30.9 | 7.0 | 7.0 | 7.0 | 11.0 |
| Duration | hr/d | 12.0 | 11.4 | 10.3 | 10.0 | 11.7 | 10.0 | 12.0 | 12.0 | 5.5 | 8.2 | 10.8 | 12.0 |
| Pole Hill | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 34.0 | 0.0 | 34.0 | 0.0 | 34.0 | 34.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.6 | 0.7 | 12.0 | 1.8 | 12.0 | 4.0 | 12.0 | 12.0 | 7.3 | 12.0 | 12.0 |
| Max Capacity | mw | 0.0 | 11.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 34.0 | 25.4 | 21.6 |
| Duration | hr/d | 12.0 | 11.4 | 23.3 | 12.0 | 22.4 | 12.0 | 20.0 | 12.0 | 12.0 | 16.7 | 12.0 | 12.0 |
| Flatiron 1&2 | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Duration | hr/d | 12.0 | 12.6 | 10.4 | 8.9 | 11.5 | 8.8 | 12.0 | 8.8 | 9.6 | 12.0 | 12.0 | 12.0 |
| Max Capacity | mw | 0.0 | 13.0 | 83.2 | 86.0 | 79.2 | 86.0 | 67.3 | 86.0 | 85.0 | 55.2 | 30.0 | 25.8 |
| Duration | hr/d | 12.0 | 11.4 | 10.4 | 10.0 | 11.4 | 10.0 | 12.0 | 10.0 | 10.1 | 12.0 | 12.0 | 12.0 |
| Total Load Following | | | | | | | | | | | | | |
| Min Capacity | mw | 0.0 | 0.0 | 2.7 | 42.1 | 1.4 | 42.1 | 0.0 | 34.0 | 34.0 | 0.0 | 0.0 | 0.0 |
| Max Capacity | mw | 0.0 | 33.7 | 169.7 | 173.1 | 161.4 | 173.1 | 141.7 | 159.0 | 128.7 | 98.9 | 65.1 | 61.9 |
| Total Project Capacity | | | | | | | | | | | | | |
| Min Capacity | mw | 8.1 | 5.5 | 7.6 | 45.5 | 4.4 | 46.2 | 3.5 | 45.7 | 62.3 | 30.0 | 18.4 | 14.0 |
| Max Capacity | mw | 8.1 | 39.2 | 174.6 | 176.5 | 164.4 | 177.2 | 145.2 | 170.7 | 157.0 | 128.9 | 83.5 | 75.9 |

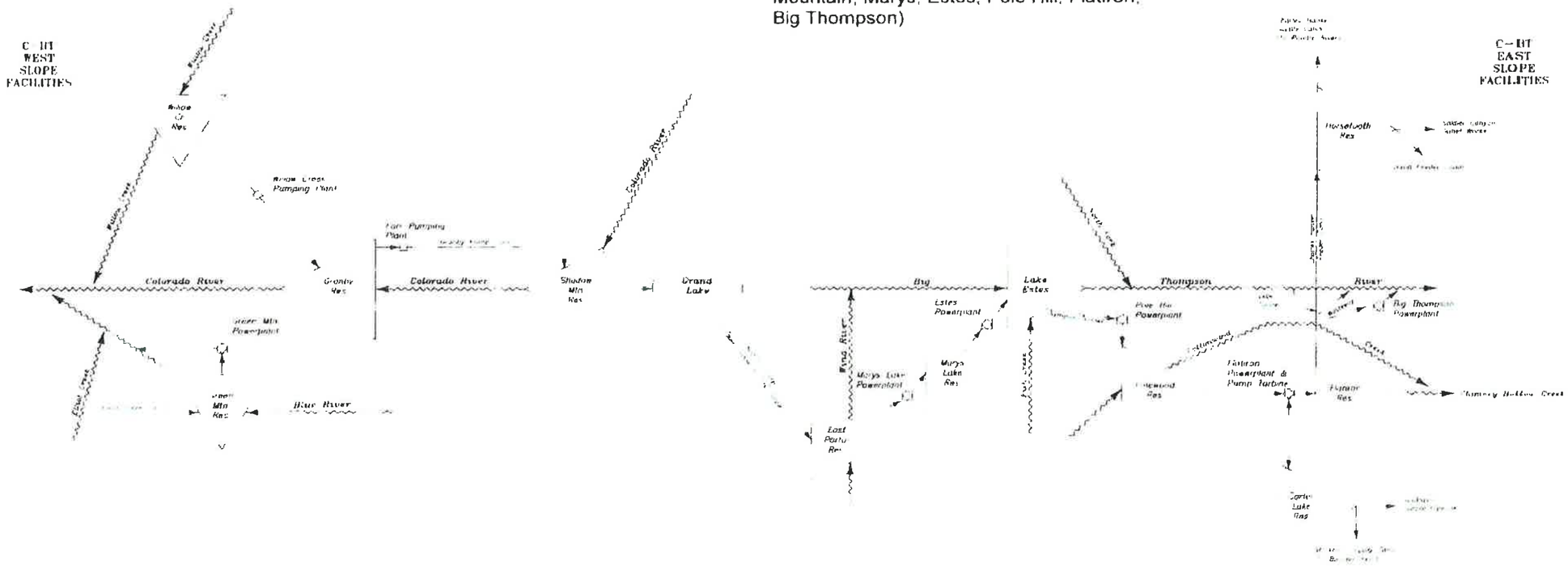
# APPENDIX C - EXHIBITS


RECLAMATION
Managing Water in the West
Colorado-Big Thompson Project
Conduit or Tunnel
Canal
Project Service Area
Dam
Diversion
1 inch equals 5 miles
Estes Reservoir
Estes Park
Hwy 34
Estes Powerplant
Olympus Dam and Tunnel
Prospect Mtn Tunnel
Big Thompson River
Marys Lake
Hwy 7
Rams Horn Tunnel
Marys Lake Powerplant
East Portal Lake
Alva B. Adams Tunnel
Rocky Mountain National Park
Hwy 14
South Fork Cache la Poudre River
Cache la Poudre River
Hansen Supply Canal
Horsetooth Reservoir
Fort Collins
Dixon Feeder Canal
Charles Hansen Feeder Canal
Hwy 287
Hwy 34
Loveland
Flatiron Powerplant and Eastern Colorado Area Office
Carter Lake
Hwy 36
St. Vrain Supply Canal
Little Thompson River
Lyons
Hwy 66
Longmont
Hwy 119
Boulder Creek Supply Canal
Colorado River
Shadow Mountain Reservoir and Dam
Alva B. Adams Tunnel
Hwy 125
Willow Creek Pump Plant
Farr Pump Plant
Willow Creek Reservoir
Granby Reservoir and Dam
Granby
Hwy 40
Fraser River
Troublesome Creek
Muddy Creek
Kremmling
Colorado River
Williams Fork Reservoir
Blue River
Hwy 9
Williams Fork River
Green Mountain Powerplant
Green Mountain Reservoir and Dam
Dille Diversion Dam
Big Thompson Powerplant
Dille Tunnel
Charles Hansen Feeder Canal
Pole Hill Powerplant
Rattlesnake Dam
Flatiron Reservoir
CR 18-E
Flatiron Powerplant and Eastern Colorado Area Office
Little Bell Diversion Dam
Pinewood Reservoir
Carter Lake
Erie
Boulder
Lafayette
Broomfield




## 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



SUMMIT OF THE CONTINENTAL DIVIDE
APPROX. EL. 12,000 FEET

PACIFIC OR WESTERN SLOPE

ATLANTIC OR EASTERN SLOPE

Note: Construction of the Strawberry and Meadow Creek diversion has been postponed indefinitely.

ROCKY MOUNTAINS

GREEN MTN. RESERVOIR
(REPLACEMENT STORAGE AND POWER)
154,645AF-TOTAL-EL.7950

ELLIOTT CREEK FEEDER CANAL
Q=90cfs

ELLIOTT CREEK

BLUE RIVER

COLORADO RIVER

GREEN MTN. POWERPLANT
21,600KW

COLORADO RIVER IMPROVEMENTS

WILLOW CREEK RESERVOIR
10,553 AF-TOTAL-EL.8130

WILLOW CREEK FEEDER CANAL
Q=400 cfs

WILLOW CR.

LAKE GRANBY
539,758 AF-TOTAL-EL.8280

WILLOW CREEK PUMPING PLANT
Q=400 cfs @175 HEAD

GRANBY PUMP CANAL
Q=1,100 cfs

GRANBY PUMPING PLANT
Q=600 cfs-@186' HEAD

GRAND AND SHADOW MTN. LAKES
8,369 AF-TOTAL-EL.8367

WEST PORTAL
INVERT EL. 8358.1

EAST PORTAL
INVERT EL. 8249.3

ALVA B. ADAMS TUNNEL
Q=550 cfs

EAST PORTAL RESERVOIR
20AF-NWS EL.8258

ASPEN CREEK SIPHON
Q=550 cfs

RAMS HORN TUNNEL
Q=550 cfs

PROSPECT MTN. CONDUIT
Q=1300 cfs

PROSPECT MTN. TUNNEL
Q=1300 cfs

PENSTOCK Q=550 cfs

MARYS LAKE POWERPLANT
8,100 KW

SURGE TANK

PENSTOCKS (3)
Q=1300 cfs

MARYS LAKE
927AF-TOTAL-EL.6040

OLYMPUS TUNNEL
Q=550 cfs

POLE HILL TUNNEL
Q=550 cfs

POLE HILL CANAL
Q=550 cfs

ESTES POWERPLANT
45,000 KW

LAKE ESTES
3,068 AF-TOTAL-EL.7475

BIG THOMPSON RIVER

OLYMPUS SIPHON
Q=550 cfs

PENSTOCK Q=550 cfs

RATTLESNAKE RESERVOIR
2,181 AF-TOTAL-EL.6580

BALD MTN. TUNNEL
Q=960 cfs

POLE HILL POWERPLANT
33,250 KW

SURGE TANK

PENSTOCKS (2)
Q=960 cfs

RATTLESNAKE TUNNEL
Q=550 cfs

CARTER LAKE PRESSURE TUNNEL
Q=550 cfs

FLATIRON POWERPLANT
63,000 KW

CHARLES HANSEN CANAL
Q=1,500 cfs

CARTER LAKE
112,230 AF-TOTAL-EL.5759

FLATIRON RESERVOIR
760 AF-TOTAL-EL.5472.8

ST VRAIN SUPPLY CANAL

LYONS TUNNEL
Q=575cfs

Q=625 cfs

OUTLET EL. 5618

HORSETOOTH SUPPLY CONDUIT
Q=375cfs

CHARLES HANSEN FEEDER CANAL
Q=550 cfs

CACHE LA POUDRE RIVER

WINDSOR SECTION-CHARLES HANSEN CANAL
Q=250 cfs

N. POUDRE SUPPLY CANAL
Q=250 cfs

NORTH POUDRE DITCH

NORTH POUDRE DIVERSION DAM

POUDRE VALLEY & RESERVOIR COMPANY CANAL

BOULDER CREEK SUPPLY CANAL
Q=200 to 175 cfs

RABBIT MTN. TUNNEL

FLATIRON PUMPING PLANT
Q=370 cfs @ 240 HEAD
REVERSIBLE FOR POWER
6,500 KW. @ 290' HEAD

ST VRAIN CREEK

LITTLE THOMPSON RIVER

BIG THOMPSON RIVER

BIG THOMPSON POWERPLANT
4,500 KW @ 180' HEAD

PENSTOCK
Q=370 cfs

CHARLES HANSEN FEEDER CANAL
Q=930 cfs

OUTLET EL. 5293.0

HORSETOOTH RESERVOIR
151,752AF-TOTAL-EL.5430

DIXON FEEDER CANAL
OUTLET EL. 5270
Q=8 cfs

SOUTH PLATTE SUPPLY CANAL
Q=230 to 115 cfs

BOULDER RESERVOIR
(CITY OF BOULDER AND NORTHERN COLORADO WATER CONSERVANCY DISTRICT)
12,600AF-TOTAL-EL.5183

BOULDER CREEK

COAL RIDGE WASTE LAKE
(PLATTE VALLEY DITCH COMPANY)
650AF-TOTAL-EL.4930

SO. PLATTE RIVER

ELEVATION ABOVE SEA LEVEL

11,000 10,500 10,000 9,500 9,000 8,500 8,000 7,500 7,000 6,500 6,000 5,500 5,000 4,500

MILES (APPROX.)

0 5 10 15 20 25 30 35 40 45

60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 35 40

NOTE

All water surface elevations for reservoirs refer to maximum operating water surface.

EXPLANATION

---- Underground, as buried conduit, siphon, or tunnel.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLORADO - BIG THOMPSON PROJECT - COLO.

PROFILE - DIAGRAM

DRAWN P.H.W. SUBMITTED
TRACED J.K.P. (S.P.R.D.) RECOMMENDED
CHECKED APPROVED

DENVER, COLORADO FEB. 24, 1950

245-704-2704

REV. 9-12-50

**Exhibit 3**

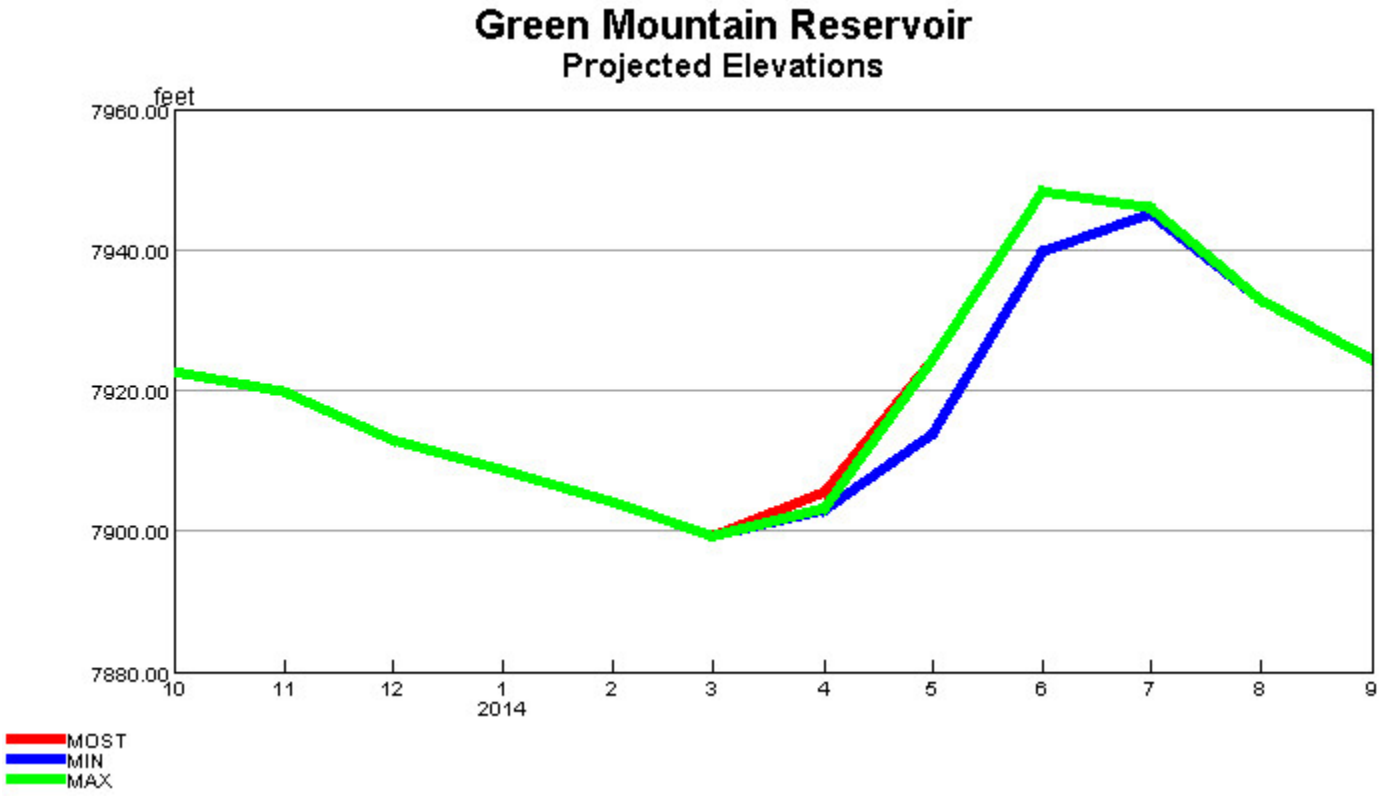

Green Mountain Reservoir
Projected Elevations
feet
7960.00
7940.00
7920.00
7900.00
7880.00
10
11
12
1
2
3
4
5
6
7
8
9
2014
MOST
MIN
MAX

**Exhibit 4**

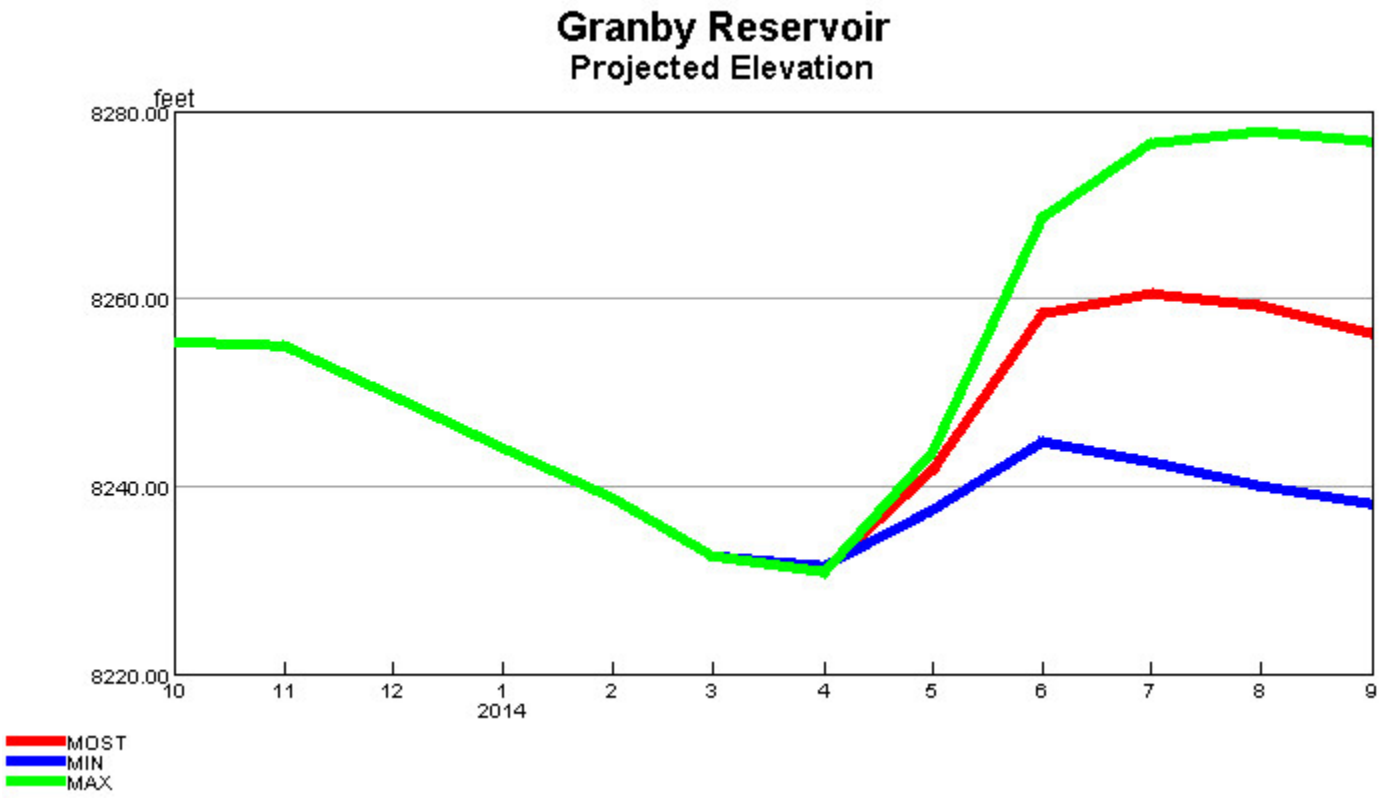

Granby Reservoir
Projected Elevation
feet
8280.00
8260.00
8240.00
8220.00
10
11
12
1
2014
2
3
4
5
6
7
8
9
MOST
MIN
MAX

**Exhibit 5**

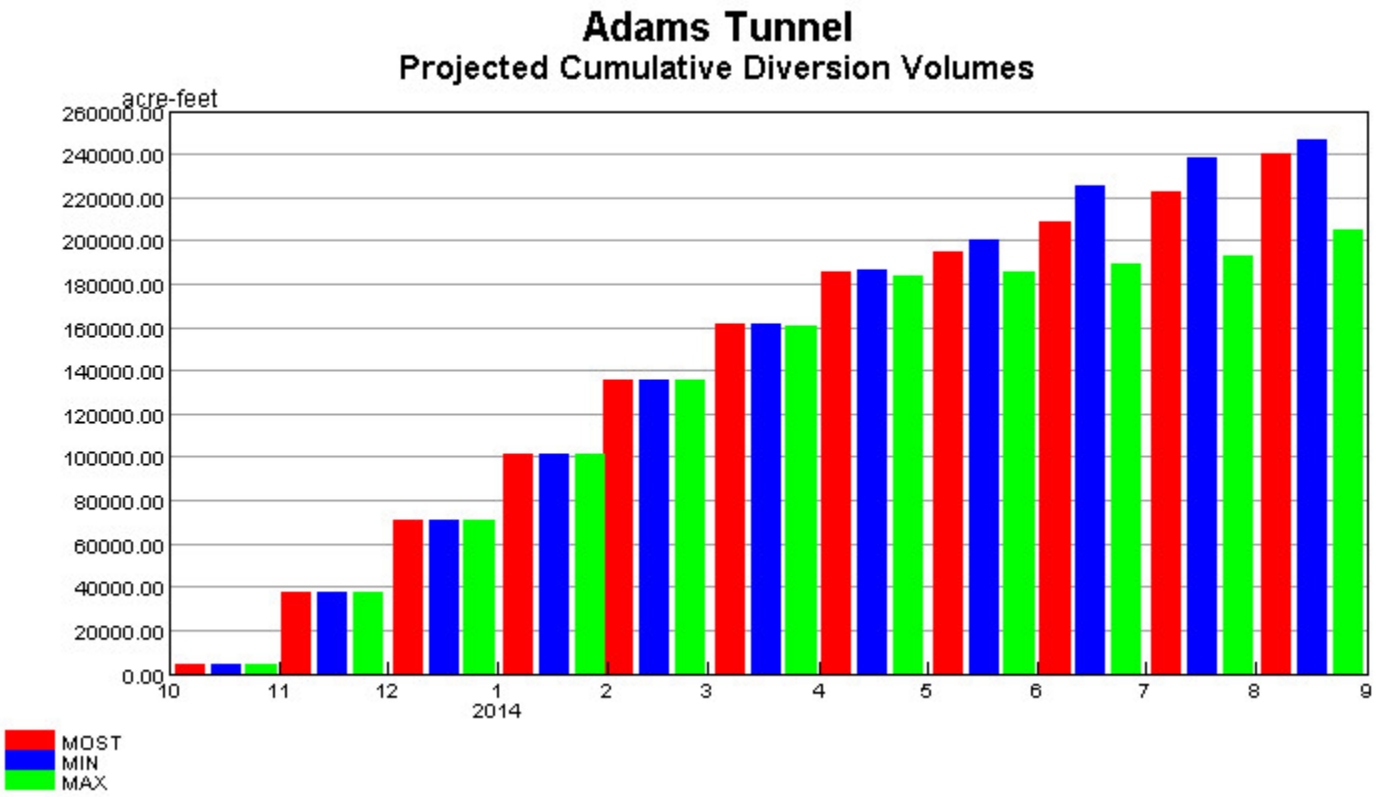

Adams Tunnel
Projected Cumulative Diversion Volumes
acre-feet
260000.00
240000.00
220000.00
200000.00
180000.00
160000.00
140000.00
120000.00
100000.00
80000.00
60000.00
40000.00
20000.00
0.00
10
11
12
1
2
3
4
5
6
7
8
9
2014
MOST
MIN
MAX

**Exhibit 6**

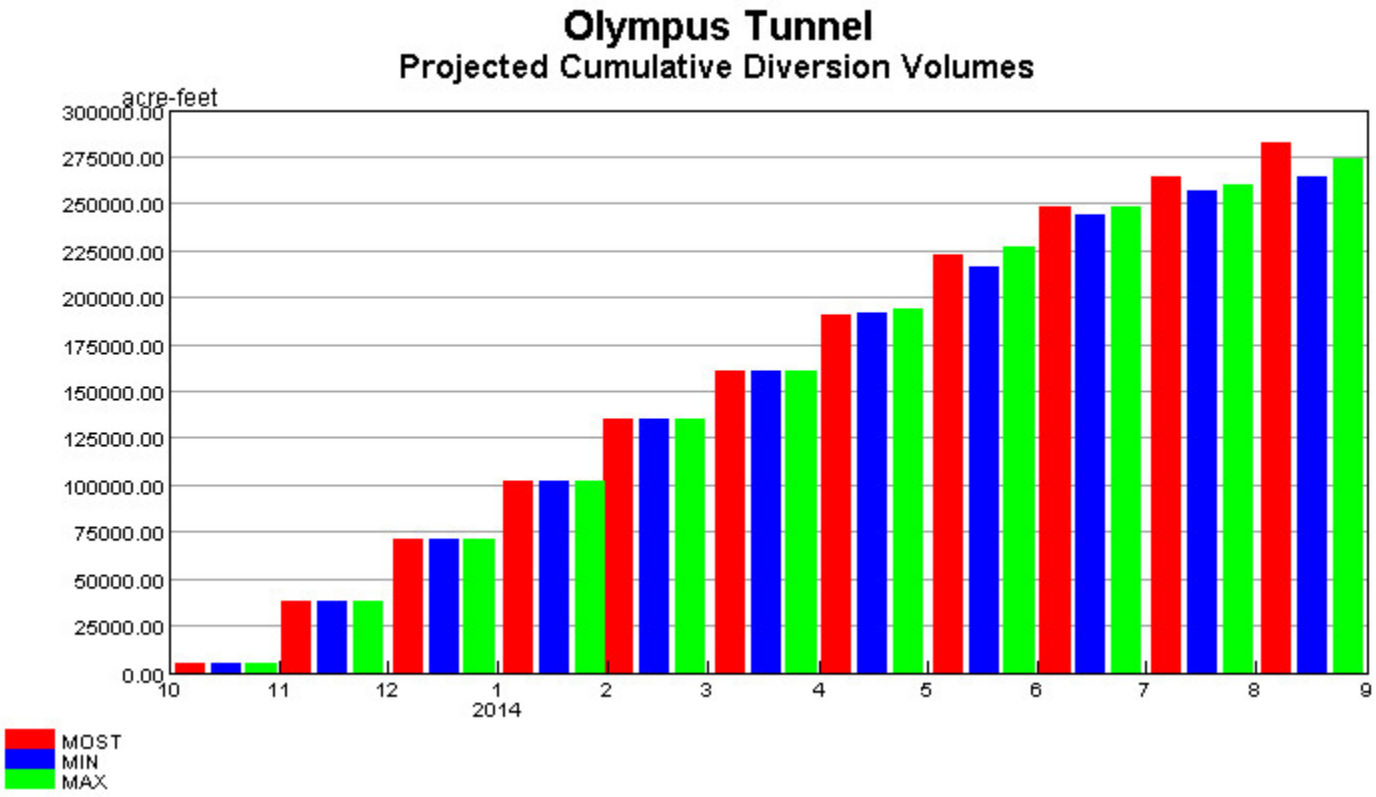

Olympus Tunnel
Projected Cumulative Diversion Volumes
acre-feet
300000.00
275000.00
250000.00
225000.00
200000.00
175000.00
150000.00
125000.00
100000.00
75000.00
50000.00
25000.00
0.00
10
11
12
1
2
3
4
5
6
7
8
9
2014
MOST
MIN
MAX

**Exhibit 7**

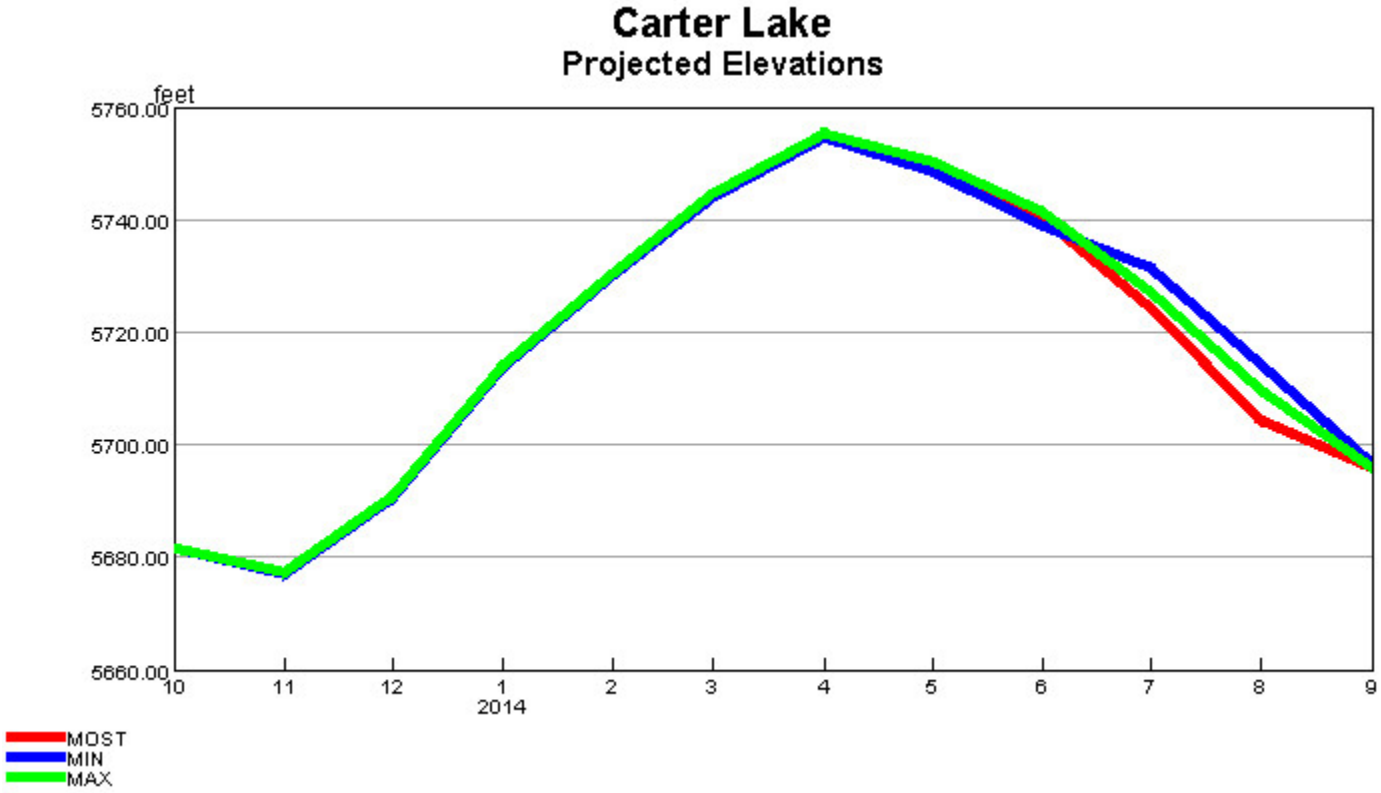

Carter Lake
Projected Elevations
feet
5760.00
5740.00
5720.00
5700.00
5680.00
5660.00
10
11
12
1
2014
2
3
4
5
6
7
8
9
MOST
MIN
MAX

**Exhibit 8**

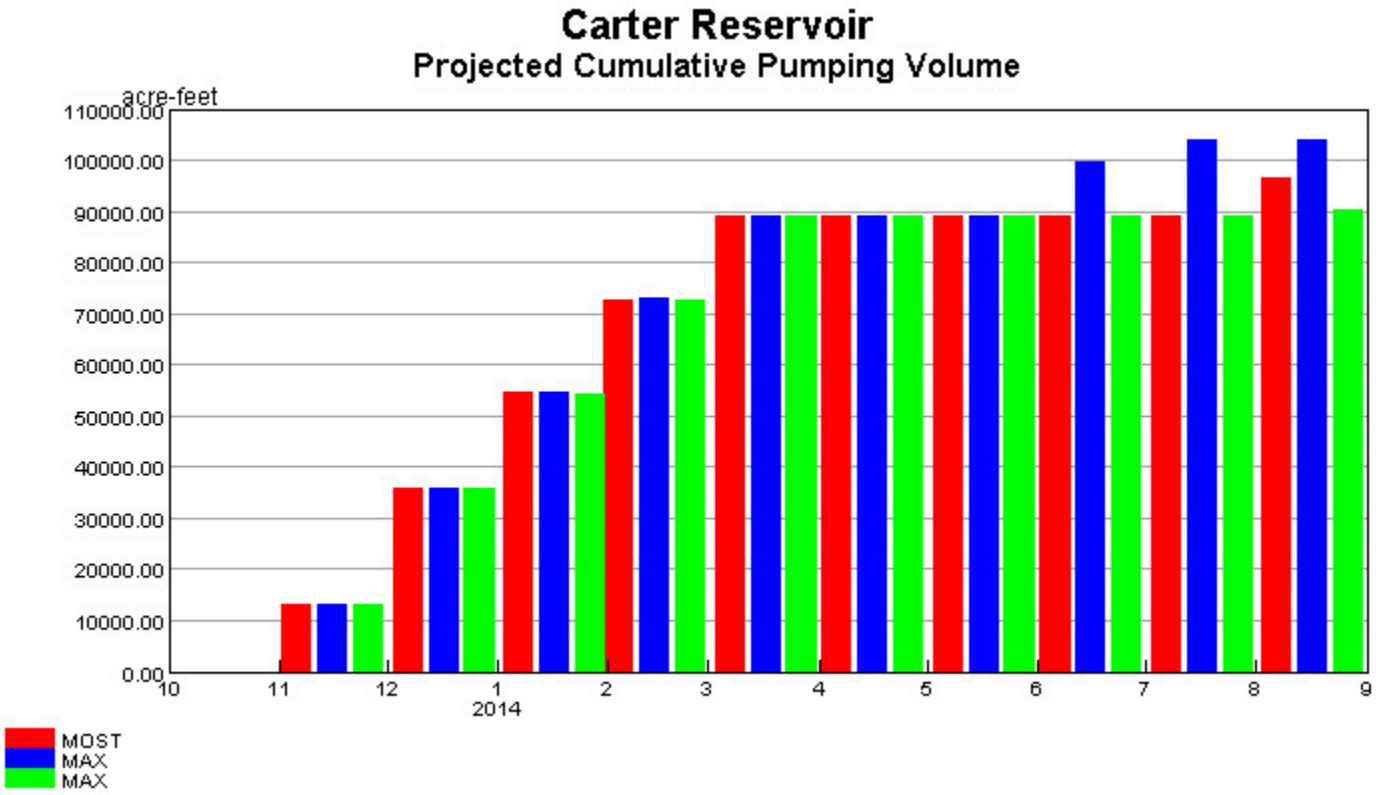

Carter Reservoir
Projected Cumulative Pumping Volume
acre-feet
110000.00
100000.00
90000.00
80000.00
70000.00
60000.00
50000.00
40000.00
30000.00
20000.00
10000.00
0.00
10
11
12
1
2
3
4
5
6
7
8
9
2014
MOST
MAX
MAX

**Exhibit 9**

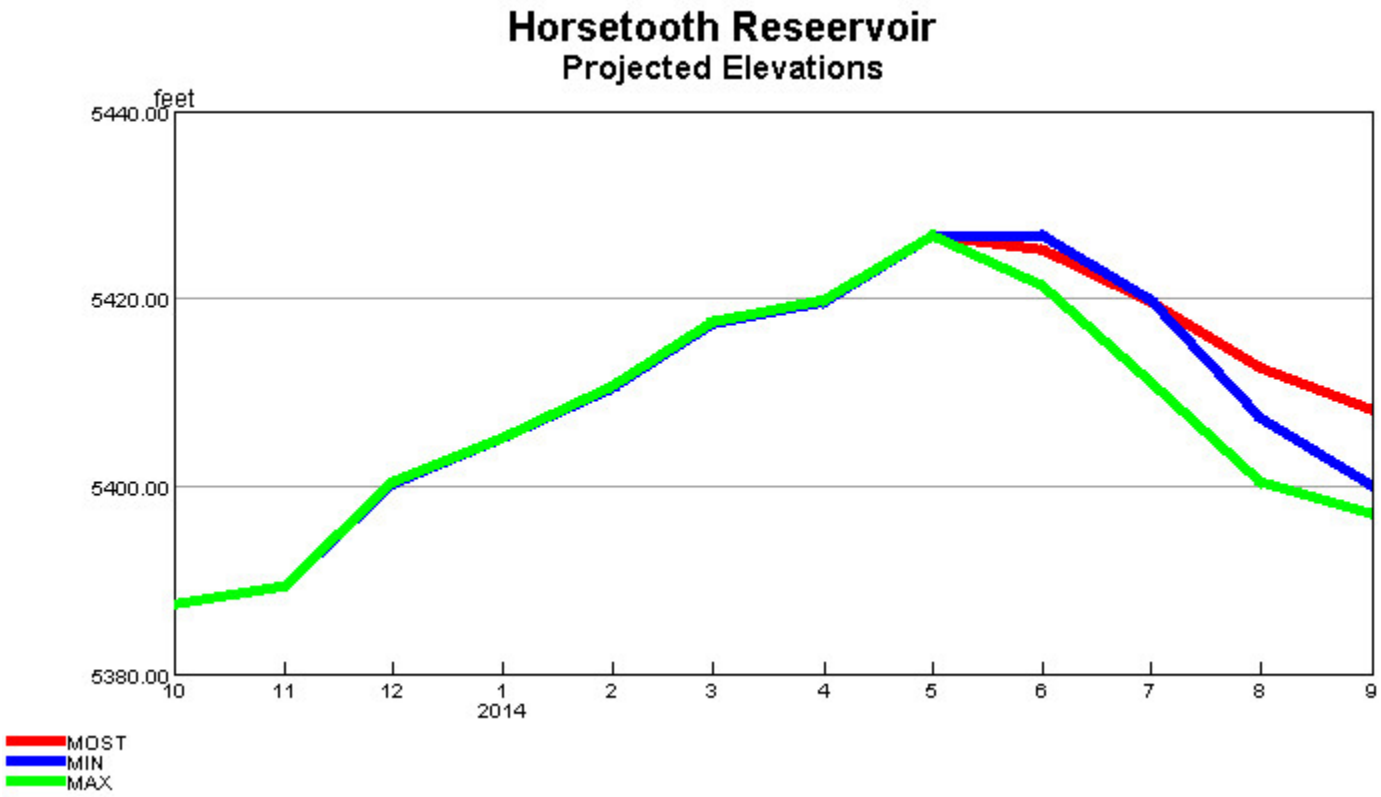
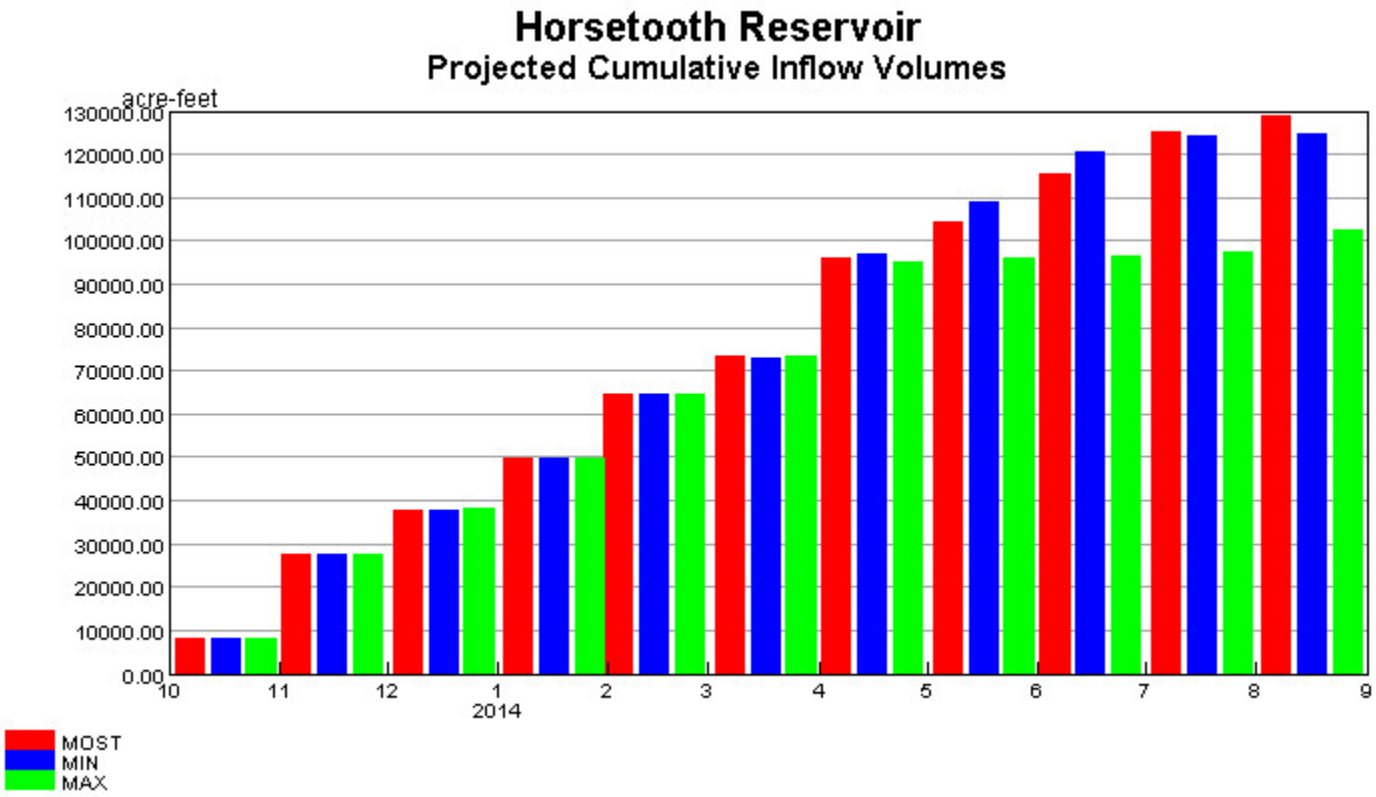

Horsetooth Reseervoir
Projected Elevations
feet
5440.00
5420.00
5400.00
5380.00
10
11
12
1
2014
2
3
4
5
6
7
8
9
MOST
MIN
MAX

**Exhibit 10**


Horsetooth Reservoir
Projected Cumulative Inflow Volumes
acre-feet
130000.00
120000.00
110000.00
100000.00
90000.00
80000.00
70000.00
60000.00
50000.00
40000.00
30000.00
20000.00
10000.00
0.00
10
11
12
1
2
3
4
5
6
7
8
9
2014
MOST
MIN
MAX

* * * * * * * * *

This is the 62nd 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 & 2 and the generating facilities of the Fryingpan-Arkansas Project. The purpose 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 WY 2012 and the other part presents the plan of generation and pumping operations for WY 2013.

An update on the System generation and pumping operations is included in the "Water Supply and Utilization" report, which is issued monthly.

**WESTERN DIVISION SYSTEM POWER OPERATIONS**
**GENERATION AND PUMP ENERGY**

**TABLE OF CONTENTS**

## WESTERN DIVISION POWER SYSTEM
## WATER YEAR 2013 – GENERATION AND PUMP ENERGY SUMMARY

WY 2013 (WY2013) was a productive year for power plants in the Colorado-Big Thompson (C-BT) and the Fryingpan-Arkansas (FryArk) projects. C-BT powerplants produced an accumulated gross generation total of 599.1 gigawatt-hours (GWh) of electricity during WY2013 representing 100 percent of its 30-year average. Meanwhile, the gross generation produced by the entire Western Division Power System's (System) was 2,014.8 GWh or 76 percent of the 30-year average. Gross generation includes one-half of the Yellowtail generation. Total 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. The System total generation was 1,457.4 GWh. The average for a WY is 2,400.7 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.

The Western Division Power System boundaries are illustrated in Exhibit 1. Table 1 in this section includes the total generation for every powerplant in the system. Table 3 shows monthly generation and pumping energy, by plant, as well as monthly System loads for the WY. The total energy that was required to operate the pumps in the System is included in Table 2. Some of the numbers included in this section were provided by Western Area Power Administration (WAPA).

Inflow for all the C-BT reservoirs during WY 2013 was below average until September 2013. The period of late May through early September was particularly dry and warm. The C-BT snowpack in general was below average the entire fall, winter and spring seasons. Diversions through the Adams Tunnel were high during most of the winter and spring. But with a quota of 60 percent declared by the Northern Colorado Water Conservancy District, the diversions of water from the west were relaxed in the late spring, which allowed for a strong skim operation from May - July. The Olympus Tunnel was able to skim 37,495 AF of water for power generation during WY 2013, producing an estimated 64,000 MW of electricity.

Pumping from the Willow Creek Canal during WY 2013 required 8.9 GWh, while Farr Plant and Flatiron Powerplant required 35.6 and 31.1 GWh, respectively. The three plants pumping operations were above-average in WY2013. Their power requirements were 120 percent of the 30-year average. The total energy used from the System to pump water during WY 2013 (including Mount Elbert) totaled 557.4 GWh. The average energy used per WY is 245.2 GWh. Mount Elbert's total energy used to pump water was 481.8 GWh. Mount Elbert's average energy used according to the 10-year average (Years 1990-1999) is 182.1 GWh.

According to the numbers provided by WAPA's office in Loveland, sales of electric power totaled 2,537,272 mega-watt hours (MWh) during WY 2013, with a revenue of $94,424,122. 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 885,587 MWh during WY 2013 for which WAPA paid a total of $26,960,443.

**WESTERN DIVISION POWER SYSTEM**
**WATER YEAR 2014 – GENERATION AND PUMP ENERGY FORECAST**

Under the most-probable runoff condition plan developed on October, 2013, the gross generation for the C-BT powerplants is projected to be 584.4 GWh during WY2014, while pump energy requirements from the C-BT Power System are expected to reach 67.8 GWh. The total generation for the entire Western Division Power System (System) is expected to be 1,819.3 GWh, with a total load of 2,163.4 GWh, leaving a shortfall of 344.1 GWh. The System generation includes one-half of the total Yellowtail Powerplant generation and the Mount Elbert Powerplant generation resulting from Fryingpan-Arkansas 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.

Under the reasonable-minimum runoff conditions plan from October, 2013, the Gross generation for the C-BT powerplants is projected to be 560.8 GWh in WY 2014 while the total System generation is projected to be 1,449.1 GWh during WY 2014, 370.2 GWh less than the total generation projected under most probable runoff conditions. Under this plan, pump energy requirements for the C-BT would total 68.3 GWh. The total System load is expected to be 2163.4 GWh over the entire WY, leaving a total generation shortfall of 714.3 GWh. Under the reasonable-minimum runoff conditions, total generation shortfalls are expected for every month of the WY.

If reasonable-maximum runoff conditions occur during WY 2014, the C-BT powerplants should produce 592.0 GWh of power generation while the System total generation should reach 1998.7 GWh, 179.4 GWh more than the generation projected under most-probable runoff conditions. Under the reasonable-maximum conditions the total C-BT pump energy requirements would be 68.1 GWh. The total System load is expected to be 2,163.4 GWh over the entire WY, leaving a total generation shortfall of 164.7 GWh.

Tables 4A through 4C summarize the projected monthly System generation, pump energy, and loads for the three forecasted runoff conditions for WY 2014. Exhibits 3A through 3C graphically display the gross generation less pumping for the C-BT contributing to the System for the most probable, reasonable-minimum, and reasonable-maximum inflow conditions. Tables 5A and 5B lists the scheduled maintenance for the various facilities in the C-BT. Tables 6 and 7 summarize the capacity data for the powerplants and pumping plants within the System, including the Yellowtail and Mount Elbert Units.

**Table 1**

WESTERN DIVISION SYSTEM
GENERATION FOR WY 2013

| Powerplant | September Gross Generation | | | Accum. Gross Generation 1/ | | |
|---|---|---|---|---|---|---|
| | 2013 (GWH) | Avg 2/ (GWH) | % of Avg. | WY 2013 (GWH) | Avg 2/ (GWH) | % of Avg |
| Green Mtn. | 4.6 | 6.4 | 72 | 25.7 | 51.9 | 50 |
| Marys Lake | 1.0 | 2.6 | 38 | 40.1 | 37.3 | 108 |
| Estes | 2.8 | 7.4 | 38 | 104.4 | 100.3 | 104 |
| Pole Hill | 4.1 | 11.1 | 37 | 177.3 | 172.3 | 103 |
| Flatiron 1&2 | 8.2 | 14.9 | 55 | 243.4 | 226.7 | 107 |
| Big Thompson | 0.2 | 0.9 | 22 | 8.2 | 10.9 | 75 |
| Seminoe | 7.7 | 7.3 | 105 | 90.8 | 132.5 | 69 |
| Kortes | 9.0 | 7.9 | 114 | 113.3 | 140.3 | 81 |
| Fremont C. | 8.6 | 22.1 | 39 | 147.9 | 239.6 | 62 |
| Alcova | 3.1 | 10.4 | 30 | 93.6 | 118.1 | 79 |
| Glendo | 1.6 | 7.2 | 22 | 54.9 | 80.3 | 68 |
| Guernsey | 0.6 | 3.2 | 19 | 9.1 | 19.4 | 47 |
| Boysen | 1.1 | 5.9 | 19 | 38.5 | 69.3 | 56 |
| Heart Mtn. | 3.2 | 2.9 3/ | 110 | 18.2 | 15.7 3/ | 116 |
| Buffalo Bill | 4.0 | 6.5 3/ | 62 | 51.5 | 68.3 3/ | 75 |
| Shoshone | 1.7 | 1.9 3/ | 89 | 17.6 | 20.3 3/ | 88 |
| Spirit Mtn. | 3.2 | 2.9 3/ | 110 | 17.7 | 14.7 3/ | 120 |
| Mt. Elbert | 22.5 | 14.5 4/ | 155 | 339.3 | 169.0 4/ | 201 |
| Yellowtail | 41.7 | 63.9 5/ | 65 | 423.3 | 959.0 5/ | 44 |
| Total | 128.9 | 199.9 | 64 | 2014.8 | 2645.9 | 76 |

1/ Oct-Sep
2/ 1976-2005 average
3/ 1995-2012 average
4/ 1990-1999 average
5/ 1971-1990 average; In general 1/2 of Yellowtail energy is dedicated to the Western Division System through marketing arrangement. The other 1/2 is marketed in Eastern Division System.

**Table 2**

PUMP ENERGY USED DURING WY2013

| Pumping Plant | September Pump Energy | | | Oct-September Pump Energy | | |
|---|---|---|---|---|---|---|
| | 2013 (GWH) | Avg 1/ (GWH) | % of Avg | WY2013 (GWH) | Avg 1/ (GWH) | % of Avg |
| Willow Crk | 0.0 | 0.2 | - | 8.9 | 5.7 | 156 |
| Farr | 0.9 | 2.5 | 36 | 35.6 | 30.6 | 116 |
| Flatiron 3 | 0.4 | 0.9 | 44 | 31.1 | 26.8 | 116 |
| Mt. Elbert | 33.2 | 18.8 2/ | 177 | 481.8 | 182.1 2/ | 265 |
| Total | 34.5 | 22.4 | 154 | 557.4 | 245.2 | 227 |

1/ 1976-2005 average

2/ 1990-1999 average

**Table 3**

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2013 OPERATIONS
GROSS GENERATION LESS PUMPING IN GIGAWATT-HOURS

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mt. Elbert * | 3.4 | 0.7 | 3.8 | 0.9 | 2.6 | 0.3 | 2.8 | 0.9 | 1.7 | 0.6 | 0.5 | 0.0 | 18.3 |
| Green Mtn. | 2.4 | 1.1 | 1.2 | 1.4 | 1.0 | 1.0 | 0.2 | 0.0 | 0.0 | 3.6 | 9.2 | 4.6 | 25.6 |
| Willow Cr. pump | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 4.8 | 2.3 | 0.7 | 0.0 | 0.0 | 8.9 |
| Farr pump | 5.5 | 0.6 | 4.0 | 5.9 | 5.3 | 5.2 | 4.4 | 1.2 | 0.3 | 2.3 | 0.0 | 0.9 | 35.6 |
| Marys Lake | 5.8 | 0.4 | 3.4 | 6.0 | 5.3 | 5.1 | 4.6 | 3.0 | 2.1 | 3.4 | 0.0 | 1.0 | 40.1 |
| Estes | 15.2 | 1.0 | 10.0 | 15.2 | 13.3 | 12.5 | 10.9 | 7.8 | 5.7 | 9.4 | 0.6 | 2.8 | 104.4 |
| Pole Hill | 23.9 | 1.6 | 9.7 | 21.1 | 21.0 | 19.5 | 16.4 | 22.4 | 23.6 | 14.0 | 0.0 | 4.1 | 177.3 |
| Flatiron 1&2 | 30.2 | 1.7 | 18.5 | 30.4 | 26.9 | 24.4 | 21.4 | 29.1 | 29.8 | 22.2 | 0.6 | 8.0 | 243.2 |
| Flatiron 3 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 0.2 | 1.7 |
| Flatiron 3 pump | 0.0 | 0.0 | 4.1 | 6.8 | 4.6 | 3.3 | 6.1 | 0.5 | 0.8 | 4.5 | 0.0 | 0.4 | 31.1 |
| Big Thompson | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 3.0 | 1.7 | 0.7 | 0.2 | 8.2 |
| Seminoe | 4.2 | 4.1 | 4.3 | 4.4 | 3.7 | 4.3 | 5.8 | 8.7 | 16.6 | 19.6 | 7.4 | 7.7 | 90.8 |
| Kortes | 5.3 | 5.0 | 5.1 | 5.6 | 5.0 | 5.4 | 7.1 | 10.4 | 22.5 | 24.7 | 8.2 | 9.0 | 113.3 |
| Fremont Canyon | 0.0 | 3.7 | 7.4 | 7.1 | 6.7 | 10.1 | 17.7 | 17.9 | 19.1 | 18.4 | 31.2 | 8.6 | 147.9 |
| Alcova | 3.0 | 3.2 | 3.6 | 3.7 | 3.3 | 5.3 | 6.4 | 7.4 | 17.6 | 23.2 | 13.8 | 3.1 | 93.6 |
| Glendo | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 11.0 | 23.6 | 17.8 | 1.6 | 54.9 |
| Guernsey | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 2.4 | 1.8 | 3.6 | 0.6 | 9.1 |
| Pilot Butte ** | 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 |
| Boysen | 2.4 | 2.1 | 2.4 | 2.2 | 2.2 | 2.3 | 2.5 | 4.7 | 5.9 | 5.9 | 4.8 | 1.1 | 38.5 |
| Shoshone | 0.7 | 1.3 | 1.4 | 1.3 | 1.4 | 0.7 | 1.2 | 1.8 | 2.0 | 2.1 | 2.0 | 1.7 | 17.6 |
| Buffalo Bill | 1.9 | 0.5 | 0.7 | 0.6 | 0.1 | 0.9 | 3.7 | 9.5 | 10.9 | 11.0 | 7.7 | 4.0 | 51.5 |
| Spirit Mtn. | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 2.7 | 3.2 | 3.4 | 3.3 | 3.2 | 17.7 |
| 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 | 0.0 |
| Heart Mtn. | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 3.3 | 2.9 | 3.2 | 3.2 | 3.2 | 18.2 |
| Yellowtail/2 | 8.5 | 14.9 | 16.6 | 16.3 | 14.9 | 16.0 | 16.3 | 20.5 | 21.4 | 23.0 | 22.7 | 20.9 | 211.6 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fry-Ark | 3.4 | 0.7 | 3.8 | 0.9 | 2.6 | 0.3 | 2.8 | 0.9 | 1.7 | 0.6 | 0.5 | 0.0 | 18.3 |
| CBT | 72.8 | 4.7 | 34.7 | 61.4 | 57.6 | 54.0 | 42.5 | 57.6 | 60.8 | 46.8 | 12.5 | 19.6 | 524.9 |
| North Platte | 12.5 | 16.0 | 20.4 | 20.8 | 18.7 | 25.1 | 37.0 | 46.0 | 89.2 | 111.3 | 82.0 | 30.6 | 509.6 |
| Bighorn | 16.5 | 18.8 | 21.1 | 20.4 | 18.6 | 19.9 | 25.0 | 42.5 | 46.3 | 48.6 | 43.7 | 34.1 | 355.1 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TOTAL GEN | 105.2 | 40.1 | 80.0 | 103.4 | 97.5 | 99.3 | 107.2 | 147.0 | 198.0 | 207.3 | 138.6 | 84.3 | 1408.0 |
| TOTAL LOAD | 162.5 | 162.3 | 177.2 | 172.6 | 137.1 | 149.2 | 176.3 | 184.8 | 211.2 | 262.2 | 211.2 | 156.8 | 2163.4 |
| SURPLUS/DEFICIT | -57.3 | -122.2 | -97.2 | -69.2 | -39.6 | -49.9 | -69.1 | -37.8 | -13.2 | -54.9 | -72.6 | -72.6 | -755.4 |

**Table 4A**

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2014 FORECASTED OPERATIONS
MOST PROBABLE WATER SUPPLY CONDITION
GROSS GENERATION AND PUMPING IN GIGAWATT-HOURS

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mt. Elbert * | 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. | 4.5 | 3.8 | 3.6 | 2.6 | 2.0 | 2.2 | 1.0 | 1.2 | 5.9 | 8.8 | 8.5 | 6.3 | 50.4 |
| Willow Cr. pump | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 4.0 | 3.0 | 0.7 | 0.2 | 0.2 | 9.8 |
| Farr pump | 0.0 | 1.0 | 5.0 | 5.0 | 4.7 | 5.3 | 3.3 | 0.0 | 0.0 | 0.0 | 1.5 | 2.5 | 28.3 |
| Marys Lake | 0.0 | 0.0 | 3.0 | 6.1 | 5.4 | 6.1 | 4.6 | 4.5 | 1.7 | 2.5 | 2.5 | 3.1 | 39.5 |
| Estes | 0.0 | 2.4 | 10.0 | 10.0 | 9.1 | 10.0 | 9.7 | 10.0 | 4.3 | 6.6 | 6.6 | 8.0 | 86.7 |
| Pole Hill | 0.0 | 3.9 | 23.7 | 25.1 | 11.5 | 12.9 | 20.0 | 23.6 | 24.1 | 19.7 | 11.1 | 12.5 | 188.1 |
| Flatiron 1&2 | 0.0 | 4.5 | 27.3 | 28.8 | 13.6 | 15.1 | 23.5 | 27.1 | 27.8 | 23.2 | 13.1 | 14.6 | 218.6 |
| Flatiron 3 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 |
| Flatiron 3 pump | 0.0 | 0.0 | 3.1 | 6.3 | 5.6 | 6.2 | 6.1 | 0.4 | 0.0 | 0.0 | 0.0 | 2.0 | 29.7 |
| Big Thompson | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 2.8 | 3.8 | 3.8 | 1.5 | 1.2 | 14.2 |
| Seminoe | 4.6 | 4.4 | 4.5 | 4.5 | 4.0 | 4.5 | 4.5 | 18.2 | 19.0 | 20.2 | 19.8 | 18.4 | 126.6 |
| Kortes | 5.6 | 5.4 | 5.6 | 5.6 | 5.0 | 5.6 | 5.4 | 20.6 | 19.9 | 20.6 | 20.6 | 19.9 | 139.8 |
| Fremont Canyon | 0.5 | 6.3 | 6.6 | 6.5 | 5.9 | 8.8 | 12.4 | 31.5 | 31.2 | 33.4 | 32.4 | 26.0 | 201.5 |
| Alcova | 4.2 | 4.1 | 4.2 | 4.2 | 3.8 | 5.4 | 4.1 | 16.8 | 16.3 | 16.8 | 16.8 | 14.2 | 110.9 |
| Glendo | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.6 | 17.8 | 13.7 | 23.4 | 17.2 | 6.7 | 80.5 |
| Guernsey | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 3.8 | 3.7 | 3.8 | 3.6 | 2.7 | 18.1 |
| Pilot Butte** | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 7.0 |
| Boysen | 0.0 | 0.0 | 0.0 | 2.5 | 2.3 | 2.6 | 3.7 | 10.3 | 11.4 | 10.1 | 8.0 | 5.9 | 56.8 |
| Shoshone | 1.1 | 1.1 | 1.1 | 1.1 | 0.9 | 0.9 | 1.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 18.3 |
| Buffalo Bill | 1.7 | 3.7 | 1.7 | 1.7 | 1.5 | 1.7 | 7.9 | 13.4 | 13.0 | 13.4 | 12.7 | 9.6 | 82.0 |
| Spirit Mtn. | 1.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.6 | 2.7 | 2.9 | 3.2 | 3.2 | 3.2 | 18.5 |
| 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 | 0.0 |
| Heart Mtn. | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 4.5 | 4.3 | 4.5 | 4.5 | 4.3 | 25.9 |
| Yellowtail/2 | 21.2 | 23.3 | 24.0 | 23.7 | 20.7 | 23.3 | 23.0 | 44.1 | 60.1 | 36.5 | 35.6 | 33.3 | 368.8 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | 5.8 | 13.5 | 59.5 | 61.3 | 31.3 | 34.8 | 48.7 | 64.8 | 64.6 | 63.9 | 41.6 | 41.0 | 530.8 |
| North Platte | 14.9 | 20.2 | 20.9 | 20.8 | 18.7 | 25.4 | 27.5 | 108.7 | 103.8 | 118.2 | 110.4 | 87.9 | 677.4 |
| Bighorn | 28.0 | 28.1 | 26.8 | 29.0 | 25.4 | 28.5 | 39.9 | 78.4 | 95.1 | 71.1 | 67.4 | 59.7 | 577.4 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TOTAL GEN | 50.0 | 64.2 | 109.6 | 113.6 | 78.5 | 91.2 | 119.6 | 255.8 | 268.3 | 257.6 | 221.3 | 189.6 | 1819.3 |
| TOTAL LOAD | 162.5 | 162.3 | 177.2 | 172.6 | 137.1 | 149.2 | 176.3 | 184.8 | 211.2 | 262.2 | 211.2 | 156.8 | 2163.4 |
| SURPLUS/DEFICIT | -112.5 | -98.1 | -67.6 | -59.0 | -58.6 | -58.0 | -56.7 | 71.0 | 57.1 | -4.7 | 10.1 | 32.8 | -344.1 |

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY

** PROJECTED VALUES ARE MARKETED ENERGY

**Table 4B**

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2014 FORECASTED OPERATIONS
REASONABLE MINIMUM WATER SUPPLY CONDITION
GROSS GENERATION AND PUMPING IN GIGAWATT-HOURS

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mt. Elbert * | 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. | 4.5 | 3.8 | 3.6 | 2.6 | 2.0 | 2.2 | 0.6 | 0.7 | 1.4 | 5.3 | 5.1 | 4.7 | 36.5 |
| Willow Cr. pump | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.8 | 0.7 | 0.3 | 0.1 | 0.1 | 4.5 |
| Farr pump | 0.0 | 1.0 | 5.0 | 5.0 | 4.7 | 5.3 | 3.1 | 0.5 | 0.0 | 2.8 | 2.0 | 1.7 | 31.2 |
| Marys Lake | 0.0 | 0.0 | 3.0 | 6.1 | 5.4 | 6.1 | 4.6 | 4.7 | 2.4 | 4.5 | 2.4 | 1.7 | 40.8 |
| Estes | 0.0 | 2.4 | 10.0 | 10.0 | 9.1 | 10.0 | 9.7 | 10.0 | 6.3 | 11.2 | 6.2 | 4.4 | 89.2 |
| Pole Hill | 0.0 | 3.9 | 23.7 | 25.1 | 11.5 | 12.9 | 19.6 | 24.1 | 18.3 | 21.1 | 9.8 | 6.6 | 176.5 |
| Flatiron 1&2 | 0.0 | 4.5 | 27.3 | 28.8 | 13.6 | 15.1 | 23.2 | 27.7 | 21.9 | 24.4 | 11.6 | 8.0 | 206.1 |
| Flatiron 3 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 |
| Flatiron 3 pump | 0.0 | 0.0 | 3.1 | 6.3 | 5.6 | 6.2 | 6.0 | 0.4 | 0.0 | 3.6 | 1.4 | 0.0 | 32.6 |
| Big Thompson | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 2.3 | 3.5 | 2.0 | 1.0 | 1.0 | 10.6 |
| Seminoe | 4.5 | 4.3 | 4.5 | 4.4 | 3.9 | 4.3 | 4.3 | 10.0 | 10.0 | 10.3 | 10.0 | 9.3 | 79.9 |
| Kortes | 5.6 | 5.4 | 5.6 | 5.6 | 5.0 | 5.6 | 5.4 | 12.2 | 11.8 | 12.2 | 12.2 | 11.8 | 98.2 |
| Fremont Canyon | 0.5 | 6.3 | 6.5 | 6.5 | 5.9 | 8.7 | 24.4 | 21.5 | 21.3 | 22.7 | 21.4 | 7.6 | 153.3 |
| Alcova | 4.2 | 4.1 | 4.2 | 4.2 | 3.8 | 5.4 | 11.1 | 11.6 | 11.3 | 11.6 | 11.6 | 4.2 | 87.2 |
| Glendo | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 1.9 | 4.0 | 15.4 | 21.9 | 12.0 | 0.7 | 57.3 |
| Guernsey | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 2.8 | 3.7 | 3.8 | 3.8 | 2.5 | 17.1 |
| Pilot Butte ** | 1.2 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 1.9 | 4.0 | 3.8 | 3.7 | 1.7 | 17.6 |
| Boysen | 0.0 | 0.0 | 0.0 | 2.5 | 2.3 | 2.5 | 3.7 | 5.5 | 5.7 | 6.1 | 5.0 | 4.0 | 37.2 |
| Shoshone | 1.1 | 1.1 | 1.1 | 1.1 | 0.9 | 0.9 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.1 | 13.2 |
| Buffalo Bill | 2.8 | 2.3 | 1.7 | 1.7 | 1.5 | 1.7 | 4.1 | 13.2 | 12.8 | 13.1 | 11.9 | 9.0 | 75.8 |
| Spirit Mtn. | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 3.1 | 3.2 | 3.2 | 3.1 | 3.0 | 18.0 |
| 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 | 0.0 |
| Heart Mtn. | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 1.7 | 1.9 | 3.3 | 2.6 | 2.2 | 13.5 |
| Yellowtail/2 | 21.1 | 21.3 | 21.9 | 21.7 | 19.0 | 21.3 | 16.9 | 19.6 | 23.0 | 24.1 | 23.4 | 21.6 | 255.0 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 | 5.7 | 13.4 | 59.5 | 61.1 | 31.4 | 34.8 | 47.7 | 66.7 | 53.1 | 61.8 | 32.5 | 24.6 | 492.3 |
| North Platte | 14.8 | 20.1 | 20.7 | 20.7 | 18.6 | 25.3 | 47.6 | 62.1 | 73.3 | 82.5 | 71.0 | 36.1 | 493.0 |
| Bighorn | 28.3 | 25.2 | 24.8 | 27.0 | 23.7 | 26.5 | 28.5 | 46.2 | 51.7 | 54.9 | 50.7 | 42.6 | 430.1 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TOTAL GEN | 50.2 | 61.2 | 107.4 | 111.3 | 76.8 | 89.0 | 127.3 | 178.9 | 182.8 | 203.7 | 156.2 | 104.3 | 1449.1 |
| TOTAL LOAD | 162.5 | 162.3 | 177.2 | 172.6 | 137.1 | 149.2 | 176.3 | 184.8 | 211.2 | 262.2 | 211.2 | 156.8 | 2163.4 |
| SURPLUS/DEFICIT | -112.3 | -101.1 | -69.8 | -61.3 | -60.3 | -60.2 | -49.0 | -5.9 | -28.4 | -58.5 | -55.0 | -52.5 | -714.3 |

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY

** PROJECTED VALUES ARE MARKETED ENERGY

**Table 4C**

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2014 FORECASTED OPERATIONS
REASONABLE MAXIMUM WATER SUPPLY CONDITION
GROSS GENERATION AND PUMPING IN GIGAWATT-HOURS

| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mt. Elbert * | 1.3 | 2.4 | 2.4 | 2.5 | 3.0 | 2.5 | 3.5 | 3.9 | 4.7 | 4.4 | 2.0 | 1.0 | 33.6 |
| Green Mtn. | 4.5 | 3.8 | 3.6 | 2.6 | 2.0 | 3.1 | 2.0 | 4.7 | 16.6 | 18.4 | 10.7 | 8.5 | 80.5 |
| Willow Cr. pump | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 5.8 | 5.7 | 1.4 | 0.4 | 0.4 | 15.2 |
| Farr pump | 0.0 | 1.0 | 4.9 | 5.0 | 4.7 | 5.3 | 3.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 25.0 |
| Marys Lake | 0.0 | 0.0 | 3.0 | 6.1 | 5.4 | 6.1 | 4.6 | 4.5 | 0.4 | 0.7 | 0.9 | 1.5 | 33.0 |
| Estes | 0.0 | 2.4 | 10.0 | 10.0 | 9.1 | 10.0 | 9.7 | 10.0 | 1.1 | 1.7 | 2.3 | 3.8 | 69.9 |
| Pole Hill | 0.0 | 3.8 | 23.6 | 25.1 | 11.5 | 12.9 | 20.3 | 25.1 | 24.3 | 16.9 | 9.1 | 7.7 | 180.3 |
| Flatiron 1&2 | 0.0 | 4.5 | 27.2 | 28.8 | 13.6 | 15.1 | 23.7 | 28.9 | 28.0 | 20.2 | 10.7 | 9.2 | 209.8 |
| Flatiron 3 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 |
| Flatiron 3 pump | 0.0 | 0.0 | 3.1 | 6.3 | 5.6 | 6.2 | 6.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 27.9 |
| Big Thompson | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 3.9 | 3.8 | 3.9 | 3.0 | 1.6 | 17.4 |
| Seminoe | 4.6 | 4.4 | 4.5 | 4.5 | 4.1 | 8.5 | 23.8 | 25.7 | 29.9 | 5.7 | 5.8 | 5.6 | 127.0 |
| Kortes | 5.6 | 5.4 | 5.6 | 5.6 | 5.0 | 10.6 | 26.7 | 27.6 | 26.7 | 5.6 | 5.6 | 5.4 | 135.4 |
| Fremont Canyon | 0.5 | 6.4 | 6.5 | 6.6 | 6.0 | 8.9 | 12.9 | 10.2 | 10.9 | 32.4 | 31.4 | 28.5 | 160.9 |
| Alcova | 4.2 | 4.1 | 4.2 | 4.2 | 3.8 | 5.4 | 4.1 | 4.3 | 4.2 | 14.2 | 14.2 | 13.8 | 80.5 |
| Glendo | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 0.6 | 17.0 | 11.9 | 24.1 | 17.8 | 6.9 | 79.5 |
| Guernsey | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 3.8 | 3.7 | 3.8 | 3.8 | 3.6 | 19.1 |
| Pilot Butte** | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 1.5 | 3.5 | 4.1 | 3.0 | 1.7 | 16.1 |
| Boysen | 0.0 | 0.0 | 0.0 | 2.6 | 2.3 | 7.7 | 10.3 | 9.8 | 10.9 | 11.9 | 10.8 | 6.8 | 73.1 |
| Shoshone | 1.1 | 1.1 | 1.1 | 1.1 | 0.9 | 0.9 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 1.7 | 19.1 |
| Buffalo Bill | 2.2 | 4.2 | 1.7 | 1.7 | 1.5 | 1.7 | 13.0 | 13.4 | 13.0 | 13.4 | 13.4 | 13.0 | 92.1 |
| Spirit Mtn. | 1.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 2.5 | 2.7 | 3.2 | 3.2 | 3.0 | 17.7 |
| 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 | 0.0 |
| Heart Mtn. | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 4.5 | 4.3 | 4.5 | 4.5 | 4.3 | 26.0 |
| Yellowtail/2 | 21.2 | 25.6 | 26.2 | 25.8 | 22.5 | 40.1 | 59.4 | 98.0 | 96.8 | 93.1 | 47.1 | 38.9 | 594.8 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fry-Ark | 1.3 | 2.4 | 2.4 | 2.5 | 3.0 | 2.5 | 3.5 | 3.9 | 4.7 | 4.4 | 2.0 | 1.0 | 33.6 |
| CBT | 5.7 | 13.2 | 59.4 | 61.1 | 31.4 | 35.6 | 50.4 | 70.6 | 68.3 | 60.6 | 36.3 | 31.2 | 523.8 |
| North Platte | 14.9 | 20.2 | 20.8 | 20.8 | 18.8 | 34.6 | 68.5 | 88.6 | 87.2 | 85.7 | 78.6 | 63.7 | 602.4 |
| Bighorn | 29.7 | 30.9 | 29.1 | 31.2 | 27.2 | 50.5 | 89.2 | 131.9 | 133.3 | 132.4 | 84.1 | 69.3 | 838.9 |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TOTAL GEN | 51.6 | 66.7 | 111.7 | 115.7 | 80.5 | 123.1 | 211.6 | 295.0 | 293.6 | 283.1 | 201.0 | 165.1 | 1998.7 |
| TOTAL LOAD | 162.5 | 162.3 | 177.2 | 172.6 | 137.1 | 149.2 | 176.3 | 184.8 | 211.2 | 262.2 | 211.2 | 156.8 | 2163.4 |
| SURPLUS/DEFICIT | -110.9 | -95.6 | -65.5 | -56.9 | -56.6 | -26.1 | 35.3 | 110.2 | 82.4 | 20.9 | -10.2 | 8.3 | -164.7 |

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY

** PROJECTED VALUES ARE MARKETED ENERGY

**Table 5**

**COLORADO-BIG THOMPSON AND FRYINGPAN-ARKANSAS PROJECTS**

**ESTIMATED MAINTENANCE SCHEDULE FOR WATER YEAR 2014**

| Facility | Description of Work | Begin Date | End Date | Generation Affected | Water ops Affected |
|---|---|---|---|---|---|
| Estes Unit 2 | Headcover Repair | 15-Oct-13 | 31-May-14 | Y | N |
| Estes Unit 3 | Annual Maintenance | 1-Jun-14 | 15-July-14 | Y | N |
| Estes Units - All | Units not available for Black Start Annual Test | | | | |
| Flatiron Unit 3 | Annual Maintenance | 5-May-14 | 6-Jun-14 | N | Y |
| Flatiron Unit 2 | Annual Maintenance | 14-Apr-14 | 23-May-14 | Y | N |
| Flatiron Unit 1 | KW1A Annual Transformer Maintenance | 10-Mar-14 | 13-Mar-14 | Y | N |
| Flatiron Unit 1 | Annual Maintenance | 24-Feb-14 | 4-Apr-14 | Y | N |
| Big T Powerplant | Annual Maintenance | 6-Jan-14 | 14-Feb-14 | N | N |
| Hansen Canal 930 Section | Annual Maintenance of Canal | 28-Mar-14 | 11-Apr-14 | Y | Y |
| Hansen Canal 550 Section | Annual Maintenance of Canal | 19-Sep-14 | 3-Oct-14 | Y | Y |
| Green Mountain Unit 1 | GM Unit 1 Annual Maintenance | 6-Jan-14 | 14-Feb-14 | N | N |
| Green Mountain Unit 2 | GM Unit 2 Annual Maintenance | 3-Mar-14 | 11-Apr-14 | N | N |
| Green Mountain Unit 1 | KZ1A Annual Transformer Maintenance | 27-Jan-14 | 28-Jan-13 | N | N |
| Green Mountain Unit 2 | KZ2A Annual Transformer Maintenance | 17-Mar-14 | 18-Mar-14 | N | N |
| Mt Elbert Unit 1 | Penstock Inspection | 2-Dec-13 | 5-Dec-13 | Y | N |
| Mt Elbert Unit 2 | Motor/Generator Cleaning, Testing, Inspection | 9-Sep-13 | 7-Mar-14 | Y | N |

**TABLE 6**

**WESTERN DIVISION - PICK-SLOAN MISSOURI BASIN PROGRAM**

**POWERPLANT DATA**

| Facility | No. Units | Capacity Each Unit | Total Installed Capacity | Normal Operating Head (ft) | Output at Rated Head ($ft^3/s$) |
|---|---|---|---|---|---|
| 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 | 2 | 43,000 | 86,000 | 1,096 - 1,118 | 1,070 |
| (Flatiron 1/) | 1 | 8,500 | 8,500 | 158-287 | 440 |
| Big Thompson | 1 | 5,300 | 5,300 | 183- 184 | 350 |
| Seminoe | 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 Butte2/ | 2 | 800 | 1,600 | -- -- | --- |
| Boysen | 2 | 7,500 | 15,000 | 72-112 | 2,415 |
| Shoshone3/ | 1 | 3,000 | 3,000 | -- -- | --- |
| Buffalo Bill3/ | 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 | ---------- | ------- |

**TABLE 7**

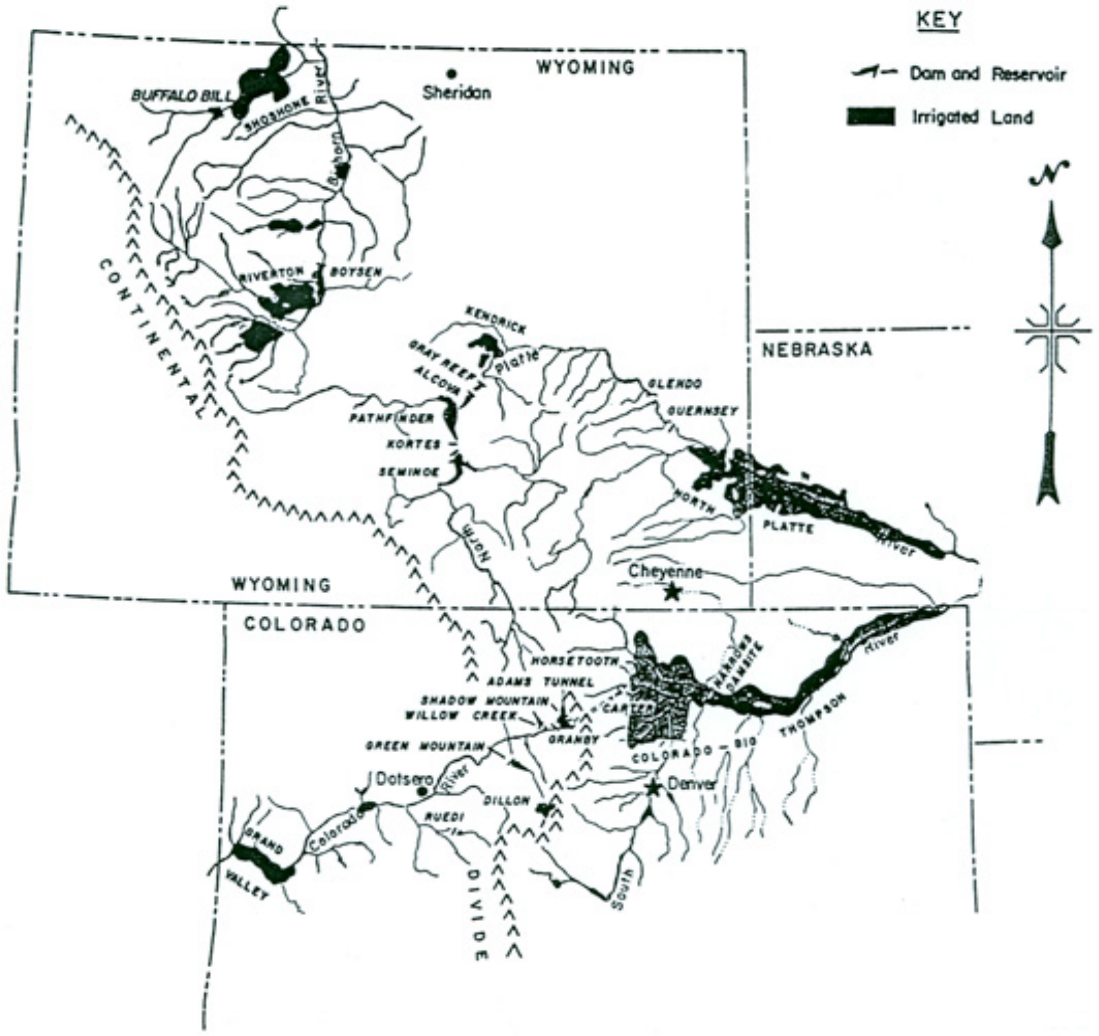
## WESTERN DIVISION - PICK-SLOAN MISSOURI BASIN PROGRAM

### PUMPING PLANT DATA

| | Pumping Units | | | Plant Rating | |
|---|---|---|---|---|---|
| Facilities | No | Capacity ($ft^3/s$) | Normal Operating Head (ft) | Installed (Hp) | Kwh to Pump 1-Acre-ft at Maximum Head |
| Granby | 3 | 600 | 92-186 | 18,000 | 227 |
| Willow Creek | 2 | 400 | 167-169 | 18,000 | 227 |
| Flatiron | 11/ | 440 | 173-287 | 13,000 | 391 |
| Mt. Elbert | 2 | 5,690 | 447-477 | 340,000 | 620 |

# APPENDIX B - EXHIBITS

**Exhibit 1**




PICK-SLOAN MISSOURI BASIN PROJECT

# WESTERN DIVISION

## WATER RESOURCE MAP

50 0 50 100

SCALE OF MILES

MAP NO. X-700-121

JUNE 1, 1976

**Exhibit 2**

# GROSS GENERATION LESS PUMPING
# WATER YEAR 2013

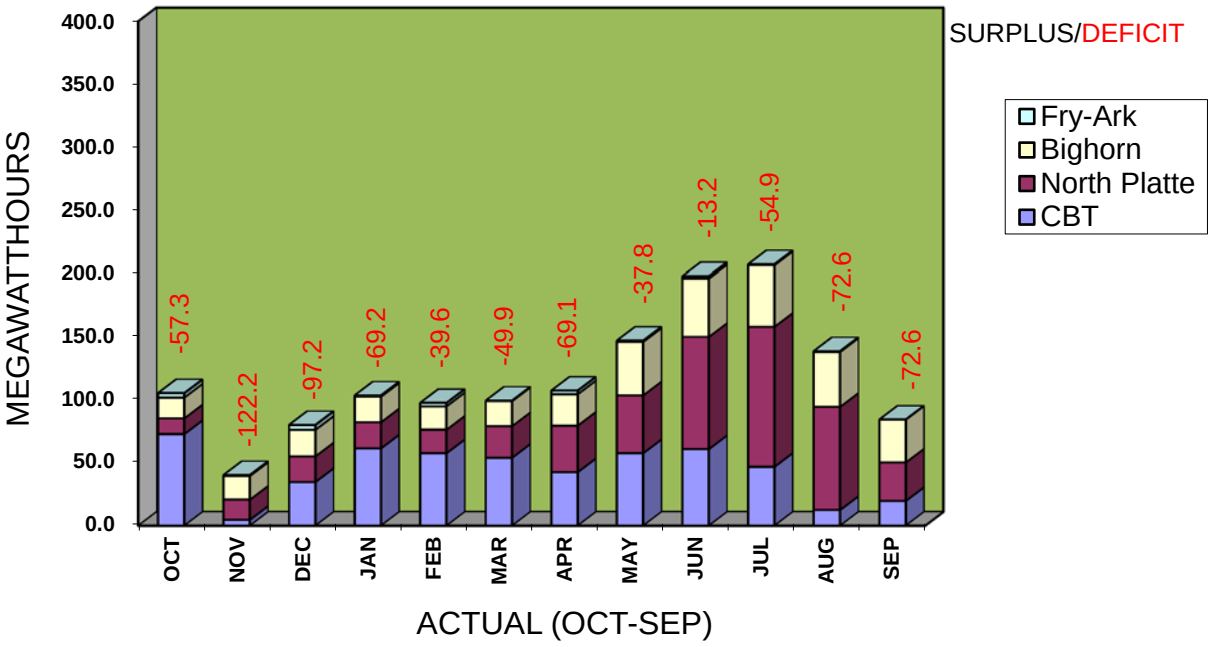


**Exhibit 3A**

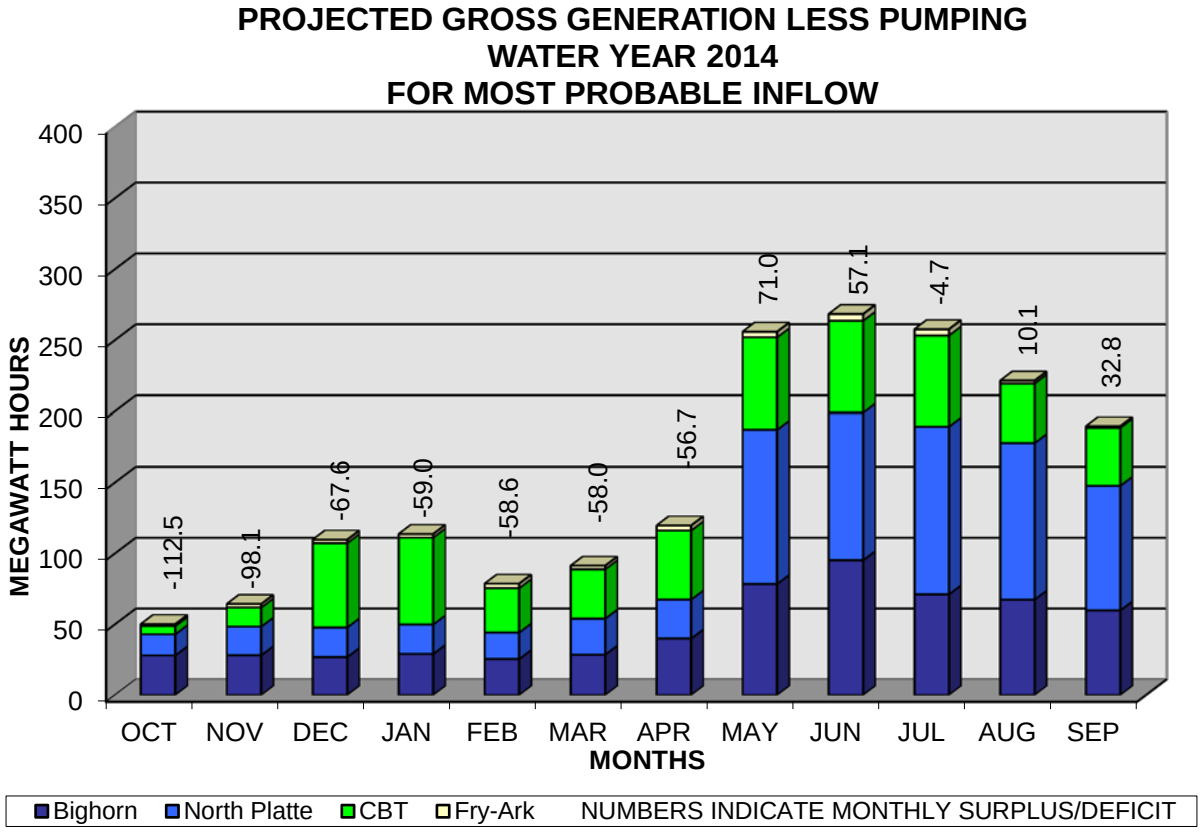

PROJECTED GROSS GENERATION LESS PUMPING
WATER YEAR 2014
FOR MOST PROBABLE INFLOW
MEGAWATT HOURS
400
350
300
250
200
150
100
50
0
-112.5
-98.1
-67.6
-59.0
-58.6
-58.0
-56.7
71.0
57.1
-4.7
10.1
32.8
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTHS
Bighorn
North Platte
CBT
Fry-Ark
NUMBERS INDICATE MONTHLY SURPLUS/DEFICIT

**Exhibit 3B**

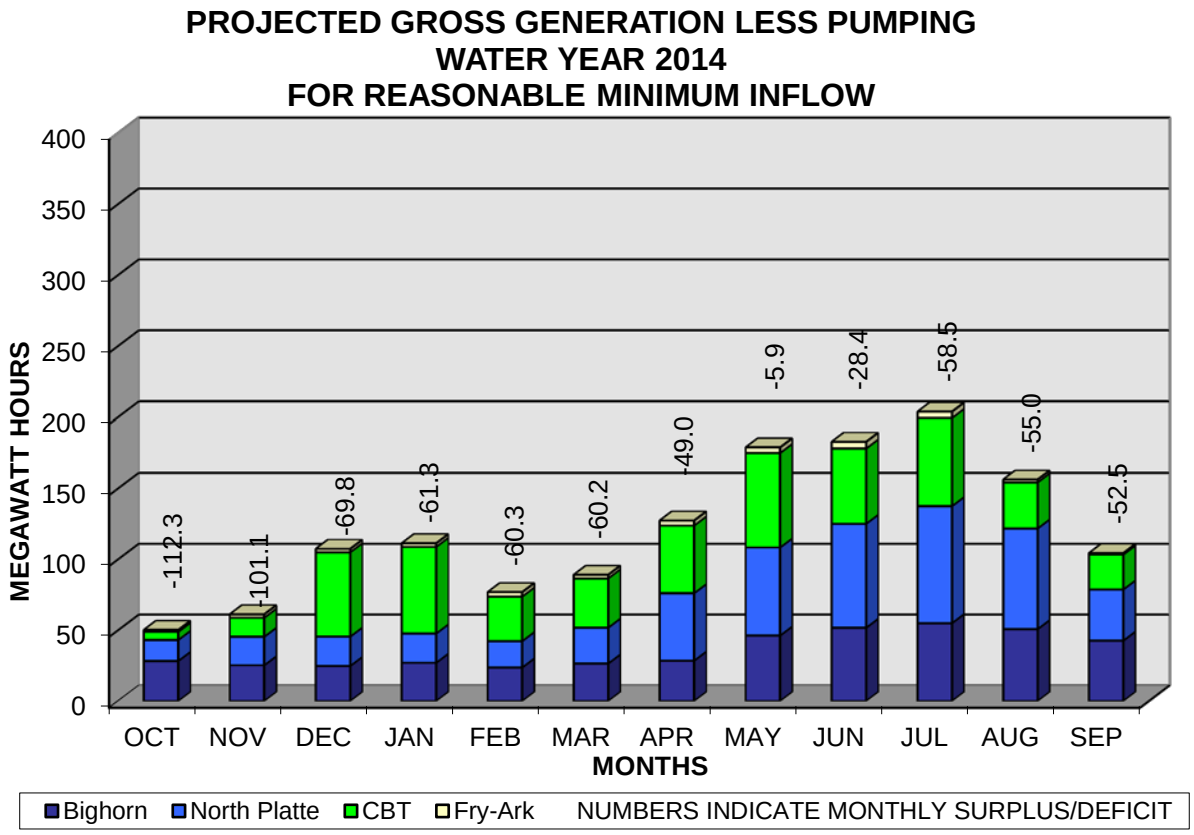

PROJECTED GROSS GENERATION LESS PUMPING
WATER YEAR 2014
FOR REASONABLE MINIMUM INFLOW
MEGAWATT HOURS
400
350
300
250
200
150
100
50
0
-112.3
-101.1
-69.8
-61.3
-60.3
-60.2
-49.0
-5.9
-28.4
-58.5
-55.0
-52.5
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTHS
Bighorn
North Platte
CBT
Fry-Ark
NUMBERS INDICATE MONTHLY SURPLUS/DEFICIT

**Exhibit 3C**

**PROJECTED GROSS GENERATION LESS PUMPING**
**WATER YEAR 2014**
**FOR REASONABLE MAXIMUM INFLOW**