



December 29, 2008

VIA E-MAIL and U.S. Mail

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Re: Windy Gap Firming Project Draft Environmental Impact Statement and Associated Application for a Clean Water Act Section 404 Permit

Dear Mr. Tully and Mr. Peter:

This letter contains the comments of the Colorado River District on the Windy Gap Firming Project (WGFP) Draft Environmental Impact Statement (DEIS) and the related Clean Water Act Section 404 permit application. The River District's primary comments are summarized below:

1. The DEIS is fundamentally flawed because (a) the Purpose and Need Statement is too narrow, (b) the No Action Alternative is speculative, and (c) the DEIS understates the actual difference between existing conditions and the Proposed Action ("PA"). The DEIS therefore does not accurately portray the impacts of the PA or other alternatives.
2. The DEIS does not adequately analyze the cumulative impacts on stream flows, aquatic resources and water quality caused by the PA and Denver Water's proposed Moffat System Project.

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3. Even though the DEIS understates the adverse impacts of the PA (and all action alternatives), the DEIS fails to adequately identify and analyze reasonable mitigation measures for the adverse impacts that are identified in the DEIS.
4. The PA conflicts with Senate Document 80.
5. The DEIS fails to reconcile conflicts between the PA and the C-BT Project authorization, C-BT Project water rights, and other federal law.
6. The DEIS fails to reconcile conflicts between the PA and the existing permits, water rights, and agreements related to the Windy Gap Project.
7. No Section 404 Permit should be issued for the PA because the DEIS fails to demonstrate that the PA is the least damaging practicable alternative.

I. Background

A. Colorado River Water Conservation District.

The Colorado River Water Conservation District (River District) is a political subdivision of the state of Colorado, created pursuant to C.R.S. § 37-46-101, *et seq.* The River District is comprised of all or parts of 15 western Colorado counties within the drainage basin of the Colorado River and its principal tributaries, including the Yampa, White and Gunnison Rivers. The River District was formed for the purpose of the conservation, use and development of the water resources of the Colorado River Basin for the benefit of all of the inhabitants of the district. The River District also is charged with safeguarding Colorado's entitlement to water under the Colorado River Compact.

B. History of the C-BT Project and Windy Gap Project.

The C-BT Project was authorized by Congress in 1937.¹ The authorizing legislation requires that the C-BT Project be constructed and operated in conformance with the feasibility report submitted to Congress – commonly referred to as Senate Document 80.² Senate Document 80 also

¹ See Act of August 9, 1937, 50 Stat 564, 595 (1937).

² *Id.* (Senate Document 80 is formally entitled *Synopsis of Report on Colorado-Big Thompson Project, Plan of Development and Cost Estimate prepared by the Bureau of Reclamation, Department of the Interior, 75th Congress, First Session, June 15, 1937.* Copy attached to these comments as Exhibit A.

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operates as a contract between the United States, acting through the Bureau of Reclamation (“USBR” or “Reclamation”), and the West Slope and Front Range parties affected by the C-BT Project. Senate Document 80 has the force and effect of a federal statute.³

Operation of the C-BT Project is also governed by the Blue River Decree.⁴ Senate Document 80 requires that the C-BT Project be operated “in a fair and efficient manner equitable to all parties having interests therein.”⁵ The USBR is required to operate the C-BT Project in accordance with the terms of Senate Document 80, and in accordance with the USBR’s role as “a trustee responsible for protection of the West Slope interests” in the C-BT Project.⁶ The River District is an expressly recognized beneficiary of the C-BT Project and is a party to the Blue River Decree.

The Windy Gap Project is a non-federal project sponsored by the Municipal Subdistrict of the Northern Colorado Water Conservancy District that relies on the C-BT Project for storage, conveyance and delivery of West Slope water to Colorado’s northern Front Range. The project is comprised of a small reservoir with a large pumping plant and pipeline, located on the Colorado River (downstream of the C-BT Project collection facilities) in Grand County. Windy Gap pumps water only when: 1) its relatively junior water right is in priority; and 2) excess storage space is available in the C-BT Project’s Granby Reservoir, also located in Grand County. The Municipal Subdistrict’s desire to firm the yield of Windy Gap is based in large part on the fact that Windy Gap normally diverts only in average water years. In very dry years, the Windy Gap Project’s junior water right is not in priority to divert. In wet years, there is little or no excess capacity available in the C-BT Project facilities to store and convey Windy Gap water.

In 1979, the Colorado Supreme Court ruled that the Municipal Subdistrict had failed to comply with the compensatory mitigation provisions of Colorado’s Water Conservancy District Act in its plan to develop the Windy Gap Project because the proposed project failed to adequately protect current and prospective water users in the Colorado River Basin.⁷ Following the court’s decision, the Municipal Subdistrict entered into the so-called Azure Agreement with the River

³ See Colorado River Storage Projects Act, 43 U.S.C. § 620j; *Public Service Company v. Federal Energy Regulatory Commission*, 754 P.2d 1555 (10th Cir. 1985).

⁴ See Supplemental Judgment and Decree, dated February 9, 1978, in Consolidated Case Nos. 2782, 5016 and 5017, Federal District Court, District of Colorado. (The original October 12, 1955, Findings of Fact and Conclusions of Law and Final Judgment and Final Decree in Consolidated Case Nos. 2782, 5016, 5017, and all subsequent rulings are referred to herein as the Consolidated Cases or the Blue River Decree). Copy attached to these comments as Exhibit B.

⁵ See Senate Document 80 at Page 3.

⁶ See Supplemental Judgment and Decree, dated February 9, 1978, at pg. 2, Consolidated Cases.

⁷ See *Colorado River Water Conservation District v. Municipal Subdistrict, Northern Colorado Water Conservancy District*, 198 Colo. 352, 610 P.2d 81 (1979).

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District, Grand County, NWCCOG, and other parties that allowed the Windy Gap Project to move forward.⁸ Only after the Azure Agreement was executed did Reclamation approve the Final Environmental Statement (“FES”) and issue a Record of Decision (“ROD”) for the Windy Gap Project. In fact, the terms and conditions of, and the mitigation called for by, the Azure Agreement were expressly recognized and effectively incorporated into both the FES and the ROD.⁹ By its own terms, the carriage contract for Windy Gap was conditioned on completion of the FES and execution of the ROD.¹⁰

The Municipal Subdistrict has proposed a variety of means to improve the yield of the Windy Gap Project, including the pre-positioning concept contained in the PA of moving federal C-BT Project water to the proposed new, non-federal Chimney Hollow Reservoir located on the Front Range. Pre-positioning would significantly increase the volume and frequency of Windy Gap’s transmountain diversions from the headwaters of the Colorado River in Grand County and would change the operation of the C-BT and Windy Gap Projects in ways not contemplated by the original agreements, authorizing documents and water right decrees for either project.

II. The DEIS is fundamentally flawed because it fails to accurately portray the impacts of the Proposed Action and the other NEPA alternatives.

A. The scope of the Purpose and Need Statement of the DEIS is so narrow that it precludes reasonable alternatives and skews the comparative impacts analysis.

The Purpose and Need Statement (DEIS, Sec. 1.3) states that the overall purpose and need is to firm 30,000 acre-feet of yield of the original Windy Gap Project. This narrow statement prevents a NEPA review of other less environmentally damaging alternatives. The underlying purpose and need for the proponents of the WGFP is to enhance their overall water supply in more general terms. The additional yield required to meet the subject portion of their future water demands could be met from many different sources other than additional diversions by the Windy Gap Project, such as additional conservation, reuse, and rotational fallowing of agricultural land on the Front Range. See DEIS Sections 1-6, 1-7 and 1-8.

⁸ See The Azure Agreement was supplemented by the March 29, 1985 *Supplement to Agreement of April 30, 1980*. The original agreement is referred to as the Azure Agreement; the supplemental agreement is referred to as the Supplemental Azure Agreement. Copies are attached to these comments as Exhibits C and D, respectively.

⁹ See Windy Gap Project, USBR Final Environmental Statement (FEIS 81-20), and Record of Decision, June 18, 1981.

¹⁰ See Article 12, Carriage Contract No. 14-06-700-7497, October 3, 1973. The original carriage contract has been amended by an Amendatory Contract, Contract No. 4-07-70-W10707, dated March 1, 1990.

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The narrow purpose and need statement means that all of the six alternatives considered in the DEIS (even the no action alternative) result in the diversion of additional water from the Colorado River Basin. The comparative differences of each alternatives' impact on the critical headwaters reach of the Colorado River is therefore relatively understated. Thus, the DEIS fails to adequately analyze the impacts of less environmentally damaging alternatives that would help to meet the stated demand for water.

B. The No Action Alternative is speculative.

To be reasonable, an alternative must be non-speculative. *See Utahans for Better Transportation v. U.S. Department of Transportation*, 305 F.3d 1152, 1172 (10th Cir. 2002). The "no action" alternative defined in the DEIS is speculative. The "no action" alternative assumes the enlargement of Longmont's Ralph-Price reservoir based merely on a statement by the City of Longmont that it might pursue such enlargement if the WGFP is not approved. *See* DEIS, Section 2.2.2. However, the DEIS fails to address the real potential that enlargement of Longmont's reservoir may be restricted or precluded by environmental requirements or economic infeasibility.

In addition, the DEIS assumes that Windy Gap demands will be much higher under the no action alternative as the demand under the action alternatives because it assumes that all Windy Gap participants, not just participants in the WGFP, will seek to maximize their Windy Gap water supply. *See e.g.*, DEIS Water Resources Technical Report at 81.

The result is that the DEIS artificially inflates diversions and the resulting impacts under the no action alternative while at the same time understating the difference between the impacts of a non-speculative no action alternative and the impacts of the action alternatives.

C. The DEIS dramatically understates the actual difference between existing conditions and the alternatives reviewed, including the PA.

The DEIS is based in part on a comparison of existing conditions, as modeled over a 1950 to 1996 study period, with the action alternatives as modeled over the same period. The existing conditions as modeled in the DEIS show an average annual diversion by the Windy Gap Project of 36,532 acre feet. *See* DEIS, Tables 3.2. However, the actual average annual Windy Gap diversions from 1985 to 2005 have been only 11,080 acre feet. The DEIS therefore overstates the actual existing conditions by more than 300% and understates the increase in future depletions by 25,452 acre feet per year. *See* Exhibit E, BBA Letter Report from Jeff Clark, dated December 23, 2008. The BBA Letter Report is incorporated into the River District's comments by this reference.

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The error produced by the modeled existing conditions is compounded throughout the DEIS. *See e.g.*, DEIS, Tables 3.3. and 3.4. In addition, the DEIS assumes that stream flows in the upper Colorado River are significantly lower than the actual gaged stream flow measurements. *See* BBA Letter Report, pg. 3. The result is that the DEIS understates the difference between the actual existing conditions and the impacts of all alternatives, including the PA.

III. The DEIS does not adequately analyze the cumulative impacts on stream flows, aquatic resources and water quality caused by the PA and Denver Water's proposed Moffat System Project.

CEQ regulations provide that a single EIS should be prepared for two or more projects that involve "cumulative" or "similar" actions. *40 C.F.R. § 1508.25(a)(2) and (3); Klamath-Siskiyou v. BLM*, 387 F.3d 989 (9th Cir. 2004). Cumulative actions are actions that "when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement." *40 C.F.R. § 1508.25(a)(2)*. Similar actions are actions which "when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." *40 C.F.R. § 1508.25(a)(2)*. Sometimes these actions must be considered together to prevent an agency from "dividing a project into multiple 'actions,' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact. *See Thomas v. Peterson*, 753 F.2d 754, 758 (9th Cir. 1985).

The anticipated Moffat Tunnel Extension Project and WGFP are both "common" and "similar" actions which should be evaluated in a single EIS, particularly, in light of the fact that they affect the same aquatic resources in the same geographic region. As explained at pages 4 to 5 of the BBA Letter Report, a single EIS, using a daily time-step model is required to properly analyze the cumulative impacts of the two proposed projects.

IV. Even though the DEIS understates the adverse impacts of the PA (and all action alternatives), the DEIS fails to adequately identify and analyze reasonable mitigation measures for the adverse impacts that are identified.

The DEIS Water Resources Technical Report Appendix (Table I-14) demonstrates that, even using the understated impacts inherent in the flawed DEIS, the PA would decrease flow in the Colorado River under average conditions below Windy Gap by approximately 23-27% from existing conditions. In addition, flows below Granby Reservoir will be reduced by 30% in June and 19% in July. *See* DEIS, WRTR, Table I-12. The WGFP can only legally divert water at the site of the Windy Gap pumping plant, which is located about 20 miles downstream of Granby Dam. The fact that the PA reduces flows in the Colorado River between Granby Dam and the Windy Gap pumping plant can only be attributed to changes in operation of the C-BT Project. This clearly demonstrates the impact of the PA and prepositioning on C-BT operations. The DEIS fails to address appropriate mitigation measures to offset these and other significant impacts.

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NEPA requires that mitigation measures be fully reviewed in the NEPA process. "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the action-forcing function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989). CEQ regulations require that the agencies include in the EIS a discussion of appropriate measures to mitigate adverse environmental impacts. *See 40 CFR §1502.14(f) and 40 CFR § 1502.16(h)*. Agencies must also state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. *See 40 CFR §1505.2(c)*. Mitigation must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated. *See Carmel-By-The-Sea v. Dept. of Transportation*, 123 F.3d 1142, 1154 (9th Cir. 1997). A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA. *See Northwest Indian Cemetery Protective Association v. Peterson*, 795 F.2d 688, 697 (9th Cir. 1986). Broad generalizations and vague references to mitigation, which fails to specify whether any mitigation measures would in fact be adopted or to provide an estimate of their effectiveness or why such estimate is not possible, do not meet NEPA requirements. *See Neighbors of Cuddy Mountain v. U.S. Forest Service*, 137 F.3d 1372, 1380-81 (9th Cir. 1998).

The brief discussion of mitigation measures (*See* DEIS, Section 3.25.1) is vague, and consists of a general intent to conduct further studies of impacts to water quality and to explore limited opportunities to re-time the identified draw down of Granby Reservoir levels. The DEIS completely fails to explain how these to-be-studied suggestions for mitigation will address impacts to streamflow, aquatic, scenic and recreational resources, or how effective they will be in addressing such impacts. There is no binding commitment on Reclamation or the Municipal Subdistrict to actually implement any mitigation measure. For these reasons, the DEIS does not satisfy the applicable CEQ standards for identification and analysis of mitigation measures.

The River District is committed to working with Reclamation, the Municipal Subdistrict, the Middle Park Water Conservancy District, Grand County, Northwest Colorado Council of Governments, and other entities to negotiate appropriate mitigation for any action alternative that may be adopted for the Windy Gap Firing Project.

V. The PA conflicts with Senate Document 80.

The DEIS contains only a very minimal discussion of whether the PA conflicts with the purpose of the C-BT Project and of the relationship between the proposed action and C-BT Project operations "in conformance with Senate Document 80." *See* DEIS, § 1.9.2.7. Although Reclamation briefly discusses these issues, the DEIS fails to examine whether the PA would violate Senate Document 80 and the Blue River Decree. Instead, the DEIS simply states that this determination will be made at a later time: "Prior to entering into a contract that would allow use of C-BT excess capacity, Reclamation must determine that the excess capacity contract is consistent with the provisions of Senate Document 80." *See* DEIS, § 1.10.2.

The primary purposes of Senate Document 80 have the force and effect of federal statute by virtue of their inclusion in the Blue River Decree, which, in turn, was incorporated into the Colorado River Storage Project Act (43 U.S.C. Sec. 620j). Senate Document 80 requires that the C-BT Project be operated:

1. To preserve the vested and future rights in irrigation.
2. To preserve the fishing and recreational facilities and the scenic attractions of Grand Lake, the Colorado River, and the Rocky Mountain National Park.
3. To preserve the present surface elevations of the water in Grand Lake and to prevent a variation in these elevations greater than their normal fluctuations.
4. To so conserve and make use of these waters for irrigation, power, industrial development, and other purposes, as to create the greatest benefits.
5. To maintain conditions of river flow for the benefit of domestic and sanitary uses of this water.¹¹

Even though the DEIS understates the impacts of the PA, it does demonstrate that the impacts of the PA would be inconsistent with the Senate Document 80 primary purposes. Pumping from the Windy Gap Project into Granby Reservoir and the subsequent conveyance of that water through the C-BT Project facilities has increased sediment and nutrient loading in Grand Lake, thus exacerbating the existing water quality problems at Grand Lake (nutrient loading, sediment, and impaired clarity). *See* WQCC Clarity Standard at Grand Lake, 5 CCR 1002-33, 33.44(Q), pg. 106; DEIS Section 3.8.2.4. The PA also would decrease water quality and increase water temperatures in the Colorado River below Windy Gap. *See* DEIS Section 3.8.2.4. The DEIS states the PA will reduce the frequency, duration, flow rate, and volume of spills from Granby Reservoir. This will result in less frequent flushing flows below Granby, which are necessary to maintain the stream channel and fishery in the Colorado River.¹²

Even though the DEIS understates the adverse impacts of the PA, the impacts attributable to the PA and the cumulative actions are inconsistent with Reclamation's obligation to operate the C-BT Project in accordance with Senate Document 80.

VI. The DEIS fails to reconcile conflicts between the PA and the C-BT Project authorization, C-BT Project water rights, and other federal law.

NEPA regulations require federal agencies to identify and evaluate possible conflicts between the proposed action and federal, regional, State and local laws. *See* 40 CFR §§ 1502.16(c)

¹¹ *See* Senate Document 80 at pg. 2.

¹² *See* Table D-4, pg. 24, Modeled Colorado River below Lake Granby Flows during Spill Events, Water Resources Technical Report Appendices, Windy Gap FIRMing Project.

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and 1506.2(d). Where an inconsistency between the proposed action and State and local laws exists, the regulations require the agencies to describe “the extent to which the agency would reconcile its proposed action with the plan or law.” *See 40 CFR § 1506.2(d)*.

A. Storage of C-BT Water on the Front Range is Limited to Horsetooth and Carter Lake Reservoirs.

Senate Document 80 and the Blue River Decree specify Horsetooth and Carter Lake Reservoirs as the C-BT Project’s primary Front Range water supply storage facilities.¹³ The proposed action would allow C-BT water to be stored in Chimney Hollow, a non-federal reservoir that is not authorized by Senate Document 80 or the Blue River Decree. The only reservoirs that are authorized for storage of C-BT water on the Front Range are Mary’s Lake Reservoir, Lake Estes, Horsetooth Reservoir and Carter Lake Reservoir. *See* Senate Document 80 at 18-21; Blue River Decree, Findings of Fact and Conclusions of Law at ¶ 14; Blue River Decree, Final Decree at p. 2.

The Blue River Decree also specifies Horsetooth and Carter Lake Reservoirs as the United States’ point of delivery of C-BT water to the Northern Colorado Water Conservancy District. *See* Blue River Decree, Findings of Fact and Conclusions of Law at ¶ 14; Final Decree at p. 2. Storage of Project water in, and the delivery of that water by the United States at, an entirely new Front Range reservoir simply was not considered in Senate Document 80 or the Blue River Decree.

The plan under the PA to pre-position C-BT Project water in a new reservoir would violate Senate Document 80 and the Blue River Decree because as the DEIS demonstrates, the PA would require fundamental changes in the manner and timing in which C-BT Project water is stored in Granby Reservoir, carried under the Continental Divide, stored on the Front Range, and delivered by the United States.

Furthermore, Reclamation has a trustee obligation, created by Senate Document 80, to deliver C-BT Project water for *irrigation* purposes in northeastern Colorado.¹⁴ Reclamation does not have a similar trustee obligation for the delivery of *municipal* Windy Gap Project water. Pre-positioning would put Reclamation’s trustee obligation at substantial risk because Reclamation’s control over the delivery of the irrigation water would be relinquished to a non-federal project and reservoir. Likewise, Reclamation’s trustee obligation to the West Slope beneficiaries of Senate Document 80 would be breached because Reclamation could not guarantee that C-BT Project water would be delivered and used in compliance with Senate Document 80.

¹³ *See* Senate Document 80 at pgs. 18-21; Blue River Decree, Findings of Fact and Conclusions of Law and Final Judgment at ¶ 14, pgs. 27-28. Senate Document 80 also refers to Arkins Reservoir, which was not constructed. The storage capacity of Arkins Reservoir was essentially transferred to the enlarged Horsetooth Reservoir. Smaller Front Range reservoirs were also integrated into the Project as power generation facilities.

¹⁴ *See* Order of November 2, 1977, Consolidated Cases.

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Because C-BT water is not decreed for storage in Chimney Hollow, *see Id.*, C-BT water may only be lawfully stored in Chimney Hollow if the United States first obtains a change of water right to add Chimney Hollow as a decreed storage facility for the C-BT Project. *See* C.R.S. § 37-92-103(5) (2008) (stating that a change of water right by definition includes “a change in the place of storage, . . . [and] a change from a fixed place of storage to alternate places of storage.”) The proposed action would create an additional 90,000 acre feet of storage capacity for C-BT water on the Front Range, and would therefore allow the C-BT Project to yield more water than has historically been produced through the facilities authorized by Senate Document 80 and the Blue River Decree.

The DEIS apparently relies on a personal communication between the Colorado State Engineer and Reclamation’s previous Area Manager to support the PA concept of pre-positioning C-BT Project water in Chimney Hollow Reservoir. *See DEIS at 3-7 (citing January 17, 2007 personal communication between then State Engineer Simpson, H.D. and Fred Ore, DEIS at 5-12).* This reliance is simply wrong. Colorado water law clearly provides that the Colorado State Engineer does not have the authority to make this type of determination. Only the water court has such authority (or, in the case of the Blue River Decree, the federal District Court). *See e.g., Empire Lodge Homeowners’ Ass’n*, 39 P.3d 1139, 1147 (Colo. 2001); *Simpson v. Bijou Irrigation Co.*, 69 P.3d 50 (Colo. 2003).¹⁵

The DEIS further complicates matters by stating that to “prevent the C-BT Project from storing more water in Granby Reservoir than it could without repositioning,” C-BT would stop storing water at Granby Reservoir when “the total C-BT contents in Granby and Chimney Hollow combined reaches 539,568 AF, which is the physical capacity of Granby Reservoir.” *See* DEIS at 3-24. This limitation presumably is intended to prevent an expansion of the C-BT Project water rights that would injure other water users. However, Colorado law requires such a term and condition to be contained within a change of water right decree.

Far from a mere formality, the requirement of court approval for changes of water rights “provides and important protection for potentially affected decreed water rights holders.” *Trail’s End Ranch, LLC v. Colo. Div. of Water Resources*, 91 P.3d 1058, 1063 (Colo. 2002). “They are designed to provide notice and the opportunity for potentially affected decreed water rights holders to participate in proceedings in order to protect their rights.” *Empire Lodge Homeowners’ Ass’n*, 39 P.3d at 1158. For example, the DEIS states that flows below Granby Reservoir will be reduced under the PA by as much as 30%. This shows the significant changes caused by the PA in stream flows and C-BT Project operations that must be addressed in a formal change of water right.

¹⁵ Nor does the fact that C-BT Project water would be stored in a reservoir located in a different basin from where the water is diverted change the strict, mandatory requirement to obtain a change decree imposed by Colorado water law. *See e.g., Twin Lakes Reservoir and Canal Co. v. Aspen*, 596 P.2d 45 (Colo. 1977); *Cities of Aurora and Colorado Springs v. Division 5 Engineer*, 799 P. 2d 33 (Colo. 1990).

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Reclamation may not substitute its authority or the administrative authority of the Colorado State Engineer for the authority of the appropriate court.

Even if the proposed storage limitation is contained in a proper change of water right decree, Reclamation must ensure that it can be implemented from a practical standpoint. Reclamation must demonstrate that it can bypass the physical inflow to the C-BT Project at times when Granby Reservoir has achieved a “paper fill” (Granby Reservoir content, plus Chimney Hollow Reservoir content).

In addition, the DEIS states that average annual C-BT Project diversions from East Slope sources would be reduced by 3,000 acre feet under the PA. *See* DEIS, Section 7.5.1. The reduction in the C-BT Project’s East Slope diversions is inconsistent with the operation of the Project contemplated by Senate Document 80. It is also inconsistent with Reclamation’s pledged intent to maximize the C-BT Project’s East Slope diversions as outlined in Reclamation’s 2001 letter to the River District regarding C-BT Project operations. *See* Letter from Maryanne C. Bach, Regional Director, Bureau of Reclamation, to R. Eric Kuhn, General Manager, Colorado River Water Conservation District, October 12, 2001, attached as Exhibit F hereto and incorporated into these comments by this reference.

B. The PA would illegally benefit the Windy Gap Project by releases of water from the Green Mountain Reservoir replacement pool.

Senate Document 80 specifies that the 52,000 acre-foot “replacement pool” in Green Mountain Reservoir shall be available to replace water in western Colorado “which would be usable there if not withheld or diverted by said project.”¹⁶ The C-BT Project is the only transmountain diversion project that the replacement pool is intended to benefit. The Project benefits by storing or diverting water that the Project would otherwise not be entitled to divert, in exchange for water released for the Green Mountain Reservoir replacement pool. The C-BT Project’s exchange of water from Green Mountain Reservoir was confirmed in the Consolidated Cases in 1992 (and contemporaneously by Colorado’s Division 5 Water Court).¹⁷ The amount of C-BT Project water stored in Granby Reservoir by virtue of the exchange with releases from the replacement pool varies from year to year but, in almost all years, the C-BT Project diverts a substantial percentage of the Project yield pursuant to the Green Mountain Reservoir replacement functions.

Under the PA, federal C-BT Project water stored in Granby Reservoir would be pre-positioned in a new non-federal reservoir on Colorado’s Front Range for the sole purpose of enhancing the yield of the non-federal Windy Gap Project. The Windy Gap Project would therefore

¹⁶ *See* Senate Document 80, pg. 3, para. 5(a).

¹⁷ *See* Findings of Fact, Conclusions of Law and Judgment and Decree, Consolidated Cases, dated November 10, 1992; and Case No. 88CW382, Water Division 5, State of Colorado.

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benefit from the release of water from Green Mountain Reservoir's replacement pool. The sequence by which the Windy Gap Project would benefit from the replacement pool may appear indirect; however, the result is clear: Pre-positioning would improve the Windy Gap Project yield by a trade of C-BT Project water that was previously stored in Granby Reservoir by virtue of releases from the Green Mountain Reservoir replacement pool. Senate Document 80, and, as described below, the Azure Agreement, both prohibit this result. The DEIS fails to identify or explain this significant conflict between the PA and applicable legal requirements.

C. Pre-positioning violates the federal Reservoir Projects Act.

The Reservoir Projects Act requires express Congressional approval for any modification of a Reclamation reservoir project that seriously affects the purposes for which the project was authorized, planned or constructed, or which involves a major operational change in the project.¹⁸ It would be difficult to conjure a more clear-cut example of a "major operational change" than the proposal to move C-BT Project water from storage in the federally-owned Granby Reservoir, located in Grand County on the west-side of the Continental Divide, into a new non-federal reservoir located on Colorado's Front Range, particularly a reservoir that did not exist and was not even contemplated at the time the C-BT Project was authorized.

When a proposed method of operating a Reclamation project is not clearly authorized by the project's authorizing legislation, the proper course is for Reclamation to allow Congress to address the issue. Under no circumstances does Reclamation have the discretion to make operating changes that are inconsistent with federal law. *See Southeastern Federal Power Customers v. Geren*, 514 F.3d 1316 (D.C. Cir. 2008); *See also* Order and Memorandum of Decision, dated September 25, 2008; *Lower Arkansas Valley Water Conservancy Dist. v. U.S., et al.*, F. Supp. 2d 1315, 1335 (D.Colo. 2008); "*Re Application of City and County of Denver*, 1989 WL 128576, at *5 (D. Colo. Oct 23, 1989) (noting that an application to change a 'water right to a different point of diversion, use and place of use' is '[b]y definition . . . a major operational change that may only be made upon congressional approval'"); and Opinion by Interior Solicitor Krulitz, re: Authority to Divert Flows from Hunter Creek Tributaries, Fryingpan-Arkansas Project, Colorado, 85 I.D. 326, 334-335 (June 28, 1978).

The C-BT project was approved by Congress to bring water from the western slope to lands on the eastern slope greatly in need of "supplemental irrigation" using the facilities contemplated in Senate Document 80. The use of C-BT Project facilities for the delivery and storage of Windy Gap municipal supplies and C-BT water rights in a new 90,000 acre foot non-federal Chimney Hollow Reservoir constitutes a "major structural and operational change." Thus, congressional approval must be obtained for the PA. This is particularly true when, as is the case here, the PA

¹⁸ *See* 43 U.S.C. § 390b(d).

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would result in impacts to the C-BT Project that are inconsistent with Reclamation's obligations under Senate Document 80. *See* DEIS, Section 3.5.2.6 and discussion in ¶ V., above.

- D. The DEIS fails to adequately consider the impacts of the PA on segments of the Colorado River that are eligible for designation under the Wild and Scenic Rivers Act.

The United States Bureau of Land Management has identified the reach of the Colorado River from Kremmling to No Name as eligible for designation and protection under the Wild and Scenic Rivers Act. These stream segments will be affected by the PA, so the DEIS must evaluate all actions within their control through the filter of the river's potential for designation. *See* Interagency Wild and Scenic Coordinating Council's technical report on "*The Wild and Scenic River Study Process*," pg. 29-30.

VII. The DEIS fails to reconcile conflicts between the PA and the existing permits, water rights, and agreements related to the Windy Gap Project.

- A. Absent a change of water rights decree or storage of Windy Gap water in Chimney Hollow would violate Colorado water law.

Diversion of Windy Gap Project water rights is authorized pursuant to decrees issued by Colorado water court (Windy Gap decrees).¹⁹ Storage clearly was contemplated (and decreed) as an integral component of the Windy Gap Project. The Windy Gap decrees authorize storage only in Windy Gap reservoir (in the amount of 1546.14 acre-feet) and in Jasper Reservoir (in the amount 11,292.58 acre feet). The use of any reservoir to enhance the yield of the Windy Gap Project, other than the decreed 11,000 acre-foot Jasper Reservoir, would involve a change in the place of storage of Windy Gap Project water.

All WGFP action alternatives provide for storage of up to 93,000 acre-feet in reservoirs that are neither identified nor decreed in the Windy Gap decrees. The Windy Gap decrees authorize large direct flow rights; however, under Colorado water law, a direct flow water right cannot be stored, absent a decree authorizing such storage. *See e.g., New Loveland & Greeley Irr. & Land Co. v. Consolidated Home-Supply Ditch & Res. Co.*, 62 P. 366 (Colo. 1900); *Board of Arapahoe County Comm'rs v. Upper Gunnison River Water Conservancy Dist.*, 838 P. 2d 840, 852 (Colo. 1992). This is the case even if the same structure diverting the direct flow rights is used to fill the reservoir. *See New Loveland & Greeley Irr. & Land Co.* at 368. Moreover, the fact that water is diverted from the basin of origin for storage in a different basin does not change the need to obtain a decree authorizing such storage and including terms and conditions to prevent injury to the water rights in

¹⁹ *See* Civil Action No. 1768, Grand County District Court; W-4001, District Court, Water Division 5, and 80CW108, District Court, Water Division 5.

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the basin of origin. *See e.g., Twin Lakes Reservoir and Canal Co. v. Aspen*, 596 P.2d 45 (Colo. 1977); *Cities of Aurora and Colorado Springs v. Division 5 Engineer*, 799 P. 2d 33 (Colo. 1990).

The River District's detailed letter to then State Engineer Hal Simpson, dated October 27, 2006, regarding the requirement for a change of water right is attached as Exhibit G hereto and incorporated into these comments by this reference.

B. The PA would violate the Azure Settlement Agreement, the original Windy Gap Record of Decision, and the Windy Gap Carriage Contract.

The signatories to the Azure Agreement did not want to allow the Windy Gap Project to change the operation of the C-BT Project in any way, so paragraph 14 of the Azure Agreement requires that the Municipal Subdistrict "comply with all terms and provisions of Senate Document 80 in the design, construction, and operation of the Windy Gap Project." In other words, the Windy Gap Project was approved only on the assurance that Windy Gap operations would be "invisible" to the C-BT Project, and that Windy Gap would always take a back-seat to the operation of the C-BT Project.

The PA would result in just the opposite. The pre-positioning proposal would require that C-BT Project operations be manipulated for the sole purpose of benefitting the Windy Gap Project. As discussed above, pre-positioning would violate the specific operational criteria set forth in Senate Document 80. It naturally follows that pre-positioning would violate a fundamental tenet of the Azure Agreement – the operation of Windy Gap in a manner consistent with Senate 80. For this reason, pre-positioning likewise runs afoul of the Final Environmental Statement and Record of Decision for the Windy Gap Project, and is inconsistent with the Windy Gap carriage contract.

By its own terms, the carriage contract for Windy Gap was conditioned on completion of the Final Environmental Statement and execution of the Record of Decision.²⁰ The carriage contract, as amended, must therefore be construed in a manner consistent with the Azure Agreement and the Supplemental Azure Agreement. The Azure Agreement expressly provides that the "Subdistrict will not claim the use of Green Mountain Reservoir for replacement purposes for the Windy Gap Project operation."²¹ As discussed above, pre-positioning would allow the Windy Gap Project to benefit from the release of water from Green Mountain Reservoir's "replacement" pool in direct contradiction of the Azure Agreement.

The Municipal Subdistrict may argue that the PA is not inconsistent with the Azure Agreement because the proponents do not plan to divert more than the negotiated volumetric limits for the Windy Gap Project that are set forth in the Azure Agreement. However, the Azure

²⁰ *See Supra*, Fn. 10.

²¹ *See Azure Agreement* at para. 18.

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Agreement and the Supplemental Azure Agreement were intended to cover the impacts of the defined project as a whole - not just the desired yield of the Project. The Azure Agreement provides that the Municipal Subdistrict may build and operate facilities necessary to accomplish the purposes of the agreement, within the conditions and limitations of the agreement.²² This provision of the Azure Agreement was intended to clear the path toward construction of the identified project as defined in the agreement; it was not intended to give the Municipal Subdistrict free reign to implement an entirely new project that was not envisioned when the Azure Agreement was executed.

The Windy Gap Project always has been considered to consist only of specific identified components. For example, each of the three water court decrees for the Windy Gap Project state that “Windy Gap is an integrated project consisting of Jasper Pump and Pipeline, Jasper Reservoir, Windy Gap Pump, Pipeline and Canal, and Windy Gap Reservoir.”²³ In addition, the amended carriage contract states that “it is the purpose of this amendatory contract to: (1) recognize that the Windy Gap Project has been completed and that the Project Works have been utilized to introduce, store, carry, and deliver Subdistrict Water, as contemplated by the [original carriage contract].”²⁴ Construction of a new Front Range reservoir as a means to increase the project yield cannot reasonably be considered to be within the limitations and conditions of the Azure Agreement, the original or amended carriage contract, or the original Windy Gap Record of Decision, particularly when the operation of the new reservoir would require a change in the operation of the C-BT Project.

The Water Conservancy Act, C.R.S. § 37-45-101, et seq. § 37-45-118(1)(b)(II) requires that any project that exports water from the natural basin of the Colorado River include mitigation to water users within the Colorado River basin to assure that present and prospective uses of water will not be impaired nor increased in costs to the West Slope water users. The Municipal Subdistrict, the River District and other West Slope parties entered into the Azure Agreement and Azure Supplement to provide the requisite compensation to the West Slope for the original Windy Gap Project. To the extent the impacts of the WGFPP as analyzed in the DEIS are different than the impacts of the original Windy Gap Project, then the PA requires that appropriate mitigation measures be adopted in order to comply with the Water Conservancy Act.

²² See Azure Agreement at para. 37.

²³ See Decrees, Civil Action No. 1768, District Court, Grand County, Colorado; Case Nos. W-4001, and 80CW108, Water Division 5, State of Colorado.

²⁴ See Amendatory Contract No. 4-04-70-W0107, March 1, 1990, at Recital (c).

VIII. No Section 404 Permit should be issued for the PA because the DEIS fails to demonstrate that the PA is the least damaging practicable alternative.

As discussed in the DEIS, a Clean Water Act Section 404 discharge permit is required for the PA. The Clean Water Act provides that, except as provided under section 404(b)(2) of the federal Clean Water Act, no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. The Section 404(b) Guidelines establish standards in the determination of whether a proposed action is the least damaging practicable alternative. *See* 40 C.F.R. § 230.10.

Section 230.12(3)(iv) of the 404(b) Guidelines provides that the proposed discharge fails to comply with the requirements of the Guidelines when there is insufficient information to make a reasonable judgment as to whether the proposed discharge will comply with the Guidelines. For the reasons set forth in these comments, the DEIS fails to provide sufficient information for the Corps of Engineers to make a reasonable judgment as to whether the PA complies with the Section 404(b) Guidelines. Therefore, a Section 404 Permit cannot be issued for the PA.

IX. Specific Comments.

- A. DEIS, Sections 1.4.1 and 1.6.1: Please note that the Blue River Decree does not authorize storage of C-BT Project water in Boulder Reservoir prior to distribution to Project beneficiaries.
- B. DEIS Sections 1.6.2.1, and 1.6.3: The demand for water from the WGFP is based on population projects that are outdated in light of the current recession and housing market collapse. Front Range water demands should be based on more updated population projections.
- C. DEIS Section 1.10.1: Please explain what accounting changes for the C-BT Project are necessary to account for the proposed changes in storage and exchanges between the C-BT and Windy Gap Projects. Please also note that a change of the C-BT Project water rights is necessary to implement the PA.
- D. DEIS, Section 1.10.2.1: Please explain in detail the decision process that Reclamation will undertake to determine if the PA is consistent with Senate Document 80, including public involvement in that process.
- E. DEIS, pg. 1-43, Left column box: Please note that a change of water right decree is necessary to authorize storage of C-BT Project water in a new non-federal reservoir prior to distribution of project water to its end-users.

- F. DEIS, Section 2.2.1: Please explain in detail how Reclamation will guarantee that C-BT Project storage and diversions will not be increased by implementation of the PA.
- G. DEIS, Section 2.2.1: Please note that Windy Gap water is not decreed for long-term storage in Granby Reservoir.
- H. DEIS, Section 2.4.2: Please note that storage of C-BT and Windy Gap water in Chimney Hollow Reservoir would require a decreed change of the C-BT and Windy Gap water rights.
- I. DEIS, Section 3.5.1: The River District believes that the cumulative impacts on the environment extends downstream of Kremmling on the Colorado River. Please explain in more detail why the DEIS limits the stream reach analyzed.
- J. DEIS, Section 3.5.1: The fact that the stream reach affected by the PA includes the reach downstream of Granby Reservoir, but upstream of Windy Gap Reservoir, demonstrates that the PA will result in an unlawful change in the operations of the C-BT Project.
- K. DEIS, Section 3.5.1.4: Please note that the Azure Agreement expressly defines the Windy Gap Project as “[a] water diversion storage and conveyance system commencing at a point on the Colorado River just below its confluence with the Fraser River and terminating at Lake Granby, which lake is part of the C-BT Project.” Please note that the Colorado State Engineer has no legal authority to determine whether C-BT or Windy Gap water rights can be legally stored in Chimney Hollow Reservoir.
- L. DEIS, pg. 3.16: The PA includes the storage of more C-BT water at a lower elevation and increases the total surface area of C-BT storage. Please explain in detail why C-BT Project evaporative losses will not be increased by the proposed storage of C-BT water in Chimney Hollow Reservoir.
- M. DEIS, pg. 3.24: Please explain in more detail how the proposed storage limitation will guarantee no expansion of the C-BT Project diversions, including the appropriate numeric volumetric storage limit, whether Reclamation intends to adjudicate a change of the C-BT Project water rights to authorize storage in Chimney Hollow Reservoir, and how Reclamation will ensure that Granby Reservoir has the physical capability to measure and bypass to the Colorado River inflow to the C-BT Project that exceeds the proposed storage limitation.

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- N. DEIS, Section 3.25.1: The summary of proposed mitigation incorrectly assumes that the purpose and need of the WGFP overrides the operation and primary purposes of the C-BT Project as defined in Senate Document 80.

Although the River District obviously has serious concerns with the DEIS, we remain committed to working with Reclamation, the Municipal Subdistrict, Grand County, the Middle Park Water Conservancy District and other interested entities on ways to improve the DEIS and discuss appropriate mitigation measures for the Windy Gap Firing Project.

Sincerely,



Eric Kuhn, General Manager
Colorado River District

Exhibits:

- A. Senate Document 80, dated 6/15/1937
- B. Blue River Decrees
- C. Azure Agreement, dated 4/30/1980
- D. Supplemental Azure Agreement, dated 3/29/1985
- E. BBA Report, dated 12/23/2008
- F. M. Bach letter to R. Kuhn dated 10/12/2001
- G. P. Fleming letter to H. Simpson, dated 10/27/2006

cc: CRWCD Board of Directors
Eric Wilkinson, General Manager, Northern Colorado Water Conservancy District
Lurline Curran Underbrink, Grand County Manager
Amelia S. Whiting, Trout Unlimited
Lane Wyatt, NWCCOG

Exhibit A to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

75TH CONGRESS }
1st Session }

SENATE

{ DOCUMENT
No. 80 }

COLORADO-BIG THOMPSON PROJECT

SYNOPSIS OF REPORT

ON

COLORADO-BIG THOMPSON PROJECT, PLAN OF
DEVELOPMENT AND COST ESTIMATE PRE-
PARED BY THE BUREAU OF RECLAMA-
TION, DEPARTMENT OF THE
INTERIOR.



PRESENTED BY MR. ADAMS

JUNE 15, 1937—Ordered to be printed without illustrations

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LETTER OF TRANSMITTAL

FEBRUARY 3, 1937.

From Senior Engineer Porter J. Preston.

To Chief Engineer.

Subject: Colorado-Big Thompson project.

1. Transmitted herewith is a synopsis of the report of plan of development and cost estimate of the Colorado-Big Thompson project.

2. The plans and designs upon which the estimates are based are shown in the full report to follow this synopsis.

3. The detail estimates have been worked out in the Denver office under the following divisions:

Canals: H. R. McBirney.

Reservoirs: K. B. Keener.

Power: L. N. McClellan.

Hydraulics: E. B. Debler.

4. The field work was done under the supervision of M. E. Bunger.

5. The economic study was carried on by R. L. Parshall, senior irrigation engineer, Bureau of Agricultural Engineering, United States Department of Agriculture. This study is later proposed to be issued as a separate document.

PORTER J. PRESTON.

Revised synopsis of report submitted June 11, 1937.

LETTERS OF SUBMITTAL

JUNE 11, 1937.

HON. HAROLD L. ICKES,
Secretary of the Interior.

MY DEAR MR. SECRETARY: There is attached hereto the portion of the report on the Colorado-Big Thompson project in Colorado covering the principles and stipulations governing the construction and operation of said project for the protection of the rights and interests dependent on the Colorado River in Colorado.

The provisions contained therein have been considered by the Northern Colorado Water Users' Association, representing the irrigation and other interests on the eastern slope in Colorado, and we respectfully submit that they are satisfactory and meet the approval of said association.

We ask that acknowledgment be made of this communication.

Respectfully yours,

NORTHERN COLORADO WATER USERS' ASSOCIATION,
CHAS. HANSEN, *President.*
MOSES E. SMITH, *Vice President.*
THOMAS A. NIXON, *Attorney.*

JUNE 11, 1937.

HON. HAROLD L. ICKES,
Secretary of the Interior.

MY DEAR MR. SECRETARY: There is attached hereto the portion of the report on the Colorado-Big Thompson project in Colorado covering the principles and stipulations governing the construction and operation of said project for the protection of the rights and interests dependent on the Colorado River in Colorado.

The provisions contained therein have been considered by the Western Slope Protective Association, representing the irrigation and other interests on the western slope in Colorado, and we respectfully submit that they are satisfactory and meet the approval of said association.

We ask that acknowledgment be made of this communication.

Respectfully yours,

THE WESTERN SLOPE PROTECTIVE ASSOCIATION,
SILMON SMITH, *Secretary.*
CLIFFORD H. STONE, *Director.*
A. C. SUDAN,
Special Representative of Grand County.

SYNOPSIS OF REPORT, COLORADO-BIG THOMPSON PROJECT

OUTLINE OF CONSTRUCTION AND OPERATING CONDITIONS

The Colorado-Big Thompson project in Colorado contemplates the diversion of surplus waters from the headwaters of the Colorado River on the Pacific or western slope to lands in northeastern Colorado on the Atlantic or eastern slope greatly in need of supplemental irrigation water.

To accomplish this diversion, the following features are required:

ON COLORADO RIVER

(1) Storage on the Blue River in what is called Green Mountain Reservoir located about 16 miles southeast of Kremmling, Colo., where the Blue enters the Colorado River. This reservoir is to be used to replace water diverted to the eastern slope that would be required by prior rights along the Colorado River.

(2) A hydroelectric plant below the Green Mountain Dam to utilize the flow of the Blue River and water stored in the reservoir for the generation of electrical energy.

(3) A storage reservoir located on the Colorado River about 6 miles northeast of Granby, Colo., to be known as Granby Reservoir. This reservoir will store the flow of the Colorado at this point as well as water diverted from Willow Creek, a tributary of the Colorado and Strawberry and Meadow Creeks, tributaries of the Fraser River.

(4) A diversion dam located about one-half mile below the junction of the North Fork and Grand Lake outlet and about 3 miles south of the village of Grand Lake. This dam will create a lake known as Shadow Mountain Lake which will have the same elevation as Grand Lake and will aid in supplying the transmountain diversion tunnel with water pumped from Granby Reservoir. This lake together with Grand Lake is to be kept at nearly constant level.

(5) An electrically driven pumping plant on the shore of Granby Reservoir, where water will be pumped into a canal feeding Shadow Mountain and Grand Lakes. The length of the canal is $4\frac{1}{2}$ miles.

(6) An outlet channel at the east end of Grand Lake connecting the lake with the portal of a transmountain diversion tunnel and provided with control features that will regulate the level of Grand Lake within a fluctuating range of 1 foot.

(7) A transmountain diversion tunnel under the Continental Divide 13.1 miles in length extending from Grand Lake to a point in Wind River about 5 miles southwest of Estes Park village.

ON EASTERN SLOPE

(8) A conduit 5.3 miles in length extending from diversion tunnel outlet to penstock of a power plant on the Big Thompson River just below Estes Park village. This conduit will be made up of buried

pipe, siphons, tunnels, and open canal. It will be entirely concealed through the area authorized to be taken into Rocky Mountain National Park.

(9) The waste rock from the tunnel is to be terraced and landscaped and all structures connected with the tunnel will be constructed to blend into their natural surroundings.

(10) A power plant known as power plant no. 1 constructed along the Big Thompson River just below the village of Estes Park utilizing the western slope water.

(11) Four additional power plants down the Big Thompson Canyon to utilize all available fall and also all water available for power in the Big Thompson River in addition to the western slope water diverted.

(12) A diversion dam on Big Thompson River about 12 miles west of Loveland to divert the water by means of a canal 9 miles in length to a storage reservoir known as Carter Lake.

(13) Carter Lake Reservoir located 8 miles northwest of Berthoud, Colo., to store water brought over during winter months. Water is released from this reservoir through a 4-mile canal into the Big Thompson River and through a 9-mile canal into the St. Vrain River for irrigation purposes.

(14) A siphon across the Big Thompson River, 9 miles west of Loveland, Colo., and a canal 10 miles in length to convey water from the fourth power plant to a storage reservoir, located about 5 miles west of Fort Collins, known as Horsetooth Reservoir.

(15) A canal from Horsetooth Reservoir to the Cache La Poudre River and extended north to a pumping plant which lifts water high enough to serve the North Poudre Canal.

(16) A storage reservoir near the mouth of Buckhorn Creek to be known as Arkins Reservoir, supplied from a canal diverting from the Big Thompson River just below the last power plant. It is to be used to aid in balancing the demands for power and irrigation, also storing excess water available in the Big Thompson River. Water will be released from the reservoir for supplemental irrigation in the South Platte area.

(17) Transmission lines connecting the Valmont steam plant of the Public Service Co. with all the hydroelectric plants contemplated, also connecting with the transmountain tunnel portals and the Granby and North Poudre pumping plants. The line connecting power plant no. 1 and Granby pumping plant will run east, and south of the outside boundaries of the Rocky Mountain National Park, crossing the Continental Divide at Buchanan Pass.

In order to carry out the construction, operation, and maintenance of the project as outlined above, it will be necessary to comply with the following requirements as agreed to by representatives of the eastern and western slopes in Colorado and here made as a part of this report.

MANNER OF OPERATION OF PROJECT FACILITIES AND AUXILIARY FEATURES

The construction and operation of this project will change the regimen of the Colorado River below the Granby Reservoir. The project contemplates the maximum conservation and use of the waters of the Colorado River, and involves all of the construction features

heretofore listed. In addition thereto certain supplemental construction will be necessary. This will be for the primary purpose of preserving insofar as possible the rights and interests dependent on this water, which exist on both slopes of the Continental Divide in Colorado. The project, therefore, must be operated in such a manner as to most nearly effect the following primary purposes:

1. To preserve the vested and future rights in irrigation.
2. To preserve the fishing and recreational facilities and the scenic attractions of Grand Lake, the Colorado River, and the Rocky Mountain National Park.
3. To preserve the present surface elevations of the water in Grand Lake and to prevent a variation in these elevations greater than their normal fluctuation.
4. To so conserve and make use of these waters for irrigation, power, industrial development, and other purposes, as to create the greatest benefits.
5. To maintain conditions of river flow for the benefit of domestic and sanitary uses of this water.

In order to accomplish these purposes the project should be operated by an unprejudiced agency in a fair and efficient manner, equitable to all parties having interests therein, and in conformity with the following particular stipulations:

(a) The Green Mountain Reservoir, or similar facilities, shall be constructed and maintained on the Colorado River above the present site of the diversion dam of the Shoshone power plant, above Glenwood Springs, Colo., with a capacity of 152,000 acre-feet of water, with a reasonable expectancy that it will fill annually. Of said capacity, 52,000 acre-feet of water stored therein shall be available as replacement in western Colorado, of the water which would be usable there if not withheld or diverted by said project; 100,000 acre-feet shall be used for power purposes; and all of said stored waters shall be released under the conditions and limitations hereinafter set forth.

(b) Whenever the flow in the Colorado River at the present site of said Shoshone diversion dam is less than 1,250 cubic feet per second, there shall, upon demand of the authorized irrigation division engineer or other State authority having charge of the distribution of the waters of this stream, be released from said reservoir as a part of said 52,000 acre-feet, the amount necessary with other waters available, to fill the vested appropriations of water up to the amount concurrently being diverted or withheld from such vested appropriations by the project for diversion to the eastern slope.

(c) Said 100,000 acre-feet shall be stored primarily for power purposes, and the water released shall be available, without charge, to supply existing irrigation and domestic appropriations of water, including the Grand Valley reclamation project, to supply all losses chargeable in the delivery of said 52,000 acre-feet of water, and for future use for domestic purposes and in the irrigation of lands thereafter to be brought under cultivation in western Colorado. It shall be released within the period from April 15 to October 15 of each year as required to supply a sufficient quantity to maintain the specified flow of 1,250 cubic feet per second of water at the present site of said Shoshone diversion dam, provided this amount is not supplied from the 52,000 acre-feet heretofore specified. Water not required for the above purposes shall also be available for disposal to agencies for the development of the shale oil or other industries.

(d) The cost of construction and perpetual operation and maintenance of said reservoir or reservoirs shall be a charge against the project and shall be paid from revenues collected from this project as may be provided in contracts between the Secretary of the Interior and the beneficiaries of the project in eastern Colorado, and any other contracting parties.

(e) In the event said reservoir or reservoirs are not maintained with a capacity of 52,000 acre-feet, the Secretary of the Interior should withhold the diversion of water from the western to the eastern slope of Colorado until such storage capacity is made available.

(f) The Secretary of the Interior shall have the option to require the transfer to the United States of any and all rights initiated or acquired by the appropriation or use of water through the works of the project in eastern Colorado, at any time: *Provided, however,* That the title so taken shall be subject to a beneficial use of such water as may be provided in the repayment contract or contracts; and the rights to store water to the extent of said 152,000 acre-feet shall be initiated, acquired, and held by the appropriate authorities for use in western Colorado, for replacement of water diverted to the eastern slope, and for other purposes contemplated for this project.

(g) The Secretary of the Interior shall operate this project in accordance with the following stipulations as to priorities of water use as between the parties claiming or using project water and within the limits of his legal authority. Said 52,000 acre-feet of replacement storage in Green Mountain or other reservoirs shall be considered to have a date of priority for the storage and use of replacement water earlier than that of the priorities for the water diverted or stored for delivery to the eastern slope. The 100,000 acre-feet of storage in said reservoir shall be considered to have the same date of priority of appropriation as that for water diverted or stored for transmountain diversion.

(h) Said Green Mountain Reservoir, or such other replacement reservoirs as provided in paragraph (a) herein, as are planned as a part of the project, shall be constructed at the same time as the other parts of the project and shall be completed before any water is diverted to the eastern slope of the Continental Divide by means of said project.

(i) Inasmuch as the State of Colorado has ratified the Colorado River Compact, and inasmuch as the construction of this project is to be undertaken by the United States, the project, its operation, maintenance, and use must be subject to the provisions of said Colorado River Compact of November 24, 1922 (42 Stat. 171), and of section 13 of the Boulder Canyon Project Act, dated December 21, 1928 (45 Stat. 1057-1064). Notwithstanding the relative priorities specified in paragraph (g) herein, if an obligation is created under said compact to augment the supply of water from the State of Colorado to satisfy the provisions of said compact, the diversion for the benefit of the eastern slope shall be discontinued in advance of any western slope appropriations.

(j) An adequate system, as determined by the Secretary of the Interior, shall be provided for the irrigation of the lands in the vicinity of Kremmling, now irrigated by either natural or artificial means, and the installation made therefor shall be a part of this project. The rights to the use of water for the irrigation of these lands shall be considered to have a date of priority earlier than that of the rights to the use of water to be diverted through the works of this project to the eastern slope. This system shall be designed and built in a manner requiring the least possible continuing annual expense for operation

and maintenance but the cost thereof shall not exceed \$300,000; and said system shall be provided and in operation before any water is stored for transmountain diversion. In addition, the Secretary shall protect, add to, or improve the source of supply of domestic waters for the municipalities of Kremmling and Hot Sulphur Springs in the manner and to the extent which he may determine to be necessary to provide a source of supply not less than that now available for these municipalities. The cost of these features shall be included in the total project cost.

(k) To compensate Grand County for the loss of taxes through the transfer of property to the United States for the construction of this project, \$100,000 shall be paid to said Grand County. This payment shall be made in 10 annual installments of \$10,000 each, commencing upon the date when 10 percent of the total property in Grand County required for said project has been removed from taxation.

(l) The project and all of its features shall be operated in a manner determined by the Secretary of the Interior as necessary to provide the water to preserve at all times that section of the Colorado River between the reservoir to be constructed near Granby and the mouth of the Fraser River as a live stream, and also to insure an adequate supply for irrigation, for sanitary purposes, for the preservation of scenic attractions, and for the preservation of fish life. The determination of the need for and the amount and times of release of water from Granby Reservoir to accomplish these purposes shall be made by the Secretary of the Interior, whose findings shall be final.

In order to facilitate compliance with the stipulation in paragraphs (j), (k), and (l) hereof a representative may be selected and designated by the interests dependent thereon in Grand County, Colo., and when so designated he will be recognized as the official spokesman of said interests in all matters dealing with project operations affecting Grand County.

The principles and provisions expressed in these stipulations have been approved by the Western Colorado Protective Association, representing interests in western Colorado, and the Northern Colorado Water Users Association as evidenced by the letters hereto attached.

SUMMARY

The Colorado-Big Thompson project comprises 615,000 acres of irrigated lands, out of approximately 800,000 acres lying under the canal systems in the northern and northeastern portions of Colorado.

The water supply for the area is to be derived from a portion of 782 square miles of drainage area above Hot Sulphur Springs lying west of the Continental Divide in Grand County, Colorado, and varying in elevation from 8,050 to 14,000 feet.

HISTORY

The first irrigation in northeastern Colorado occurred about 1860 where the early settlers plowed out small ditches with sufficient grade and length to irrigate a few acres of land in the first bottom—i. e. lands not far above the high-water line of the streams and adjacent to them.

The first irrigation of the higher or second bench lands along the Chebe La Poudre River was by the Old Union Colony of Greeley, in

1870. This colony was organized by Horace Greeley, then editor of the New York Tribune, who will be remembered here especially for his advice to eastern young men to "Go west and grow up with the country."

This colony irrigated about 12,000 acres under their first project and it was a success from the start, due in a large measure to the fact that they were people of considerable means and were then able to finance themselves over the period required to bring raw prairie land into profitable cultivation.

This colony was soon followed by others along the Poudre at Fort Collins, on the Big Thompson, at Loveland and the St. Vrain near Longmont.

The difficulties experienced by these colonists in distributing the water between them led to the creation of Colorado's irrigation laws which have been copied by most of the irrigation States of the West.

This irrigated area of six hundred to eight hundred thousand acres was developed by means of individual initiative and by small scale cooperative enterprises. Today there are 6,400 irrigated farms, served by 124 canals and ditches and 60 storage reservoirs.

IRRIGATION USE

In the early days irrigation in this area was confined to growing crops to supply local needs, the lack of transportation contributing to high prices for the home-grown production and prohibiting shipping to distant points. The crops grown were mainly the grains and hay for local consumption, with some vegetables. Such irrigation corresponded with the run-off of the streams.

As mining developed in the State, Denver and other towns grew into cities, and after these cities were connected to the East by railroads the markets demanded a more diversified agriculture to supply their needs. Thus a gradual demand developed for late water which the streams could not supply.

This change created a need for storing the flood waters for late irrigation. From 1890 to 1910 was a period of reservoir construction, during which storage was provided for all the available water supply of the streams over and above the direct irrigation requirements for the area here under discussion. Much of this development took place during a decade of more than normal run-off on the eastern slope and also during a period expanding the agricultural area throughout the West.

Attempts to maintain the area under cultivation with the depleted run-offs during the past 10 years have spread the water supply to such an extent that much acreage has had an insufficient water supply to produce full crops or crops producing the higher values. Attempts have been made to supplement the individual farm water supply by the development of the underground sources by pumping from numerous wells throughout the region. This is lowering the water table and already is affecting the water supply of the lower South Platte Valley which receives its irrigation supply largely from return waters.

NEED OF SUPPLEMENTAL WATER

Under such conditions only the older water rights have any assurance of an adequate water supply, and in the dryer years the owners of junior rights are forced to confine their farming to crops that can

be matured by the early flood flow or that require a minimum amount of water. In years when the supply is not correctly estimated considerable loss results. Ordinarily the crops raised in this and other irrigated areas do not compete with those grown under rainfall conditions, but a shortage of water always leads to the raising of more of the competing crops. Such crops also cut the income of the irrigation farmer below what he can earn with the higher type, noncompetitive crops.

On fully three-fourths of the 615,000 acres in this area the water supply is inadequate, in spite of every effort to conserve, store flood water, or otherwise add to the water supply that has been within the financial ability of the farmer. This inadequacy is due not only to a development probably too large for the period when run-off of the streams was much higher than at present, but to the fact that the last 10 years have seen a very marked decrease in the stream flow. It must be emphasized that the additional water supply here contemplated is to be used for a supplemental supply and not to create a large new additional irrigated acreage.

There has been expended in this area to date for various types of irrigation works, including nearly \$750,000 for pumping plants, most of which have been installed in the last 10 years, about \$35,000,000 against which there is an outstanding indebtedness of only \$1,510,650. These people, however, have about reached their limit as individuals and mutual irrigation companies to provide for themselves a supplemental water supply so badly needed to make their present water supply secure and are obliged to seek Government aid to bring this about.

It has been conceded by a majority of the irrigation interests in this section of the State that the water supply in 1926 was ample for all their present acreage now irrigated. In order, therefore, to determine the normal shortage in acre-feet over a period of years a comparison of the supply in these years with that of 1926 was made and the difference obtained. These differences are set up in the following table:

TABLE 1.—Showing water districts, acreage irrigated, deficiencies 1925 to 1935 with tentative allocation of total supplemental supply

Water district no.	Area irrigated	1926 diversion, acre-feet	Average diversion, 1925-35	Difference, 1926, 11-year average required supplementary water in acre-feet	Tentative allocation of supplemental supply			
					Colorado-Big Thompson project water	Moffat and Jones Pass tunnel water return	Present seepage return, acre-feet	Total supplemental supply, acre-feet
(1)	(2)	(3)	(7)	(15)	(16)	(17)	(18)	(19)
3.....	213,640	530,000	398,000	132,000	104,000	-----	49,500	153,500
4.....	65,408	235,000	163,000	72,000	44,100	-----	21,000	65,100
5.....	81,806	113,000	94,000	19,000	38,800	-----	18,500	57,300
1.....	92,394	663,000	457,000	206,000	81,400	11,000	83,000	175,400
2.....	37,899	170,000	154,000	16,000	5,000	4,500	5,100	14,600
64.....	121,289	513,000	383,000	130,000	36,700	14,500	37,400	88,600
Total....	615,436	2,224,000	1,649,000	575,000	310,000	30,000	214,500	554,500

It will be noted from column no. 15 that the total average shortage in this project area which comprises water districts 3, 4, 5, 1, 2, and 64 is 575,000 acre-feet. Column no. 16 is a tentative allocation of the proposed supplemental supply to the various districts. Column no. 18 is the estimated usable return flow that would arise from the addition of 310,000 acre-feet of new water to this area. Column no. 19 is the total usable supplemental supply amounting to 554,520 acre-feet, an amount within 5 percent of the 10-year average shortage. The sale or rental of supplemental water, when available, in the Poudre Valley has averaged \$4.50 per acre-foot over a period of years. In extreme cases it has sold as high as \$9 per acre-foot.

The deficiency in water supply for the period 1925 to 1934, inclusive, reflected a direct economic loss in crop production of approximately \$42,355,000.

The following shows the approximate annual loss in value of crops because of inadequate water supply:

Sugar beets.....	\$1, 900, 000
Alfalfa.....	948, 000
Small grain.....	470, 000
Beans.....	302, 000
Corn.....	228, 000
Potatoes.....	425, 000
All other crops.....	444, 000
Total.....	4, 700, 000

This average annual direct crop loss is about 19 percent of the \$24,800,000 estimated cost of the Colorado-Big Thompson irrigation project.

The crop loss in 1934, due to shortage of water, as compared to 1926, after variation in price and acreage factors had been accounted for, amounted to \$12,400,000, or just one-half the cost of the project.

The losses here given are the farm losses and do not include the losses that are due to processing, transporting, or handling of that quantity of production, which would add several million dollars to the loss of the community as a whole.

The effect of such inadequate water supply for the period 1925-35 is shown graphically on drawing no. 1 following.

SUPPLEMENTAL WATER SUPPLY

In 1929 the State engineers of Colorado, in cooperation with the Platte Valley Water Conservation League, and the United States Army engineers, made a comprehensive study of the water resources of the South Platte Basin in northeastern Colorado. This study included the Cache La Poudre River in water district no. 3, the Big Thompson River in water district no. 4, and the St. Vrain River in district no 5. The investigators determined the excess water available on these streams above present normal demands and also above the normal demands on the South Platte River proper below where these streams enter.

The investigators also determined the location, capacity, and cost of the most feasible reservoir sites for the storage of this excess water.

The results are shown in the following table and have been brought up to date by using the same demands for irrigation as set up in the report and using the water-supply records furnished by the State engineer's office.

Stream	Excess supply available for storage, average, 1918-35	Capacity proposed reservoir by Army engineers	Average annual yields at reservoirs	Total reservoir costs	Cost per acre-foot capacity	Cost per acre-foot yield
	<i>Acre-feet</i>	<i>Acre-feet</i>				
Cache La Poudre.....	30,000	52,000	25,500	\$2,747,000	\$72	\$147
Big Thompson.....	16,000	32,700	11,300	2,006,000	61	173
St. Vrain.....	16,000	30,000	14,000	2,186,000	73	156

From the foregoing table it is evident that there is not sufficient excess water available that originates in this area to supply the demands for supplemental water, and the cost of making use of what is available is prohibitive. It will be shown, however, that 16,000 acre-feet of this surplus is available for storage in the Colorado-Big Thompson project reservoirs on the eastern slope with no additional cost.

The water users in northeastern Colorado have now exhausted every possible source of obtaining supplemental water or augmenting their present supply either by storage, transmountain diversion within their individual cooperative means, and by pumping. Fortunately, however, there exists a surplus of water on the headwaters of the Colorado River west of this area and separated from it by the Continental Divide.

In the spring of 1935, \$150,000 was allocated to the Bureau of Reclamation to make surveys and prepare plans and cost estimates for bringing water from the headwaters of the Colorado River into the area in northeastern Colorado in need of supplemental water.

In August 1935 the Bureau of Reclamation started surveys for the project and previously there had been started a land classification to determine the irrigated and arable land in the Colorado River Basin in Colorado in order to arrive at the approximate amount of water now used in the area and how much might be used when full development has been made. Both surveys have been completed, insofar as this project is involved, and the following is the result of the land classification.

LAND CLASSIFICATION—COLORADO RIVER AREA

Since the quantity of water available for diversion from the headwaters of Colorado River might be limited now by the water rights of lands already irrigated, or might in the future limit in turn the development of lands in the Colorado Basin within the State, all the land on Colorado River and its tributaries above the Colorado-Utah line, except the Gunnison River area, has been classified to show the location and extent of irrigated lands and of lands capable of irrigation.

This classification was undertaken in all areas covered by former reports, supplemented by local information as to possible projects and by reconnaissance. For localities with no records of water supply it was assumed to exist unless the contrary was obvious, and doubtful areas were included rather than excluded from the classification. The land was measured by plane-table survey except some small isolated areas which were estimated.

Land that had customarily been irrigated was so classed, no matter how inadequate the supply. Land capable of irrigation was

tested according to a set of standards which fairly represent the experience on this area and others as to what constitutes arable land. Where pumping for irrigation was involved land was classified up to 200 feet above the source of supply.

The result of the survey of the irrigated and arable land appears in the following table.

It should be stated, that, as will be shown under the discussion of water supply which follows, the present irrigated area above the Utah State line does not limit the diversion possible at the location chosen. It is also true that the diversion when in operation, and replacing the summer flow of Colorado River in the manner contemplated by the project plan, will not limit the future development of all the arable land on Colorado River and its tributaries above Gunnison River.

Colorado River drainage—Gunnison excepted—Colorado (land classification according to streams)

Stream name	Irrigated	Arable	Total
Colorado River:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
1. To Granby Dam.....	2,600	1,100	3,700
2. Granby Dam to Hot Sulphur Springs.....	1,300	350	1,650
3. Hot Sulphur Springs to Kremmling.....	3,200	1,200	4,400
4. Kremmling to Glenwood Springs.....	1,100	260	1,360
5. Glenwood Springs to Palisade.....	7,000	2,500	9,500
6. Palisade to State line.....	70,600	32,800	103,400
Total.....	85,800	38,210	124,010
Tributaries:			
Willow Creek.....	880	120	980
Fraser River.....	7,100	650	7,750
South Fork Colorado River.....	610	30	640
Small streams †.....	2,300	4,000	6,300
Williams Fork River.....	3,600	10,900	14,500
Troublesome Creek.....	4,200	7,200	11,400
Muddy Creek.....	4,900	5,100	10,000
Blue River.....	8,400	3,100	11,500
Small streams †.....	610	570	1,180
Sheephorn Creek.....	1,200	50	1,250
Piney Creek.....	790	50	840
Egeria Creek.....	5,700	9,300	15,000
Cabin Creek area.....	5,700	2,600	8,300
Catamount Creek.....	1,000	10	1,010
Sweetwater Creek area.....	1,100	380	1,480
Eagle River.....	16,400	5,000	21,400
Small streams †.....	950	60	990
Roaring Fork River.....	33,100	9,400	42,500
Garfield Creek.....	2,100		2,100
Elk Creek.....	3,000	130	3,130
Divide and Mam Creeks.....	13,700	9,100	22,000
Rifle Creek.....	11,100	3,200	14,300
Parachute Creek.....	1,700	370	2,070
Roan Creek.....	5,600	3,300	8,900
Plateau Creek.....	24,000	7,000	31,000
Small streams †.....	10,200	3,000	13,200
Grand total.....	256,300	122,830	379,130

† Above Hot Sulphur Springs.

‡ Between Hot Sulphur Springs and Kremmling.

§ Between Kremmling and Glenwood Springs.

¶ Between Glenwood Springs and Palisade.

WATER SUPPLY

The stream flow records at the different stations in the Colorado River Basin show the amount of water passing the stations after all present irrigation has taken place above, so there is no need for any further adjustment of stream flow to take care of water consumed in this irrigation.

It is assumed that all arable lands as shown will be irrigated some time in the future, notwithstanding the fact that quite a percentage

is so located that it would never be feasible to irrigate. It is also further assumed that reservoirs would be built on the tributaries to conserve a portion of the flood flows to make the irrigation of these arable lands possible.

With the above assumptions it has been found that in a year like 1931, with the run-off only 40 percent of the average for a 31-year period, and the lowest year of record, the Colorado-Big Thompson project would only have to supply approximately 53,000 acre-feet to replace water diverted by the proposed project that could have been used by the Colorado River water users for power and irrigation, provided the project was in operation at that time.

The average run-off of the Colorado for the years of record are: Hot Sulphur, 31 years, 523,000 acre-feet; Glenwood Springs, including Roaring Fork, 3,413,000 acre-feet, Fruita, 6,300,000 acre-feet. These amounts are exclusive of supply consumed in present irrigation of Colorado River Basin lands.

The following is the estimated amount of water available for diversion from the drainage area above the Colorado-Big Thompson collection system at 8,260 feet elevation.

YIELD OF GRANBY RESERVOIR

Stream-flow records available on the Colorado River near the Granby Dam site for the years 1908-11 and 1935-36, and on Willow Creek for the years of 1935 and 1936, were supplemented by estimates based on available stream-flow records on the Colorado River at Hot Sulphur Springs and Glenwood Springs to cover the 37-year period, 1900 to 1936, inclusive.

A capacity of 482,000 acre-feet was selected as the best capacity for the Granby Reservoir, considering cost and use. Of this capacity, 20,000 acre-feet were set aside for dead storage to reduce pumping lifts for waters delivered to Shadow Mountain Reservoir. A further objective is to keep to the lowest practicable area the exposure of reservoir bed when storage is exhausted. This leaves an active capacity of 462,000 acre-feet.

Reservoir operating studies are based on the following conditions:

(a) Recorded (or estimated) past flows of Colorado River at Shadow Mountain and Granby Dams reduced by 27 percent prior to 1906, and 13 percent thereafter, of the flow of the North Fork at Grand Lake to allow for increasing diversions by the Grand River ditch.

(b) Willow Creek diverted to reservoir to the extent of 90 percent of the flow of Willow Creek and other streams intercepted by the diversion canal from May to October, inclusive, of each year.

(c) Strawberry, Meadow, and Walden Hollow Creeks also diverted whenever practicable. The flow of these streams, together with some additional waters capturable from Willow Creek at times, are expected to offset evaporation and seepage losses in excess of present losses from the Granby and Shadow Mountain Reservoir sites.

(d) No releases from Granby Dam for any reason.

(e) Transmountain tunnel to be operated at full capacity from October 1 until March 31 following, with operations thereafter gaged to fit run-off conditions so as to avoid spills and yet concentrate flows in the period of July 15 to September 15, for the purposes of best

distribution in power production and to minimize reregulating storage requirements on the eastern slope. The computations assumed infallible forecasts of run-off.

(f) A minimum storage hold-over of 100,000 acre-feet on September 30 of each year to assure dependable power production in winter.

Under these conditions, a yield of 320,000 acre-feet of primary water is secured as follows:

Unit 1,000 acre-feet

Run-off year (October to September)	Inflow to Granby Reservoir		Tunnel diversion	Spills	Shortages
	Colorado River	Willow Creek			
1899-1900.....	242.8	52.4	320.0		
1900-1901.....	246.9	53.4	320.0		
1901-2.....	164.9	34.7	255.1		64.9
1902-3.....	222.0	48.8	270.8		49.2
1903-4.....	253.6	51.2	304.7		15.3
1904-5.....	287.9	64.9	310.2		9.8
1905-6.....	292.4	58.7	320.0		
1906-7.....	381.0	78.3	320.0		
1907-8.....	190.6	25.6	320.0		
1908-9.....	323.8	91.5	320.0		
1909-10.....	200.1	32.5	320.0		
1910-11.....	268.5	53.6	320.0		
1911-12.....	350.4	79.3	320.0		
1912-13.....	215.4	40.3	320.0		
1913-14.....	371.0	85.1	320.0		
1914-15.....	223.2	43.8	320.0		
1915-16.....	249.5	47.8	320.0		
1916-17.....	348.3	79.7	320.0		
1917-18.....	322.9	81.2	356.4	18.7	
1918-19.....	189.6	36.4	329.0		
1919-20.....	361.2	78.4	345.6		
1920-21.....	347.9	90.7	368.6	70.0	
1921-22.....	196.8	39.5	320.0		
1922-23.....	280.3	60.2	320.0		
1923-24.....	262.2	54.4	320.0		
1924-25.....	202.6	36.7	320.0		
1925-26.....	346.4	70.0	320.0		
1926-27.....	275.0	54.8	320.0		
1927-28.....	317.5	61.9	338.3		
1928-29.....	297.1	61.2	358.3		
1929-30.....	247.4	42.9	320.0		
1930-31.....	171.5	36.6	320.0		
1931-32.....	243.9	48.0	320.0		
1932-33.....	239.6	54.5	320.0		
1933-34.....	128.9	26.2	320.0		
1934-35.....	209.2	41.8	252.5		67.5
1935-36.....	279.7	53.8	310.0		10.0
Average.....	263.6	65.4	318.7	2.5	8.5

Operating results cannot be expected to result so favorably. The operating conditions enumerated imply superhuman ability to forecast stream flow. Occasional releases will be required from Granby Reservoir although small in amount. Interruptions in tunnel operation cannot always be arranged so as to lose no water.

In view of these conditions, it is concluded that the firm yield of tunnel water from the Granby and Shadow Mountain Reservoirs should be taken as 300,000 acre-feet annually. Shortages of 5 percent may be expected on an average of once every 5 years and shortages of 25 percent may be expected on an average of once every 20 years. Secondary water may be expected to be available in some years in amounts up to 50,000 acre-feet.

EFFECT OF THE PROPOSED TRANSMOUNTAIN DIVERSION ON FUTURE WESTERN SLOPE DEVELOPMENT

Most of the diverted water is derived from the spring floods, when there is an excess of water over all present and future requirements along the Colorado River in the State. To permit full use of the inflow to the Granby Reservoir, Ranch Creek Reservoir may be constructed near Tabernash to store water locally surplus. The waters there conserved would in part be utilized to replace the waters withheld at Granby Dam, but the greater part of the conserved water would be used to augment irrigation supplies down to Hot Sulphur Springs and to maintain a satisfactory stream flow in this locality for recreational purposes.

With the region above Hot Sulphur Springs taken care of by the Ranch Creek Reservoir, the critical points along the Colorado River, from the standpoint of present and future use of water, are at Glenwood Springs, where the Shoshone power plant of the Public Service Co. uses present stream-flows up to 1,250 second-feet, and near Palisades at the head of the Grand Valley, where the Government high-line canal diverts water for irrigation and power purposes. The present irrigated area along the Colorado River between Palisades and the Colorado-Utah State line is 70,600 acres.

The additional arable area in this region, not now irrigated, is as follows:

	<i>Acres</i>
Under constructed canals.....	13,800
Pumping unit of Grand Valley project, for which canal capacity has been provided.....	10,000
Lands on Mack Flat, no present provision for water service.....	9,000
Total.....	32,800

Maximum irrigation demand at the head of the Grand Valley for the present irrigated area and for the additional area of 23,800 acres for which provision has been made in the constructed canals, is estimated as 1,700 second-feet, and this amount is being demanded in the pending adjudication proceeding.

With maximum irrigation demands there is a full water supply for the Orchard Mesa pumping plant and for the Grand Valley power plant. In the nonirrigation season the controlling requirement is for power with a total demand of 800 second-feet for power and for domestic needs under the higher canals. With the new area of 9,000 acres developed, the future demands are then estimated as 1,800 second-feet in the months of May to August, inclusive, tapering off uniformly to 800 second-feet on April 1 and on November 30.

In determination of the effect of the Colorado-Big Thompson transmountain diversion on the western slope, the past stream flows at Glenwood Springs and at the head of the Grand Valley were first depleted to show the resulting stream flows with the following developments:

(a) Full irrigation development of 276,000 acres of irrigated and arable lands along the Colorado River and tributaries above Palisades (the present irrigated area is 186,000 acres).

(b) Full development of Moffat Tunnel diversion from Fraser River and tributaries, Jones Pass diversion from Williams River, and Independence Pass diversion from the Roaring Fork, including

replacement storage so that these projects may divert all flows interceptible.

From the reconstructed flows, thus computed, there was subtracted the water estimated to be withheld at the Granby Reservoir site. The reductions in stream flow at Glenwood Springs and at the head of the Grand Valley, during those periods of each year when the resulting stream flows would be less than the future demands above described, then represents the effect of the project on the western slope if no replacement storage were provided. These computations were made for the years 1926 to 1936, inclusive, at Glenwood Springs, and for the entire period of record, 1902 to 1936, inclusive, at the head of the Grand Valley, with the following results:

Year	Shortages at Glenwood Springs (acre-feet)			Shortages at head of Grand Valley (acre-feet)		
	End of flood season, Oct. 31 ¹	Nov. 1 to flood season of following year ²	Total	Before flood season in spring ³	After flood season to Oct. 31	Total
1902.....	(0)	(0)	-----	6,000	39,000	45,000
1903.....	(0)	(0)	-----	3,000	12,000	15,000
1904.....	(0)	(0)	-----	None	2,000	2,000
1905.....	(0)	(0)	-----	None	14,000	14,000
1906.....	(0)	(0)	-----	None	None	None
1907.....	(0)	(0)	-----	None	None	None
1908.....	(0)	(0)	-----	None	None	None
1909.....	(0)	(0)	-----	None	6,000	6,000
1910.....	(0)	(0)	-----	None	None	None
1911.....	(0)	(0)	-----	None	12,000	12,000
1912.....	(0)	(0)	-----	None	1,000	1,000
1913.....	(0)	(0)	-----	None	None	None
1914.....	(0)	(0)	-----	None	7,000	7,000
1915.....	(0)	(0)	-----	None	None	None
1916.....	(0)	(0)	-----	None	9,000	9,000
1917.....	(0)	(0)	-----	None	None	None
1918.....	(0)	(0)	-----	None	None	None
1919.....	(0)	(0)	-----	None	1,000	1,000
1920.....	(0)	(0)	-----	None	7,000	7,000
1921.....	(0)	(0)	-----	2,000	None	2,000
1922.....	(0)	(0)	-----	None	None	None
1923.....	(0)	(0)	-----	None	None	None
1924.....	(0)	(0)	-----	None	None	None
1925.....	(0)	(0)	-----	None	4,000	4,000
1926.....	15,000	19,000	37,000	None	None	None
1927.....	7,000	32,000	39,000	None	2,000	2,000
1928.....	10,000	18,000	28,000	None	None	None
1929.....	None	20,000	20,000	None	None	None
1930.....	12,000	14,000	26,000	None	None	None
1931.....	37,000	16,000	53,000	None	None	None
1932.....	14,000	24,000	38,000	1,000	27,000	28,000
1933.....	23,000	21,000	44,000	None	3,000	3,000
1934.....	31,000	17,000	48,000	5,000	15,000	20,000
1935.....	20,000	15,000	35,000	None	28,000	28,000
1936.....	20,000	15,000	35,000	2,000	11,000	13,000

¹ Encroachment on irrigation supplies.

² Encroachment on winter power waters.

³ These shortages occur in years of late run-off when irrigation requirements rise faster than stream flow. Winter flows are always adequate Nov. 1 to Apr. 1.

⁴ Not computed.

DIVERSION PLAN AND STRUCTURES

REPLACEMENT

In order to protect the water users in the Colorado River Basin against any depletion of their water supply by diversions through the Continental Divide tunnel to northeastern Colorado, a storage reservoir is planned on the Blue River about 16 miles southeast of Kremmling, Colo. This reservoir is to be known as the Green Mountain.

The dam site is located in the E ½ of sec. 15, T. 2 S., R. 80 W., sixth principal meridian, near the head of a box canyon, between Green and Little Green Mountains, caused by the river cutting through a porphyry sill. The foundation bedrock consists of sedimentary rocks, either Dakota sandstone or Morrison shales, and the intrusive porphyry.

The irrigation outlet capacity is 1,000 cubic feet per second, and the power outlet capacity is 1,500 cubic feet per second. The spillway capacity is 25,000 cubic feet per second.

The reservoir will flood 2,100 acres of land and will have a capacity of 152,000 acre-feet.

From the water-supply studies it was found, assuming that full development had taken place in the Colorado River Basin and that the Big Thompson project had been in operation the last 35 years, that in the year 1931, the lowest year of dependable run-off record, the Colorado Basin users above Glenwood Springs would have been shorted 37,000 acre-feet for irrigation use and the Public Service Co. would have been shorted 16,000 acre-feet at their power plant at Shoshone during the nonirrigation season, or a total shortage of 53,000 acre-feet. Accordingly, 50,000 acre-feet of Green Mountain storage have been allocated to replacement purposes for which the water users in north-eastern Colorado will pay \$1,500,000. The remaining 100,000 acre-feet are allocated to power and will be paid for out of power revenues.

Since the average shortage for both power and irrigation for the last 10 years, the lowest 10 years of run-off record is 36,000 acre-feet. There would be the 16,000 acre-feet difference, and a portion of the 100,000 acre-feet let out for power that could be used by the Colorado Basin users to supply shortages that might occur in their irrigation use in years of extreme low run-off, these shortages not being caused by the transmountain diversion.

The total estimated cost of the dam and reservoir is \$3,776,032, \$2,276,032 of which will be paid for from power revenues.

GRANBY RESERVOIR AND STORAGE

The storage of Colorado River waters for the project is to be made in what is known as Granby Reservoir which is located in Tps. 2 and 3 N., Rs. 75 and 76 W., sixth principal meridian, in Grand County, Colorado. The reservoir basin occupies the valleys of Stillwater Creek, the south fork or Arapaho Creek, and the main Colorado River.

The damsite is located about 4 miles northeast of the town of Granby, Colo., in the NE¼ of sec. 11, T. 2 N., R. 76 W., in Grand County, Colo. It is located at the head of a short canyon which the river has cut through pre-Cambrian rocks forming a spur of the main Rocky Mountain mass. At the damsite the canyon at river-bottom level is 200 feet wide, while at elevation 8,275 it is 720 feet in width.

The dam is to be a combination earth and rockfill structure with a maximum height of 223 feet. The outlet capacity is 300 cubic feet per second and the spillway capacity is 12,000 cubic feet per second.

With the high-water line at elevation 8,275 feet the reservoir has a capacity of 482,860 acre-feet, and will flood an area of 6,943 acres.

This reservoir will not only intercept the flow of the Colorado at that point, but the flow of Willow Creek will be intercepted near Dexter, Colo., and brought into the reservoir through a canal of 1,000

cubic feet per second capacity. Willow Creek enters the Colorado about 2 miles below Granby Dam.

It is estimated that Willow Creek will supply an average of about 60,000 acre-feet per year, and that the total estimated cost of this diversion is \$733,203.

The storage in Granby Reservoir will also be augmented by the flow of Meadow and Strawberry Creeks, tributaries of Fraser River which enters the Colorado about 5 miles below the dam. The canal intercepting these two creeks will have a capacity of 500 cubic feet per second, and it is estimated they will produce an average of 12,000 acre-feet a year. The total estimated cost of this diversion is \$133,600.

If water supply records kept in the future show there is sufficient water supply left in the Fraser River below the City of Denver's diversion, a canal could be taken out of it just below the mouth of St. Louis Creek near the town of Fraser, Colo., and extend from there to Granby Reservoir, intercepting Ranch, Meadow, and Strawberry Creeks on the way. A small regulating reservoir should be built on Ranch Creek above where the Canal intercepts it.

NORTH FORK DIVERSION DAM AND SHADOW MOUNTAIN LAKE

In order to divert the water of the North Fork of the Colorado into Grand Lake and thence to the channel extending from it to the west portal of the Continental Divide tunnel, it is planned to construct a concrete overflow dam 35 feet in height, above streambed, across the North Fork about one-half mile below its junction with the Grand Lake outlet.

The dam site proper is located in the NW $\frac{1}{4}$ of sec. 19, T. 3 N., R. 75 W., and is a glacial morain cut through by the river.

The water backed up by this dam will form a lake called Shadow Mountain, the name of a nearby mountain, which will have a surface area of 1,356 acres. The elevation of this lake will be the same as Grand Lake and connected with it by means of the present outlet.

NORTH FORK DIVERSION DAM

The dam proper is a concrete gravity overflow spillway section, 90 feet long, with crest elevation at 8,370. This spillway is designed for maximum discharge of 1,800 cubic feet per second. On each side of the overflow section is a concrete gravity section containing three automatic siphon spillways on each side. The total spillway capacity is 9,400 cubic feet per second.

The total estimated cost is \$483,928.

GRANBY PUMPING PLANT

As stated before, the water surface elevation of Granby Reservoir is 8,275 and the water surface of Shadow Mountain and Grand Lakes is 8,369. In order to get the water stored in Granby Reservoir into Shadow Mountain Lake and available for delivery through the Continental Divide tunnel, a pumping plant is located on the north shore of Granby Reservoir about one-half mile above the junction of the South Fork with the Colorado. A granite spur juts out into the reservoir site at that point making it ideal for the intake tunnels and a shaft for the pump.

The proposed pumping plant will contain three motor-driven vertical-shaft pumping units having a total capacity of 900 cubic feet per second with full reservoir and 550 cubic second-feet at low water. At normal water surface the capacity will be 870 cubic feet per second.

Each pump will be driven by a 6,500-horsepower synchronous motor.

Power will be delivered to the plant from a 69,000-volt transmission line extending from power plant no. 1 just below Estes Park, around the Rocky Mountain National Park, and crossing the Continental Divide at Buchanan Pass about 5 miles south of the park boundary.

The water from the pumps empties into a canal of 900 cubic second-foot capacity and runs by gravity into Shadow Mountain Lake. It is planned to operate this canal all winter when temperatures get as low as 40° below zero. The latent heat in the water and the friction heat absorbed from the pumps will prevent this water from freezing and will keep quite an area open after the water reaches Shadow Mountain Lake.

The total estimated cost of the pumping plant is \$1,250,000.

The total estimated cost of the pump canal is \$417,553.

CONTINENTAL DIVIDE TUNNEL

The west tunnel portal is connected with Grand Lake by means of a channel constructed 67.5 feet in width and 15 feet in depth. At the lake end of this channel a permanent concrete barrier or weir will be placed with a crest elevation at 8,368 which would be the minimum elevation to which the water in Grand Lake could be drawn. Since the barrier is so constructed that it requires the water to be 1 foot in depth over it to supply the normal capacity of the tunnel, the normal elevation of Grand and Shadow Mountain Lakes would be 8,369 feet.

The present maximum fluctuation of Grand Lake is about 4 feet, or from an elevation of 8,368 in winter to 8,372 feet during the peak run-off from melting snow. The automatic control gates at the North Fork Diversion Dam and at tunnel inlet will so control the elevation of the water surface in Grand Lake that it would never fluctuate more than 1 foot.

The Continental Divide tunnel extends from the easterly end of Grand Lake to Wind River, southwest of Estes Park, with an azimuth of 242° 20' 30", and length of 69,023 feet. It is to be horseshoe shape 9.5 feet in diameter and lined throughout with a 9-inch concrete lining.

It will be located entirely in pre-Cambrian rock consisting of the Longs Peak and related granites and the gneisses and schists of the Idaho Springs formation. The granites are strong massive rocks. Gneisses predominate over schists and only a small proportion have prominent and continuous cleavage planes. The proportion of granite to gneiss and schist is approximately 4 to 1.

From a detailed geological survey of the tunnel and comparing it with conditions actually encountered in the Moffat Railroad tunnel, which was built under the Continental Divide for the Denver & Salt Lake Railroad, and about 25 miles due south of this one, it was estimated there would be only 400 feet of bad ground and 5,200 feet of ground needing support. However, for purposes of estimate, it was figured there would be 6,900 feet of bad ground and 17,500 feet of ground needing support.

The total estimated cost is \$7,271,371.

POWER CONDUIT NO. 1

Power conduit no. 1 extends from the east portal of the Continental Divide tunnel in Wind River to the penstock of power plant no. 1 on the northeast slope of Prospect Mountain.

Both ends of the Continental Divide tunnel are without the national-park boundaries but the area east of the east portal is authorized by Congress to be taken in, through that area. The water will be taken through a closed conduit consisting of a 10-foot reinforced concrete pipe completely buried. The total length of power conduit is 5.36 miles, of which 1.86 miles is closed conduit, 1.19 miles is concrete lined tunnel, 0.98 mile is siphon, and the remainder is open canal.

The total estimated cost of power conduit no. 1 is \$1,101,000.

POWER PLANT NO. 1

Power plant no. 1 will be located on the south bank of the Big Thompson River about one-half mile east of Estes Park. It will contain two 15,000 kilovolt-ampere generating units with auxiliaries. Each unit will consist of a vertical-shaft, single-runner, spiral-casing type hydraulic turbine operating under an effective head of 705 feet direct connected to a 15,000 kilovolt-ampere water-wheel type generator. A complete description with cost estimate will be found in Power and Pumping Summary.

Until there has developed a sufficient market for power to justify the construction of power plants nos. 2 and 3, the water will be turned into the Big Thompson at power plant no. 1 and carried by that stream to a diversion dam located in SE $\frac{1}{4}$ sec. 1, T. 5 N., R. 71 W., about midway between the present diversion dam and power plant for the town of Loveland, Colo.

POWER CANAL NO. 4

From this diversion dam the water will be carried in a canal of 750 cubic second-feet capacity on the south side of the stream a distance of 4.93 miles to a point just above the mouth of the Big Thompson Canyon. At this point a portion of the water will drop direct into the Big Thompson River to supply the supplemental water demands of that stream and a portion will be siphoned across to elevation 5,450 to supply the canal going to the Poudre River, which will be described later. Power plants nos. 4 and 4-A will be constructed at this point to take advantage of a fall of 550 feet into the Thompson and 358 feet to the Poudre Canal when the power market justifies.

CARTER LAKE SUPPLY CANAL

About 3.07 miles below the diversion dam mentioned above, a canal of 300 cubic feet per second takes off toward the south and supplies Carter Lake.

This canal is 8.78 miles in length, of which 7,040 feet is tunnel 1,878 feet siphon, and the remainder is open canal.

The estimated cost of this supply canal is \$710,629.

CARTER LAKE RESERVOIR

This site is located in Ts. 4 and 5 N., R. 70 W., of sixth principal meridian, about 1 mile north and 7 miles west of Berthoud, Colo.

The reservoir will occupy a valley about 2 $\frac{1}{4}$ miles long and from one-half to 1 mile wide. The northern portion of the area is a natural

basin called Carter Lake. This lake dried up during the last 5 drought years, for the first time within the memory of the white settlers.

The proposed maximum water surface in the reservoir is at elevation 5,760 with a capacity of 111,963 acre-feet. The area of high water line is 1,150 acres. For this water surface three dams will be required. Dam no. 1 is located at the natural outlet of the valley and will contain the outlet works for the reservoir; the other two dams will occupy saddles. These dams are earth and rock fill; the main dam is 243 feet high, and the saddles 43 and 48, respectively.

The capacity of the outlet to St. Vrain supply canal is 300 cubic feet per second, the outlet to the Big Thompson has a capacity of 1,000 cubic feet per second.

The total estimated cost of the reservoir is \$1,822,202.

ST. VRAIN FEEDER CANAL

A canal of 300 cubic feet per second capacity will extend from the small outlet of Carter Lake to the St. Vrain, reaching the St. Vrain high enough to supply all ditches.

The length of this canal is 9.76 miles with 3,445 feet in tunnel, 1,575 feet of siphons, and the remainder open canal.

The estimated cost of the St. Vrain feeder is \$368,951.

BIG THOMPSON FEEDER

About one-half mile below Carter Lake Dam a canal will be taken out of the draw leading from the dam, and will run into Cottonwood Creek, a tributary of the Big Thompson. This canal will have a capacity of 1,000 cubic feet per second and be 5.37 miles in length.

The cost is estimated at \$155,246.

HORSETOOTH SUPPLY CANAL

This canal starts at the end of a siphon across the Big Thompson from power conduit no. 4. This water will pass through power plant no. 4-A when constructed. The canal starts at elevation 5,450 with a capacity of 250 cubic feet per second. The structures, however, are designed for a capacity of 400 cubic feet per second on the theory that some time in the future it might be necessary to increase the capacity of the canal to that amount. The length of this canal is 9.88 miles, of which 12,863 feet is tunnel, 3,296 feet is siphons, and the remainder open canal.

The elevation of 5,450 was chosen because it not only puts the water above all present diversions on the Poudre River, but it afforded the most direct and economical route.

The estimated cost of this feeder is \$1,208,391.

HORSETOOTH RESERVOIR

The proposed Horsetooth Reservoir will occupy a valley 6 miles long and from one-quarter to three-quarters miles wide, extending in a north-south direction, formed by the erosion of soft red beds of Lykens formation between harder ridges of Lyons on the west and Dakota sandstone on the east. There are three natural outlets to the east through the Dakota hogback, namely, Soldier, Dixon, and

Spring Canyons, which are the sites of three proposed dams of the same names. The fourth proposed dam, Horsetooth, will cross the valley at the north end on a low saddle separating the valley from drainage to the north into the Poudre River. The outlet will be through the Horsetooth Dam saddle. There are no outlets through the other dams. The proposed water surface is at 5,400 feet in elevation which gives a capacity of 96,756 acre-feet. The area flooded will be 1,513 acres. The outlet capacity was designed for 1,200 cubic feet per second with reservoir full. This large capacity is necessary as the irrigation use requires that the entire amount of supplemental water be delivered at a rate that would supply it in 60 days.

The advantages of a reservoir at this point are: It is high enough to supply all users from the main Cache La Poudre River and is located close to it. It takes the place of 6 miles of canal through rough country and allows a canal of 250 cubic second-feet to be constructed from the Big Thompson instead of one for 1,000 cubic feet per second.

The estimated cost of the reservoir is \$3,625,021.

POUDRE FEEDER CANAL

From the outlet of Horsetooth Reservoir a canal of 1,000 cubic second-feet capacity will extend north to Lewstone Creek, a tributary of the Poudre. The water will run down this creek to the Poudre above all the diversions except the Poudre Valley.

POUDRE VALLEY FEEDER CANAL

A canal will extend from Lewstone Creek to the Poudre Valley Canal about 1 mile below its headgate, crossing the Poudre River in a siphon. This canal will have a capacity of 400 cubic feet per second to take care of the supplemental demands of the Poudre Valley Canal and also the demands of the North Poudre irrigation district. The total length of the two canals is 5.48 miles.

The cost of the Poudre Feeder and Poudre Valley Canals is estimated at \$632,843.46.

NORTH POUDRE FEEDER CANAL

It is planned to enlarge the Poudre Valley Canal for a distance of 3.58 miles from the point the supply canal enters to the location of the pumping plant for the North Poudre district. This will enlarge the canal from a capacity of 500 to 750 cubic feet per second and the estimated cost is \$11,436.

NORTH POUDRE PUMPING PLANT

This pumping plant, constructed on the banks of the Poudre Valley Canal, will consist of two 75 cubic second-feet capacity vertical synchronous motor driven single stage pumps, operating against an effective head of 187 feet.

The estimated cost is \$200,000.

NORTH POUDBRE FEEDER CANAL

This canal of 150 cubic second-feet capacity extends from the pressure outlets of the pumping plant to the North Poudre Canal, a distance of 9.98 miles.

The estimated cost is \$128,889.

ARKINS RESERVOIR

This reservoir is located on Buckhorn Creek, a tributary of the Big Thompson, in Tps. 5 and 6 N. R. 70 W., sixth principal meridian, and about 8 miles northwest of Loveland, Colo. The object of this reservoir is to provide storage for Colorado River waters brought over in the wintertime and to be used to supply supplemental water on the lower South Platte in water districts 1, 2, and 64. It will also serve in connection with the use of the 16,000 acre-feet of floodwater now available on the Big Thompson.

The bringing of more of the supplemental water over in the wintertime aids materially in the production of a maximum amount of power out of the waters of the Big Thompson River. For that reason the entire cost of the inlet to Arkins Reservoir and one-half the cost of the reservoir itself is assessed against power and paid for out of power revenues from plant no. 1.

The capacity of Arkins Reservoir is 50,000 acre-feet with a high water line at 5,275 feet elevation and floods 929 acres of land.

The dam site occupies a notch cut through the Dakota sandstone ridge by Buckhorn Creek.

The main dam is an earth- and rock-fill structure 155 feet in height with an outlet capacity of 650 cubic feet per second and a spillway of 10,000 cubic second feet capacity.

There is a saddle dam, in addition to the main dam of earth- and rock-fill construction, 50 feet maximum height, built across a saddle at the southern extremity of the reservoir.

The total estimated cost of the reservoir and dam is \$1,740,737.

The estimated cost of the Arkins Reservoir inlet is \$351,488.

This inlet diverts from the Big Thompson River just below the dam of the Handy Canal and follows around the north side of the river a distance of 2.33 miles to Arkins Reservoir.

ROCKY MOUNTAIN NATIONAL PARK

Every effort has been made in the survey and design of this project to not disturb the natural beauties of the Rocky Mountain National Park and its surrounding areas. The Continental Divide tunnel was lengthened 1.6 miles in order that its extremities should fall outside the boundaries of the park. The conduit leading from the east portal of the tunnel to power plant no. 1 is to be buried and the surface landscaped through the area authorized by Congress to be added to the park. The waste from the east portal of the tunnel placed in this area is to be terraced and planted with evergreen trees. The waste from the west portal is to be used to fill up some low areas and render the area suitable for the building of summer homes.

The approach to the Western Gateway of the Rocky Mountain National Park will be along the shores of Shadow Mountain Lake with

its fluctuation of only 1 foot instead of the swampy area that now breeds mosquitoes and exposes mud flats in low water.

The bill authorizing the creation of the Rocky Mountain National Park reserved the right for the Bureau of Reclamation to survey and construct an irrigation project within the boundaries of the park.

OPERATION OF THE SYSTEM

IRRIGATION PROJECT OPERATIONS

The system is planned and it is anticipated that it will be operated in a manner to have the water available in Carter Lake, Horsetooth and Arkins Reservoirs available by July 1, to the full capacity of those reservoirs, 256,000 acre-feet. The usual demand for supplemental water begins July 1 to 15 and extends to September 15 to 30. The outlets of the reservoirs are planned to deliver the water from the reservoirs in 60 to 75 days, including the water that must pass through them for direct delivery that may be in the way of being transferred from the Colorado River Basin to the eastern slope during the period of irrigation application. The balance of the 310,000 acre-feet, or 54,000 acre-feet, will be available for direct irrigation use as brought over during the above period or to some extent may be required prior to July 1.

The run-off of the waters of the Colorado River here contemplated to be used will largely be secured from the melting snows during May, June, and early July and stored in the Granby Reservoir. During the fall of that year, winter and spring of the following year, the water will be transferred from the Granby Reservoir through the Continental Divide tunnel at a uniform rate and restored in the Carter Lake, Horsetooth, and Arkins Reservoirs. This will permit a flow that is well suited to the development of firm power through the five power plants that will eventually be constructed along the Big Thompson as shown on the map of the general layout.

Granby Reservoir will act as a hold-over reservoir to carry the water from years of excessive run-off to years of subnormal flow.

POWER PROJECT OPERATION

Water will be carried through the Continental Divide tunnel at a uniform flow for the generation of power at the several power plants, except that the quantity will be reduced during the summer season when some water from the Big Thompson is available for power purposes in power plants nos. 2, 3, 4, and 4-A. At this period there will be little or no demand for power for pumping at the Granby pumping plant, which will permit the cutting down of the quantity of water to take care of the commercial power load.

It is planned to construct the Granby pumping plant and the Granby pump canal 150 percent of the capacity of the Continental Divide tunnel. This will permit the operation of the pumping plant at full capacity with off-peak power, and reduce the amount of pumping with firm power. The varying discharge of the pump ditch during the 24-hour period will be equalized by the Shadow Mountain and Grand Lakes, so that a uniform discharge will be maintained through the Continental Divide tunnel. The range in height of water surface in Shadow Mountain and Grand Lake to equalize this

flow will not exceed two-tenths of a foot, and will be greatest in the winter and early spring months.

There is an average of 16,000 acre-feet of surplus water on the Big Thompson available for storage in the system mainly in May and June. In order to take this water into the reservoirs it will be necessary to reserve capacity in the three reservoirs on the eastern slope until toward the latter part of June. The snowfall, the main source of this water supply, will be known well in advance so that operations of the several parts of the system, including the production of power at the several power plants, can be adjusted to take care of this water and hold back an equal amount in Granby Reservoir.

TENTATIVE PROJECT FINANCIAL SET-UPS

This proposed development consists of two projects: first, the irrigation project, and second, the power project.

It is planned that those features of the development that are used mainly for irrigation are grouped under the irrigation project set-up, while those used entirely, or are made of a greater capacity because of power development, are grouped in whole or in part in the power project set-up.

IRRIGATION PROJECT

The following major features with their appurtenant structures are given with the estimated field costs including 10 percent for engineering and 15 percent for contingencies. The full capacity of Arkins Reservoir is necessary to develop a larger portion of firm power than would otherwise be possible without it. At the same time, a reservoir of half its capacity or additional capacity in Horsetooth or Carter Lake Reservoirs would be necessary to provide capacity to deliver the irrigation water as needed. It is, therefore, deemed equitable to divide the cost of this reservoir equally between the irrigation and power projects.

The Green Mountain Reservoir, with a capacity of 152,000 acre-feet, is larger than is necessary to furnish replacement for a like amount of water diverted by the project above Granby Dam at a time when it would be required for irrigation, present and future, and to furnish the Shoshone power plant 1,250 second-feet or such lesser amount that they would be entitled to receive if the proposed project was not operating. From studies made, it appears that 50,000 acre-feet will be sufficient to replace all the water that the proposed project will take at a time when required for use lower down in the stream within the State. Therefore 52,000 acre-feet of the Green Mountain Reservoir capacity is allocated for replacement (including evaporation losses) and charged to the irrigation project. The balance of the capacity or 100,000 acre-feet is allocated to the power project and is to be paid for out of power revenues.

The following is a summary of the irrigation project costs:

Estimated cost chargeable to irrigation feature

Willow Creek feeder canal.....	\$733, 203
Granby Reservoir.....	2, 813, 703
Granby pumping plant.....	1, 250, 000
Granby pump canal.....	417, 553
North Fork diversion dam.....	483, 928
Continental Divide tunnel.....	7, 271, 371

Estimated cost chargeable to irrigation feature—Continued

Carter Lake supply canal.....		\$710, 629
Horsetooth supply canal.....		1, 208, 391
St. Vrain feeder canal.....		368, 951
Big Thompson feeder canal.....		155, 246
Poudre feeder canal.....		632, 843
Poudre Valley feeder canal.....		11, 436
North Poudre feeder canal.....		128, 889
North Poudre pumping plant.....		200, 000
Horsetooth Reservoir.....		3, 625, 021
Arkins Reservoir.....		1, 859, 323
Carter Lake Reservoir.....		1, 925, 253
Green Mountain Reservoir (52,000 acre-feet replacement) (100,000 acre-feet for power).....		3, 776, 032
Improvement of Colorado River above Kremmling to maintain fish- ing and to adjust the present irrigation system to the altered conditions.....		300, 000
Less the following items tentatively chargeable to power:		27, 871, 772
One-half cost of Arkins Reservoir.....	\$929, 661	
Portion of cost of Green Mountain Reservoir for 100,000 acre-feet.....	2, 276, 032	
		3, 205, 693
Cost of irrigation features.....		24, 666, 079
Say.....		24, 800, 000

REPAYMENT

Twenty-four million eight hundred thousand dollars upon 310,000 acre-feet at \$80 per acre-foot.

Two dollars per acre-foot on 40-year repayment basis.

In the above repayment is predicated upon the contracts to be made upon a basis of 310,000 acre-feet. Beside the 320,000 acre-feet available from the Colorado River drainage there is an average of 16,000 acre-feet available for storage on the Big Thompson, making 336,000 acre-feet in all, leaving 26,000 acre-feet for losses on the eastern slope and for the uncertain, heretofore mentioned in operations on the western slope.

The power costs are shown under the heading "Power and pumping system."

The construction of power plant no. 1 as shown in the power set-up is a necessary development in order to secure power for pumping purposes at the Granby pumping plant.

POWER AND PUMPING SYSTEMS

The ultimate power and pumping system is proposed to consist of the major pumping plant at Granby, power plant no. 1 near the town of Estes Park, power plant no. 2 near Drake post office, power plant no. 3 at Cedar Cove, power plants nos. 4 and 4-A near the mouth of the Big Thompson Canyon, and power plant no. 5 at the Green Mountain Reservoir. If conditions justify, there may also be a pumping plant on the Poudre River near the point where the proposed Poudre supply canal crosses the river. Power plant no. 5, Granby pumping plant, and power plant no. 1, would be interconnected by a single circuit 69,000-volt transmission line. Power plants nos. 1 to 4-A, inclusive, would be interconnected by two 115,000-volt transmission lines and these same lines would extend to one or more load centers where the power could be disposed of commercially.

The buildings for the power and pumping plants would be of reinforced concrete construction of suitable size to house the machinery and provide space for such facilities as would be required for efficient and economical operation. For scenic reasons, special care would be taken in the architectural design of the buildings to make them blend in with the beauties of the surrounding territory so as to be both as inconspicuous as possible and also as artistic as feasible without undue expenditure. An artist's sketch of one of these buildings is included with the report.

Following is a tabulation covering the essential data for each of the power and pumping plants:

Power plants

Plant designation	Effective head in feet	Turbine capacity in cubic feet per second	Power available in horse-power	Number of units	Size of each unit in horse-power	Installed power in kilowatts
No. 1.....	704	550	38,800	2	20,000	30,000
No. 2.....	1,195	550	65,800	2	34,000	50,000
No. 3.....	323	550	18,000	2	9,000	13,500
No. 4.....	550	400	22,000	1	22,000	16,000
No. 4-A.....	381	250	9,500	1	9,500	7,000
No. 5.....	225	1,500	33,800	2	17,000	26,000
Total installed power in kilowatts.....						142,500

Pumping plants

Plant designation	Head in feet	Pump capacity in cubic feet per second	Capacity of each pump in cubic feet per second	Number of pumps	Rating of each motor in horse-power	Power required in kilowatts
Granby.....	130	870	290	3	6,500	15,000
Poudre.....	187	150	75	2	2,000	3,000
Total installed pumping, kilowatts.....						18,000

POWER PLANT NO. 1

Power plant no. 1 will be located on the south bank of the Big Thompson River about one-half mile east of the village of Estes Park and will contain two 15,000 kilovolt-ampere generating units with auxiliaries. Each unit will consist of a vertical-shaft, single-runner, spiral casing type hydraulic turbine operating under an effective head of approximately 705 feet and direct connected to a 15,000 kilovolt-ampere water-wheel type generator with direct connected exciter and pilot exciter. Water would be supplied to each turbine through a steel penstock approximately 5,000 feet long, with synchronous bypasses provided so that the flow through the penstock can be discharged either through the turbines or the bypasses into the Big Thompson River. The bypasses will be mechanically connected to the turbine gate operating mechanism so that rapid governing of the units under varying load conditions can be effected without creating excessive water hammer. Trashracks with shut-off gates for

each penstock will be provided in the forebay structure. The head-gates will be controlled from the power plant. A spillway will be provided to care for the flow when the headgates are closed and the penstocks inoperative. The plant will be equipped with all necessary auxiliaries, including a traveling crane for handling the large pieces of equipment. A small machine shop will be provided for making minor repairs. An outdoor type substation with self-cooled transformers will be provided for stepping the voltage up to 69,000 for transmission to the Granby pumping plant, and to 115,000 volts for transmission to commercial markets. The substation structure will be of the conventional structural steel type with high voltage oil circuit breakers, lightning arresters and necessary auxiliaries. The control of the oil circuit breakers will be from the main power plant switchboard. Operators' quarters, a warehouse, and a large machine shop for general project repairs will be provided in the vicinity of the power plant.

POWER PLANT NO. 2

Power plant no. 2 will be located about one-half mile northwest of Drake, on the south bank of the north fork of the Thompson River just above its junction with the Big Thompson. The plant will contain two 25,000-kilovolt-ampere generating units of the horizontal shaft type. The net head will be approximately 1,195 feet. Each unit will consist of a double overhung impulse wheel hydraulic turbine with the generator mounted in the center, between the two runners. A direct connected exciter and pilot exciter will be mounted at one end. Water will be delivered to the turbines through two steel penstocks about 4,150 feet long. Each penstock will be provided with two branches to the turbine nozzles and each branch will be provided with a synchronous bypass arranged so that the flow through the penstock can be discharged through either the nozzles of the bypasses to the river. The bypasses will be mechanically connected to the turbine nozzle operating mechanism so that rapid governing can be effected under varying load conditions without excessive water hammer. The head-gate structure will be provided with trash racks and sliding gates at the end of the penstocks and a spillway to care for the flow when the gates are closed. The plant will be complete with all necessary auxiliaries for station service requirements and with a crane for handling the machinery. A structural steel outdoor type substation will be provided with self-cooled transformers for stepping the voltage to 115,000 volts, and with outdoor type oil circuit breakers, lightning arresters, and other necessary auxiliaries. The operation of the substation will be handled from the main switchboard of the power plant. Quarters for the operators will be provided adjacent to the power plant.

POWER PLANT NO. 3

Power plant no. 3 will be located about one-half mile east of the Loveland power-diversion dam on the north bank of the Big Thompson River. The plant will contain two 6,500 kilovolt-ampere generating units, each consisting of a vertical hydraulic turbine direct connected to a generator with main exciter and pilot exciter. The effective head will be approximately 328 feet. Water from the head-gate structure will be delivered to the turbines through steel

pen stocks about 650 feet long. Each pen stock will be provided with a synchronous bypass arranged so that the flow through the pen stock can be discharged either through the turbines or the bypasses to the Big Thompson River, and to allow rapid governing of the units without excessive water-hammer. The head-gate structure will be provided with trash racks and sliding gates at the head of the pen stocks and a spillway to care for the flow when the gates are closed. The plant will be complete with all necessary auxiliaries for station-service operation, and with a crane for handling equipment. The plant will be provided with a structural-steel outdoor-type substation similar to that proposed for plant no. 2.

POWER PLANTS NOS. 4 AND 4-A

Power plant no. 4 will be located about 2 miles east of Cedar Cove on the south bank of the Big Thompson River, while power plant no. 4-A will be located a short distance upstream from plant no. 4, and at an elevation about 175 feet above the river. The capacity of plant no. 4 will be 16,000 kilovolt-amperes and of plant no. 4-A, 7,000 kilovolt-amperes. One unit only will be provided at each plant and will consist of a vertical-shaft, single-runner, spiral-casing type turbine direct connected to a vertical water wheel generator with direct connected main and pilot exciters. Plant no. 4 will have an effective head of about 550 feet, and plant no. 4-A, 380 feet. Plant no. 4 will receive its water through a single steel penstock about 1,960 feet long, and plant no. 4-A, through a similar pipe about 1,400 feet long. Each plant will be provided with synchronous bypasses similar to those in plants nos. 1 and 3. Plant no. 4 will discharge directly into the Big Thompson River. Plant no. 4-A will be siphoned under the river through a pressure tunnel to the proposed Poudre supply canal, but will have provisions so that if so desired, the water may be discharged directly into the Big Thompson River. The headgate structure will be provided with trashracks, sliding gates, and spillways similar to those in plants nos. 1, 2, and 3. A single outdoor structural steel type switchyard will be provided for the two plants. The equipment in this substation will be similar to that for plants nos. 1, 2, and 3. Plant no. 4-A will be remotely controlled from plant no. 4, so that the two plants can be operated with one set of operators. The plant will be complete with auxiliaries and cranes similar to that in other plants. Quarters for the operators will be provided in the vicinity of the plants.

POWER PLANT NO. 5

Power plant no. 5 will be located about 12½ miles southeast of Kremmling, on the east bank of the Blue River, immediately downstream from the dam forming the proposed Green Mountain Reservoir. The plant will contain two 13,000 kilovolt-ampere generating units of the vertical hydraulic-turbine driven type, with direct connected generator with main and pilot exciters. The plant will have a varying head depending upon reservoir water surface, but it is expected that the average head will be about 225 feet. The trashrack and intake structure will be located immediately upstream from the dam and a single steel penstock installed in the tunnel will conduct the water to the power plant. Each turbine will be provided with a

pressure regulator or relief valve to limit the water hammer under sudden change of load conditions. The plant will be complete with necessary auxiliaries for station service, a small machine shop for minor repairs, and a crane for handling equipment. An outdoor structural steel substation will be provided complete with equipment for stepping the voltage up to 69,000 volts for transmission and with oil circuit breakers and other necessary auxiliaries for the control and protection of the lines and equipment. The oil circuit breakers will be controlled from the main switchboard of the power plant. Quarters for operators will be constructed in the vicinity of the power plant.

GRANBY PUMPING PLANT

The Granby pumping plant will be located approximately 6 miles south of the village of Grand Lake on the north shore of the proposed Granby Reservoir. The plant will contain three motor-driven vertical-shaft pumping units having a total capacity of 900 second-feet at full reservoir, and 550 second-feet at low water. The total capacity at the normal water surface will be approximately 870 second-feet. The motors will be of the synchronous type and arranged for semi-magnetic operation. That is, the operator will be required only to close the main switch to the unit in order to place it in operation, and to open the same switch to discontinue operation. The motors will be equipped with direct connected exciters. The water from the Granby Reservoir will be delivered to the pumps through tunnels about 155 feet long. A channel in the reservoir will convey the water to the mouth of the intake tunnels in extreme low water. Water from each pump will be discharged through about 175 feet of tunnel, and 165 feet of steel pipe to the canal at elevation approximately 8,381. This canal, which will be approximately 4 miles in length, will discharge into the proposed Shadow Mountain Lake. The center line of each pump and propeller will be at approximately elevation 8,145, with the base of the motor driving the pump 135 feet above, or at elevation 8,280. Vertical shafts in the rock between the underground pump room and the motor room on the surface will accommodate the shafts connecting the pumps to the motors. Each pump will have a capacity of 290 second-feet when operating under a total dynamic head of 130 feet and will be driven by a 6,500-horsepower synchronous motor.

The entrances to the intake tunnels will be provided with trashrack and stop-log structures, and sliding gates will be installed at the intake and discharge of each pump. The intake gates will be located in the gallery adjoining the pump room and will be hydraulically operated. The discharge gates will be located at the head of the canal and will be of a type which will close automatically in the event power service is interrupted, so as to prevent water in the canal from running back down through the pump.

The pumping plant will be complete with auxiliary pumping units for unwatering the intake and discharge tunnels and the drainage sump. It will also be complete with all other necessary station auxiliaries, including a crane for handling the equipment. A small machine shop will be provided for making minor repairs. Quarters for the operators will be provided in the vicinity of the plant.

Power will be delivered to the plant from a 69,000-volt transmission line, through an outdoor structural steel type substation containing self-cooled transformers, together with all necessary protective appa-

ratus and auxiliaries. The operation of the substation will be handled from the main switchboard of the pumping plant.

POUDRE PUMPING PLANT

The Poudre pumping plant will be located on the Poudre Valley Canal at a point about 3 miles below the crossing of the proposed Poudre supply canal. It is proposed to have a capacity of 150 second-foot, composed of two 75-second-foot vertical synchronous-motor-driven single-stage pumps, operating against an effective head of 187 feet. The plant will be complete with all necessary auxiliaries, including a crane for handling the equipment. An outdoor substation will be provided for stepping the voltage down from transmission voltage to motor voltage. Due to the relatively short periods of operation, it is not probable that it will be necessary to construct operator's quarters at this plant.

TRANSMISSION SYSTEM

The transmission system will consist of a single 69,000-volt circuit connecting power plant no. 5 with the Granby pumping plant and power plant no. 1. Power plants nos. 1 to 4-A, inclusive, will be connected by two 115,000-volt lines and two 115,000-volt lines will continue to market. For the purpose of this report only, and to include a sufficient amount in the cost estimates for any probable transmission set-up, this market has been assumed as the Valmont steam plant of the Public Service Co. of Colorado. Power plant no. 4 will be connected with the Poudre pumping plant by one 34,500-volt transmission line. The number of lines and mileage involved in each are as shown in the following tabulation:

From—	To—	Number of lines	Number of miles	Voltage
Power plant no. 5.....	Ka Rose.....	1	36	69,000
Granby pumping plant.....	Grand Lake.....	1	10	69,000
Do.....	Power plant no. 1.....	1	36	69,000
Power plant no. 1.....	Power plant no. 2.....	2	12	115,000
Power plant no. 2.....	Power plant no. 3.....	2	3	115,000
Power plant no. 3.....	Power plant no. 4.....	2	4	115,000
Power plant no. 4.....	Valmont.....	2	27	115,000
Do.....	Poudre pumping plant.....	1	18	34,500

The line to the Poudre pumping plant would be a wood-pole line with pin-type insulators. All other lines would be of the wood-pole, H-frame type, with suspension insulators, and combining all of the most modern features for continuity of service, ease of maintenance, and long life. The line from power plant no. 1 to the Granby pumping plant will probably require special construction to give added strength in the mountainous region near the Continental Divide.

In order to provide power for construction, it is proposed that one of the first features of the project would be to build one of the permanent 115,000-volt circuits from the Valmont plant to plant no. 1, the permanent 69,000-volt lines from plant no. 1 to Granby pumping plant and from Ka Rose to the Green Mountain dam site, and an extension from the Granby Pumping Plant to the west portal of the pro-

posed tunnel. Initially this entire line would be operated at 69,000 volts, and under such operation would be adequate for all contemplated construction activities. In connection with supplying construction power it would also be necessary to install a substation at the Valmont steam plant to step voltage up to 69,000 volts for transmission. Preliminary studies indicate that it would be advisable to make this substation of approximately 5,000 kilovolt-ampere capacity.

The estimated cost of installing the facilities to provide construction power are as indicated in the following tabulation:

From—	To—	Miles	Cost	
			Per mile	Total
Valmont.....	Power plant no. 2.....	34	\$8,750	\$229,500
Power plant no. 2.....	Power plant no. 1.....	12	4,100	49,200
Power plant no. 1.....	Granby pumping plant.....	36	3,600	129,600
Granby pumping plant.....	Grand Lake.....	10	3,200	32,000
Ka Rose.....	Power plant no. 5.....	36	3,600	129,600
Total transmission lines.....		128		569,900

Substation at Valmont..... \$61,300
 Total to supply power for construction..... 631,200

The transmission system as provided to furnish construction power would be adequate for transmission of power to markets from power plant no. 1 or power plant no. 5 if either were built individually, but the additional complete system would probably be constructed when two or more plants are constructed. The additional costs of the lines involved in this construction are shown in the following tabulation:

From—	To—	Miles	Cost	
			Per mile	Total
Power plant no. 1.....	Power plant no. 2.....	12	\$4,100	\$49,200
Power plant no. 2.....	Valmont.....	34	8,750	229,500
Power plant no. 4.....	Poudre pumping plant.....	18	1,800	32,400
Total additional cost of permanent transmission system.....		64		311,100

In addition to the transmission lines required for the disposal of power, it may be necessary that the Government also construct a substation at the point of power disposal. As a market survey has not been conducted to establish the points at which this power can be disposed of, or the quantities involved at each point of disposal, it is assumed for the purpose of this report that the substations will average in cost \$10 per kilowatt of capacity. Assuming that provision is made to dispose of a peak capacity of 140,000 kilowatts, this will involve an additional expenditure of \$1,400,000.

POWER OUTPUT

Water supply studies indicate that with power plant no. 1 only constructed, there is available, above all requirements for pumping purposes, a constant power output at 100 percent load factor of 120,000,000 kilowatt-hours per year. Since the pumping plant capac-

ity proposed is sufficient to allow pumping to be done in 16 hours of each day it will be possible to handle peak commercial power requirements without undue interference. With this in mind, it has been assumed for the purpose of this report that a market can be found which has a load factor such that 60 percent of this power or 72,000,000 kilowatt-hours per year can be absorbed as firm energy. The balance of this energy, or 48,000,000 kilowatt-hours per year, plus about 40,000,000 kilowatt-hours additional, which is available during various parts of the year, is classed as secondary energy.

Since the Valmont steam plant of the Public Service Co. of Colorado has an installed capacity of 75,000 kilowatts, it appears that the 88,000,000 kilowatt-hours of secondary energy could be absorbed as a fuel saving measure if the price does not exceed fuel costs. Allowing 10 percent for line losses, this is equivalent to an average load of about 9,000 kilowatts.

FINANCIAL OPERATION OF POWER SYSTEM

It is contemplated that the initial power development would consist of the construction of power plant no. 1 only, together with such transmission lines and substations as are required to supply power to the Granby pumping plant and to commercial markets. The estimated construction cost of the strictly power features, as well as items which it is expected that power revenues will repay, is given below.

It is assumed that 5 mills per kilowatt-hour can be secured for firm energy and 1.8 mills per kilowatt-hour for secondary energy with delivery at the market. In each case 10 percent loss is allowed for transmission. The following gives the financial set-up for power plant no. 1, operation costs and returns.

While for the purpose of this report the allocation of construction cost to irrigation and power has been made on the basis set out below, it is understood that this allocation is not thereby fixed, and the same may be changed as further information may warrant until such time as the contract for repayment of the cost of the irrigation features has taken final form.

Power plant no. 1 construction costs

Power plant no. 1 near Estes Park.....	\$1, 778, 000
Conduit from east portal continental divide tunnel to power plant no. 1.....	1, 101, 000
Transmission lines connecting power plant no. 1 with Granby pumping plant—with Valmont and line to North Poudre pumping plant.....	440, 000
Commercial substation (30,000 kilowatts).....	300, 000
Headquarters at power plant no. 1 for operation of power system...	100, 000
Subtotal.....	3, 719, 000
Interest during construction, .3 percent.....	112, 000
Total repayable in 50 years with interest.....	3, 831, 000
One-half cost of Arkins Reservoir.....	929, 661
Portion of cost Green Mountain Reservoir, for 100,000 acre-feet allocated to power.....	2, 276, 032
Payable on 40-year basis without interest.....	3, 205, 693
Total cost power plant no. 1 including other items that are required to be accomplished with the initial development...	7, 036, 693

Annual revenues from power plant no. 1

From sale of 65,000,000 kilowatt-hours firm power, at \$0.005.....	\$325, 000
From sale of 79,000,000 kilowatt-hours secondary power, at \$0.0018..	142, 000
From rental of water for power development to privately owned plants.....	20, 000
Gross annual income.....	<u>487, 000</u>

Annual operation and maintenance plus retirement of principal

Brought forward.....	<u>\$487, 000</u>
3.887 percent, on \$3,831,000, interest and retirement of investment on basis of 50 years.....	148, 000
Repayment of \$3,205,693 on basis of 40 years without interest.....	80, 000
Operation and maintenance of power plant.....	36, 000
Operation and maintenance Granby pumping plant.....	27, 000
Operation and maintenance of transmission lines.....	13, 800
Operation and maintenance conduit, tunnel, and canals.....	15, 000
Depreciation, 1.5 percent, on \$3,831,000.....	57, 000
General expense.....	18, 200
Total annual costs.....	<u>395, 000</u>
Annual surplus during 40 years repayment period of the non-interest-bearing obligation.....	92, 000

FULL POWER DEVELOPMENT

The results of this study indicate that the initial installation proposed is sufficient from a financial standpoint to return all necessary costs of operation and repayments.

There are five additional plants that can be developed in the future in a manner that will keep pace with the power requirements of the section that may be served and not have a large unearning investment tied up for some years.

The following is an estimate of the cost of the additional power plants that may be constructed in the future, but are not a part of the initial development.

Power plant no. 5.....	\$1, 190, 000
Green Mountain-Ka Rose transmission line.....	130, 000
Operators' quarters.....	60, 000
Substation (20,000 kilowatts).....	200, 000
Subtotal.....	<u>1, 580, 000</u>
Interest during construction, 3 percent.....	47, 400
	<u>1, 627, 400</u>

The above plant, together with plant no. 1, will produce: 113,000,000 kilowatt-hours firm power annually; 92,000,000 kilowatt-hours secondary power annually.

The following are the construction costs of developing power plants nos. 2, 3, 4, and 4-A with appurtenant structures:

Power plant no. 2.....	\$2, 325, 000
Power plant no. 3.....	665, 000
Power plant no. 4.....	760, 000
Power plant no. 4-A.....	420, 000
Power canal no. 2.....	2, 444, 000
Power canal no. 3.....	493, 000
Power canal no. 3-A.....	113, 000
Power canal no. 4.....	1, 194, 000
Operators' quarters.....	150, 000

COLORADO-BIG THOMPSON PROJECT

33

Substations (90,000 kilowatt hours).....	\$900, 000
Additional transmission lines.....	311, 000
Subtotal.....	9, 775, 000
Interest during construction, 3 percent.....	293, 250
Total repayable in 50 years with interest.....	10, 068, 250
Arkins Canal feeder, payable in 40 years without interest.....	351, 000
Total power plants nos. 2, 3, 4, and 4-A.....	10, 419, 250
Total power plant no. 5.....	1, 627, 400
Total second-stage development.....	12, 046, 650
Primary development plant no. 1.....	7, 036, 693
Cost of full power development.....	19, 083, 243

The total salable output of the full development is estimated as follows, exclusive of that used for pumping:

	<i>Kilowatt-hours</i>
Firm power, annually.....	360, 000, 000
Secondary power, annually.....	1 200, 000, 000

¹ Out of an available production of 387,000,000 kilowatt-hours secondary power.

CONCLUSIONS

(1) There is a large area (615,000 acres) of irrigated land in north-eastern Colorado, the major portion of which has an inadequate water supply.

(2) The feasible storage possibilities with the available water supply in the drainage area has been exhausted.

(3) There is at least an available water supply of 310,000 acre-feet on the upper drainage area of the Colorado River that can be diverted to supplement the present water supply on the eastern slope.

(4) That the diversion of this quantity of water from the Colorado River watershed will not interfere with or encroach upon the present or future irrigation along the Colorado River and tributaries within the State, with the protection provided in the Green Mountain Reservoir.

(5) That the plan for the project here laid out appears entirely feasible from a construction point of view.

(6) That the cost of construction estimated at \$2 per acre-foot per annum over the repayment period of 40 years is less than storage water is now commanding and that it will increase the crop values five or more times this annual cost, showing its economic worth.

(7) That the power developments that may be made in the six power plants will produce a large quantity of cheap hydroelectric power that will materially benefit Colorado.

(8) That the revenues from the commercial power generated at power plant no. 1 will pay for the power features as set up under the initial power development, in addition to the power required for pumping at Granby pumping plant, and in lieu of the irrigation features used in power development, the operation of the system to a point where the water leaves the tailrace of the lower power plants can be taken care of by the power development.

(9) That the cost of the irrigation feature of the project is within the ability of the water users to pay.

Exhibit B to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

U.S. District Court,
District of Colorado
Civil Nos. 2782, 5016
& 5017

Supplemental
Judgment & Decree
2/9/1978

FEB 15 1978

FEB 9 1978

U.S. DISTRICT COURT
DENVER, COLORADO
CLERK
D.F.P.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

CONSOLIDATED CASES

UNITED STATES OF AMERICA vs. NORTHERN)
COLORADO WATER CONSERVANCY DISTRICT, et al.) Civil No. 2782

IN THE MATTER OF THE ADJUDICATION OF)
PRIORITIES OF WATER RIGHTS IN WATER)
DISTRICT NO. 36 FOR PURPOSES OF IRRIGATION)

PETITIONERS: THE COLORADO RIVER WATER)
CONSERVATION DISTRICT, THE GRAND VALLEY) Civil No. 5016
WATER USERS ASSOCIATION, ORCHARD MESA)
IRRIGATION DISTRICT, PALISADE IRRIGATION)
DISTRICT AND GRAND VALLEY IRRIGATION COMPANY)

IN THE MATTER OF THE ADJUDICATION OF)
PRIORITIES OF WATER RIGHTS IN WATER)
DISTRICT NO. 36 FOR PURPOSES OTHER THAN)
IRRIGATION)

PETITIONERS: THE COLORADO RIVER WATER)
CONSERVATION DISTRICT, THE GRAND VALLEY) Civil No. 5017
WATER USERS ASSOCIATION, ORCHARD MESA)
IRRIGATION DISTRICT, PALISADE IRRIGATION)
DISTRICT AND GRAND VALLEY IRRIGATION)
COMPANY.)

SUPPLEMENTAL JUDGMENT AND DECREE

This matter coming on for hearing before the Court, and the Court having fully considered the pleadings, the evidence as adduced from time to time in this matter, the respective briefs filed by counsel, the previous Stipulations, Judgments and Decrees rendered by this Court in these cases, and the Court now being fully advised in the premises, for the purposes of implementing the Memorandum Opinion and Order of November 2, 1977, it is therefore ORDERED, ADJUDGED and DECREED:

1. Grand Valley Irrigation Company, Middle Park Water Conservancy District, Colorado River Water Conservation District, Grand Valley Water Users Association, Palisade Irrigation District, and Orchard Mesa Irrigation District are proper representatives of the western slope beneficiaries of the Colorado-Big Thompson Project as provided in Senate Document 80, 75th Congress, First Session, and under the terms of the Judgments and Decrees of this Court of October 12, 1955, and April 16, 1964. Under these decrees, the United States is the owner of the water rights for the Colorado-Big Thompson Project, specifically including

Green Mountain Reservoir, and is the owner of any water stored under those water rights. The role of the United States, acting by and through the Department of the Interior, Bureau of Reclamation, in the operation of this project is that of a trustee responsible for the protection of western slope interests and delivering water to northeastern Colorado.

2. The United States at Green Mountain Reservoir has a priority senior to any right in the City and County of Denver (acting by and through its Board of Water Commissioners, hereinafter "Denver") for diversion or storage at Dillon Reservoir. The United States has a right to fill Green Mountain Reservoir once each year, and Denver has no right, title or interest in the water which the United States may or is entitled to store therein.

3. Paragraph 2 of the Decree of April 16, 1964, provides as follows:

Neither Denver nor Colorado Springs has any right, title, or interest in the Green Mountain Reservoir, or in the water which the United States may, or is entitled to, store therein. Any arrangement which may be tendered or proposed to the United States for the replacement of such water from other sources, for the replacement of power losses, or for compensation therefor, must be such as will not impair any right of any beneficiary under Senate Document 80.

Pursuant to the 1955 and 1964 Judgments and Decrees as implemented by this provision, Denver has no right to require the United States to refrain from releasing water stored in Green Mountain Reservoir for any purpose so long as that purpose is consistent with the Judgments and Decrees of this Court of October 12, 1955, and April 16, 1964.

4. Under the Judgments and Decrees of this Court of October 12, 1955, and April 16, 1964, Denver has rights as to the operation of Green Mountain Reservoir as follows:

(a) Prior to the completion of the annual filling of Green Mountain Reservoir under the senior right of the United States, Denver may store water out of priority in Dillon Reservoir if permitted to so do by the Secretary of the Interior, (under the terms and conditions provided for such storage by Denver in the 1955 and 1964 Judgments and Decrees,) subject to release of said water by Denver on call of the Secretary of the Interior to the extent required to complete the annual filling of Green Mountain Reservoir.

(b) Following completion of the annual filling of Green Mountain Reservoir under the senior right of the United States, subject to

*additional -
L.S.
suggestions
2/27/75*

the approval of the Secretary of the Interior, Denver has a right to divert flows in the Blue River at Dillon Reservoir in contravention of the senior power generation right of the United States (which is in the amount of 1726 c.f.s.) if such diversions by Denver would otherwise be in priority; provided, however, that acceptable arrangements for power replacement are tendered to the United States by Denver as stipulated in the 1955 and 1964 Judgments and Decrees.

(c) At any time, and subject to the approval of the Secretary of the Interior, Denver has a right to propose exchanges of water to be fulfilled from replacement storage owned or controlled by Denver by and on the Blue River or on the Williams River. The Secretary of the Interior will not unreasonably withhold his consent to such exchange proposals if they comport with the terms and conditions provided for exchanges in the 1955 and 1984 Judgments and Decrees.

*Added Denver has the 77
from U.S. Supreme Court
2/27/78*

5. This Supplemental Judgment and Decree implements the Judgments and Decrees of October 12, 1955, and April 16, 1964, and is to be so construed. Nothing herein constitutes a modification of any limitation or condition provided in these Judgments and Decrees and nothing herein varies, diminishes, or changes the rights or obligations of any party or beneficiary under these Judgments and Decrees or under Senate Document No. 80.

6. The Court retains continuing jurisdiction over this matter for the purposes of effectuating the objectives of this Supplemental Judgment and Decree and the Judgments and Decrees heretofore entered October 12, 1955, and April 16, 1964. However, this Supplemental Judgment and Decree is intended to be a final order of this Court subject to appeal if any of the parties to these cases feel aggrieved thereby.

DATED at Denver, Colorado, this 9th day of February, 1978.

BY THE COURT:

Alfred J. Arraj
ALFRED J. ARRAJ, Judge
United States District Court

ENTERED
ON THE DOCKET

FEB 13 1978

JAMES R. MANSPEAKER
U.S.
DEP. CLERK

Exhibit B to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

U.S. District Court,
District of Colorado
Civil Nos. 5016 & 5017

Findings of Fact &
Conclusions of Law
10/12/1955

and

Final Judgment
10/12/1955

5016

CIVIL

FILED
United States District Court
Denver, Colorado

OCT 12 1955

J. Walter Benjamin
CLERK

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

CONSOLIDATED CASES

IN THE MATTER OF THE ADJUDICATION
OF PRIORITIES OF WATER RIGHTS IN
WATER DISTRICT NO. 36 FOR PURPOSES
OF IRRIGATION

CIVIL NO. 5016

PETITIONERS: THE COLORADO RIVER WATER
CONSERVATION DISTRICT, THE GRAND VALLEY
WATER USERS ASSOCIATION, ORCHARD MESA
IRRIGATION DISTRICT, PALISADE IRRIGA-
TION DISTRICT AND GRAND VALLEY IRRIGA-
TION COMPANY

IN THE MATTER OF THE ADJUDICATION OF
PRIORITIES OF WATER RIGHTS IN WATER
DISTRICT NO. 36 FOR PURPOSES OTHER
THAN IRRIGATION

CIVIL NO. 5017

PETITIONERS: THE COLORADO RIVER WATER
CONSERVATION DISTRICT, THE GRAND VALLEY
WATER USERS ASSOCIATION, ORCHARD MESA
IRRIGATION DISTRICT, PALISADE IRRIGA-
TION DISTRICT AND GRAND VALLEY IRRIGA-
TION COMPANY

FINDINGS OF FACT AND CONCLUSIONS OF LAW

AND

FINAL JUDGMENT

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

IN THE MATTER OF THE ADJUDICATION
OF PRIORITIES OF WATER RIGHTS IN
WATER DISTRICT NO. 36 FOR PURPOSES
OF IRRIGATION
PETITIONERS: THE COLORADO RIVER WATER
CONSERVATION DISTRICT, THE GRAND VALLEY
WATER USERS ASSOCIATION, ORCHARD MESA
IRRIGATION DISTRICT, PALISADE IRRIGA-
TION DISTRICT AND GRAND-VALLEY IRRIGA-
TION COMPANY

IN THE MATTER OF THE ADJUDICATION OF
PRIORITIES OF WATER RIGHTS IN WATER
DISTRICT NO. 36 FOR PURPOSES OTHER
THAN IRRIGATION
PETITIONERS: THE COLORADO RIVER WATER
CONSERVATION DISTRICT, THE GRAND VALLEY
WATER USERS ASSOCIATION, ORCHARD MESA
IRRIGATION DISTRICT, PALISADE IRRIGA-
TION DISTRICT AND GRAND VALLEY IRRIGA-
TION COMPANY

CONSOLIDATED CASES

CIVIL NO. 5016
FILED
United States District Court
Denver, Colorado

OCT 12 1955

J. Walter Bowman
CLERK

CIVIL NO. 5017

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter having come on for trial, the United States of America acting by and through J. Lee Rankin, Assistant Attorney General, William H. Veeder, Special Assistant to the Attorney General, and H. Lawrence Hinkley, Assistant United States Attorney; the City and County of Denver acting by and through its attorneys Glenn G. Saunders, John P. Akolt, John C. Banks, Harold D. Roberts, John M. Dickson, Robert A. Dick, Peter H. Holme, Jr., and Allen Dines; the City of Colorado Springs acting by and through its attorneys Frederick T. Henry and William S. Jackson; the City of Englewood acting by and through its attorneys M. O. Shivers, Jr., Frederic L. Kirgis, and Omer L. Griffin, the Northern Colorado Water Conservancy District acting by and through William R. Kelly and John R. Clayton; the Colorado River Water Conservation District acting by and through Frank Delaney and John B. Barnard; the Grand Valley Water Users Association, Grand Valley Irrigation Company, Orchard Mesa Irrigation District and Palisade Irrigation District acting by and through Silmon Smith; evidence having been adduced and stipulations entered into among the several parties, this Court does hereby enter the following:

FINDINGS OF FACT AND CONCLUSIONS OF LAW

HISTORY OF LITIGATION

1. The case of the United States of America v. Northern Colorado Water Conservancy District, et al., was initiated in this court on June 10, 1949. Involved in this action are the respective rights to the use of water in the Colorado River and its tributaries and the Blue River and its tributaries of the United States of America, Northern Colorado Water Conservancy District, the Colorado River Water Conservation District, the Palisade Irrigation District, the City and County of Denver, the City of Englewood, the City of Colorado Springs. Originally named in the cause were the Public Service Company of Colorado and the South Platte Water Users Association. The Public Service Company of Colorado has been dismissed without prejudice. Also involved are the rights to the use of water of the City and County of Denver from and in the South Platte, Fraser and Williams Fork Rivers and their respective tributaries.

2. The United States of America in initiating Civil Action No. 2782 sought to have its rights to the use of water in the Colorado River and its tributaries quieted against the adverse claims of the City and County of Denver, the City of Colorado Springs, the South Platte Water Users Association, and the Moffat Tunnel Water and Development Company, predecessor in interest of the City of Englewood. It likewise sought to have declared in regard to the other parties defendant the validity of Senate Document No. 80, 75th Congress, 1st Session and to have construed certain features of that document.

3. At the time of the initiation of this cause there was pending in Water District No. 36, Summit County, Colorado, Proceedings No. 1805 and 1806. Decrees were entered

in those proceedings awarding to the City and County of Denver a priority date of June 24, 1946, and to the City of Colorado Springs a priority date of May 13, 1948. Both the City and County of Denver and the City of Colorado Springs sued out writs of error. They sought to join the United States of America as a defendant in error in the above-mentioned proceedings before the Supreme Court of the State of Colorado in Cases No. 16881 and 16888 before the Court.

4. The United States of America moved to dismiss the writs of error in which the City and County of Denver and the City of Colorado Springs sought to join the United States. On March 5, 1953, the Supreme Court of the State of Colorado granted the motion of the United States of America, dismissing it from said cases and entered an order declaring that the writs of error "heretofore issued in said causes, and each of them, be, and they are, dismissed as to the defendant in error. The United States of America, otherwise to remain in full force and effect until the further order of the Court."

5. On October 18, 1954, the Supreme Court of the State of Colorado rendered its decision in the Proceedings No. 16881 and 16888, City and County of Denver v. Northern Colorado Water Conservancy District, et al. (276 Pacific 2d 992, 1954.) The Supreme Court of Colorado on December 13, 1954, denied Denver's motion for a rehearing and on January 14, 1955 denied its supplemental motion and petition for rehearing.

6. Although the priorities decreed by the District Court in Civil Actions No. 1805 and 1806 from which the City and County of Denver and the City of Colorado Springs appealed were affirmed, the Supreme Court of the State of Colorado nevertheless remanded the cause in accordance with the

following declaration:

"Where the interests of beneficiaries are not represented or protected by their trustees, the beneficiaries become proper and necessary parties, with the right to appear and present their case. This they did here and properly so, through the Colorado River Water Conservation District; then, when this was denied, promptly again through their local districts and association. Having appeared to the full extent of their ability, upon default of their trustee they were entitled to be heard;

"Accordingly, the decree of the trial court herein is affirmed, except as to its denial of any decree to the Green Mountain Reservoir and powerplant wherein its action is reversed and the case is remanded with instructions to the trial court to reopen the case as to the adjudication of said Green Mountain Reservoir and hydroelectric plant rights with permission to file claim as may be advised in that behalf, and, upon the evidence already introduced, and additional evidence, if any, which may be tendered, to adjudicate said rights."

7. The petitioners named in the caption hereof acting upon the remand of the Supreme Court of the State of Colorado petitioned the District Court in and for Summit County, Colorado, Civil Actions No. 1805 and 1806 for the issuance of alias notice and summons directed to the United States of America. That petition was granted and there was accordingly entered an appropriate order. Pursuant to the order of the District Court in and for Summit County, Colorado, there was served upon the Attorney-General of the United States of America on April 27, 1955, an alias notice and

summons in Civil Actions No. 1805 and 1806. That service was pursuant to 43 U. S. C. 666. A like petition was also filed in the said proceedings by the Northern Colorado Water Conservancy District.

8. On May 6, 1955, Civil Actions No. 1805 and 1806 were removed from the District Court of Summit County, Colorado, to this Court by the United States of America.

9. By its order of June 13, 1955, this Court denied the motions to remand of the City and County of Denver and the City of Colorado Springs. That order of June 13, 1955 denying the motions to remand specifically limited the issues in those removed cases to be in accordance with the mandate of the Supreme Court of the State of Colorado entered October 18, 1954 (276 Pacific 2d 992). An order on pretrial was duly entered in Civil Action No. 2782 and the removed cases designated in this court as 5016 and 5017, and an Order of Consolidation for trial was likewise duly entered. By that order it was specifically provided that the consolidation would be for purposes of trial and the taking of evidence but that any party could request this Court to enter separate findings of fact, conclusions of law and judgment.

The consolidated cases were duly set for trial on October 5, 1955.

THE COLORADO-BIG THOMPSON PROJECT

10. The Colorado-Big Thompson Project was sponsored by the Northern Colorado Water Users Association and its successor in interest, the Northern Colorado Water Conservancy District. Construction of that project was undertaken by the

United States of America pursuant to the Reclamation Act of June 17, 1902, 32 Stat. 388, 43 U. S. C. 391. Its construction was authorized by the Department of Interior Appropriation Act of August 9, 1937 (50 Stat. 595), which provided for the construction of the project in accordance with Senate Document No. 80, 75th Congress. On September 21, 1937, the President of the United States approved the finding of feasibility in accordance with the Reclamation Law.

11. The Colorado-Big Thompson Project as constructed and now in operation has as its objective, among others, the means for providing a supplemental supply of water for the irrigation of approximately 615,000 acres of irrigated land in the Counties of Larimer, Weld, Morgan, Washington, Logan, Boulder and Sedgwick, State of Colorado. These lands are all situated in the area generally known as the Eastern Slope of the Continental Divide within the State of Colorado and within the Drainage area of the South Platte River. The service area of the defendant, the Northern Colorado Water Conservancy District, a quasi-municipal corporation organized and existing pursuant to the laws of the State of Colorado, embraces approximately 800,000 acres.

12. The principal source of water delivered by the Colorado-Big Thompson Project to the lands within the Northern Colorado Water Conservancy District is the Colorado River. It is delivered to that agency by the United States of America by means of structures hereafter described and pursuant to contracts between the Northern Colorado Water Conservancy District and the United States of America.

GENERAL PHYSICAL DESCRIPTION

The Colorado-Big Thompson Project, despite its magnitude, the multiple purposes for which it has been constructed, the extensive system of dams, reservoirs, diversion works, tunnels, canals, conduits, basins, pumping plants, hydroelectric plants, and other structures for impounding, diverting or using water, is nevertheless an entire, interconnected, single, closely integrated project which must be administered in accordance with Senate Document No. 80, 75th Congress, 1st Session, and in accordance with the Stipulation, as amended, hereinafter set forth. The Colorado-Big Thompson Project requires the highest degree of correlation of its widely separated components. All references herein to Senate Document No. 80 pertain only to the matter set forth under the heading of "Manner of Operation of Project Facilities and Auxiliary Features", as set forth in that document. The objectives of the Colorado-Big Thompson Project and its method of operation, the places and purposes of use of the rights to the use of water of the United States of America are specified in Senate Document No. 80, 75th Congress, 1st Session.

1. Green Mountain Reservoir is located approximately sixteen miles southeast of the town of Kremmling, in Summit County, Colorado, and more particularly in all or parts of Sections 11, 12, 13, 14, 15 and 24 T. 2 S., R. 80 W., and Sections 17, 18, 19, 20, 21, 28, 29, 33 and 34, T. 2 S., R. 79 W., 6th Principal Meridian. This reservoir provides storage of water and the utilization of it in accordance with Senate Document No. 80.

The reservoir is formed by the construction of Green Mountain Dam across the Blue River, an earth and rock-fill dam having an impervious earth core with rock stabilizing sections on the upstream and downstream faces.

The normal high water surface elevation is 7950.0. The spillway discharge capacity of 25,000 cubic feet per second is controlled by three radial gates that are each twenty-five feet long and twenty-two feet high.

Green Mountain Dam is described as follows: Station 0 / 00 on the dam axis bears S. $36^{\circ} 31' 45''$ W. a distance of 11,165 feet from the Southwest corner of Section 1, T. 2 S., R. 80 W., 6th Principal Meridian; thence the axis bears N. $21^{\circ} 00' 00''$ E. The dam is 309 feet in height from the lowest point of excavation, with the crest at elevation 7960.0. The crest width is 40 feet. The crest length is 1284 feet, including spillway gate structure.

The total storage capacity of the Green Mountain Reservoir is 154,645 acre-feet, including 7,757 acre-feet dead storage.

The sources of water supply for storage in Green Mountain Reservoir are the Blue River and all tributaries of the Blue River upstream from the dam, and Elliott Creek by means of its diversion canal.

All of the direct flow of the Blue River and of Elliott Creek and the waters impounded in Green Mountain Reservoir pass through a conduit leading to the Green Mountain Powerplant. After passing through this hydroelectric powerplant, the water is returned to the Blue River.

Elliott Creek Feeder Canal has its beginning in a diversion works across Elliott Creek and more particularly at the intersection of the canal centerline with the head-gate structure of the diversion works, which point is Elliott Creek Feeder Canal Station 3/91.8; and which point..

bears N. 23° 26' E. a distance 2,545.1 feet from the Southwest corner of Section 15, T. 2 S., R. 80 W., 5th Principal Meridian. The canal has various sections, as necessary, with a capacity of 90 cubic feet per second, and extends from its point of beginning in an easterly direction 1.1 miles where it empties into Green Mountain Reservoir by means of a concrete chute that ends at Station 59/45.0 and which point bears S. 30° 23' 14" W. a distance of 3,149.7 feet from the Northwest corner of Section 14, T. 2 S., R. 80 W., 6th Principal Meridian.

The Green Mountain Powerplant is located adjacent to the downstream toe of the Green Mountain Dam and also adjacent to the Blue River channel, in Section 15, T. 2 S., R. 80 W., 6th Principal Meridian.

The conduit to the powerplant is fed through a 13'-6" diameter vertical shaft, an 18' 0" diameter reinforced concrete tunnel and a twin-barrel steel penstock in a 15'-9" x 23'-3" horseshoe-shaped tunnel. The vertical shaft drops 96.15 feet from the intake trashrack structure to the circular tunnel. The length of the circular tunnel is 569 feet. The slope of this tunnel is 5 feet per 1,000 feet of length. The penstocks are each approximately 906 feet long and 102 inches in diameter. The combined discharge capacity of the outlet works and powerplant is 2,000 cubic feet per second. The maximum amount of water claimed for development of hydroelectric energy through the powerplant is 1,726 cubic feet per second.

2. Improvement to the Colorado River and affected tributaries between Granby Dam and the confluence of the Blue and Colorado Rivers will protect the rights of the

land owners in the vicinity of Kremmling as provided by Senate Document No. 80, page 4, par. (j) et seq.

3. Lake Granby, located in Grand County, Colorado, is formed by Granby Dam across the Colorado River and four dikes in the immediate vicinity of this dam across four saddles or depressions in the earth's surface below the normal high water surface, elevation 8280.00 feet in the reservoir. The reservoir is located in all or parts of Sections 25, 26, 27, 34, 35 and 36, T. 3 N., R. 76 W.; Sections 29, 30 and 32, T. 3 N., R. 75 W.; Sections 1, 2, 3, 10, 11, 12, 13 and 15 T. 2 N., R. 76 W. and Sections 5, 6, 7, 8, 9, 14, 15, 16, 17, 18, 21, 22 and 23, T. 2 N., R. 75 W. The Granby Dam, across the bed of the Colorado River is located in Sections 11 and 12, T. 2 N., R. 76 W.

Granby Dam is described as follows: Station 11 / 00 of the dam axis bears N. 90° 37' W. a distance of 2,635.3 feet from the Southeast corner of Section 11, T. 2 N., R. 76 W., 6th Principal Meridian. The bearing of the axis of the dam is N. 49° 30' W. The maximum height of the dam is 298 feet above the lowest point in the foundation excavation. The length of the crest is 923 feet including the spillway gate structure. The structure is an earth and rock-fill dam with an impervious earth core in the center and rock fill or rip-rap on the outside faces. The crest width is 40 feet.

Dikes Nos. 1, 2 and 4 are interconnected and are located in Sections 10, 11, and 15, T. 2 N., R. 76 W. southwest of Granby Dam.

Dike No. 3 is described as follows: Station 20/00, of the dike axis bears S. 63° 17' 15" E. a distance of 1,996.6 feet from the Northwest corner of Section 13, T. 2 N.,

R. 76 W., 6th Principal Meridian.

The sources of supply for Lake Granby are the Colorado River and its tributaries above the location of Granby Dam, and the Willow Creek Diversion, which diversions are hereinafter described.

The total storage capacity of Lake Granby is 543,758 acre-feet, including 74,190 acre-feet of dead storage.

The water impounded in Lake Granby is pumped to Shadow Mountain Lake and thence via Grand Lake and the Alva B. Adams Tunnel, transported to the Eastern Slope.

4. The Western Slope Feeder Canals are a system of collection ditches diverting water from the tributaries of the Colorado River into Lake Granby which collection ditches are described as follows:

Willow Creek Reservoir is located approximately four miles north of Granby, in Grand County, Colorado, and more particularly in all or parts of Section 7, T. 2 N., R. 76 W., and Sections 1, 2, 11 and 12 T. 2 N., R. 77 W., 6th Principal Meridian. The reservoir stores water from Willow Creek and its tributaries upstream therefrom. The reservoir is formed by the construction of Willow Creek Dam across Willow Creek. It is an earth and rock-fill dam having an impervious earth core with rock stabilizing sections on the upstream and downstream faces. The maximum normal operating water surface elevation is 8130, with a flood water surface elevation of 8132. The uncontrolled spillway with crest at 8130 discharges at the rate of 3,200

cubic feet per second, when the water in the reservoir is at elevation 8132.

Willow Creek Dam is described as follows: Station 10/67.2 on the dam axis = Station 14/60.54 in the centerline of the diversion outlet works on the dam axis bears N. 18° 15' 41" W. a distance of 2,307.9 feet from the Southeast corner of Section 7, T. 2 N., R. 76 W., 6th Principal Meridian; thence from said station the axis bears N. 20° 42' E. a distance of 222.8 feet to a point of beginning of the dam axis, thence S. 20° 42' W. a distance of 388.9 feet to P. T. Station 9/01.1; thence on a curve to the right with a radius of 150.0 feet for an arc distance of 106.9 feet to P. C. Station 7/94.2; thence S. 61° 32' W. 604.2 feet, more or less. The dam is approximately 127 feet in height from the lowest point of excavation with the crest at elevation 8140. The crest width is 30 feet. The crest length is approximately 1,100 feet.

The total storage capacity of Willow Creek Reservoir is 10,553 acre-feet.

Willow Creek Feeder Canal has its beginning in Willow Creek Reservoir and more particularly at the intersection of Willow Creek Dam axis and the centerline of the diversion outlet works, which point is dam axis Station 10/67.2 and the diversion outlet works Station 14/60.54 and which point bears N. 18° 15' 41" W. 2,307.9 feet from the Southeast corner of Section 7, T. 2 N., R. 76 W., 6th Principal Meridian. The canal has various sections, as necessary, with a capacity of 400 cubic feet per second, and extends from its point of beginning in an easterly direction 2.0 miles to Station 120/95. 2 on the axis of the Willow Creek Forebay

Dam; thence the flow of water continues easterly through the Forebay 0.3 miles to the Willow Creek Pumping Plant, at which point a pumping plant with a capacity of 400 cubic feet per second is constructed to raise the water approximately 168 feet to a canal which continues easterly from the pumping plant 1.2 miles to Station 204/70.4 in the west abutment on the axis of Granby Dike No. 4; thence the canal continues in an easterly direction 0.1 of a mile and empties into Lake Granby by means of a concrete chute that ends at Station 211/30.0, and which point bears S.41° 34' 17" E. 5,966.2 feet from the Northwest corner Section 10, T. 2 N., R. 76 W., 6th Principal Meridian. All intercepted flows from named and unnamed creeks enroute to Lake Granby are also diverted into Lake Granby.

5. Granby Pumping Plant and Pump Canal.

The Granby Pumping Plant is located on the north shore of Lake Granby about seven and one-half miles northeast of Granby, Colorado in Section 35, T. 3 N., R. 76 W., 6th Principal Meridian. The building is of reinforced concrete design, 59'00" x 125' 00", and 188.5' from the submerged foundation to the top of the parapet. The Pumping Plant consists of three 6,000 horsepower electric motors which will drive three centrifugal pumps, each of which has a capacity of 200 cubic feet per second at a pumping head of 186 feet. The Granby Pumping Plant intake channel has its point of beginning inside Granby Reservoir at Station 13/00 of the Granby Pump Canal line, which point bears S. 73° 51' 59" W. a distance of 7,632.1 feet from the Northeast corner of Section 36, T. 3 N., R. 76 W.; thence the channel extends in a northerly direction 0.3 of a mile to the Granby Pumping Plant; thence the water is pumped by Granby Pumping Plant into the Granby Pumping Plant discharge conduit,

which has a capacity of 1,100 cubic feet per second, and which discharge conduit extends in a northerly direction for 0.7 of a mile to Station 64/55.0 BK. = 66/88.0 AH; at which point the water is released into the Granby Pump Canal.

Granby Pump Canal has its point of beginning at the end of the Granby Pumping Plant discharge conduit, which point is Station 64/55.0 BK = Station 66/88.0 AH; thence the unlined canal, with a capacity of 1,100 cubic feet per second, extends in a northerly direction for 1.8 miles to canal Station 161/31.3 = Station 29/63.7 of Shadow Mountain Dam and Dikes, which point bears N. 22° 20' 31" W; a distance of 3,277.0 feet from the Southeast corner of Section 24, T. 3 N., R. 76 W., and at which point the water flows into Shadow Mountain Lake.

6. Shadow Mountain Lake is in effect an extension of Grand Lake and acts as a conduit to the inlet of the Alva B. Adams Tunnel for water pumped from Lake Granby as well as water intercepted from tributaries of the Colorado River by Shadow Mountain Lake and Grand Lake. The two mentioned lakes also serve as a storage and regulating reservoir with the water surface normally maintained between elevations 8366 and 8367 which will provide a combined active capacity of 1,839 acre-feet. Shadow Mountain Lake is located upon all or portions of Sections 6, 7, 18 and 19, T. 3 N., R. 75 W., 6th Principal Meridian and Sections 12, 13 and 24, T. 3 N., R. 76 W., 6th Principal Meridian.

Shadow Mountain Dam is described as follows:
Station 0/00 on the Shadow Mountain Dam axis extended bears N. 18° 55' E. a distance of 3,862.1 feet from the Southwest corner of Section 19, T. 3 N., R. 75 W., 6th Principal

Meridian. The maximum operating water surface elevation is 8367.0. The spillway capacity of 8,000 cubic feet per second is controlled by two radial gates each 18.0 feet long and 18.5 feet high. The dam is 63 feet in height from the lowest point of excavation, with the crest at elevation 8375. The crest length, including the dikes and the spillway section, is 3,077 feet. The crest width is 30 feet.

The sources of water supply for Shadow Mountain Lake are the direct flows of the Colorado River and its tributaries upstream from Shadow Mountain Dam and the water pumped from Granby Reservoir heretofore described.

The total storage capacity of Shadow Mountain Lake and usable storage of Grand Lake is 18,369 acre-feet.

The water impounded in Shadow Mountain Lake and Grand Lake flows through the Alva B. Adams Tunnel to the Eastern Slope or is released through the spillway radial gates into the Colorado River, and thence into Granby Reservoir and related works.

7. The Alva B. Adams Tunnel (Continental Divide Tunnel) extends from the east shore of Grand Lake, under the Continental Divide a distance of 13.1 miles in a northeasterly direction, to Wind River, a tributary of the Big Thompson River, which is a tributary of the South Platte River. Said tunnel has a diameter of nine feet nine inches, with a capacity of 550 cubic feet per second. The supply of water for said tunnel is obtained by means of the dams and collecting systems, ditches, and tributaries of the Colorado River, which combine to deliver water to the west or inlet portal of said Tunnel.

The inlet conduit of the said Tunnel extends from

Station 5/95 (West Portal) of the Alva B. Adams Tunnel in a southwesterly direction into Grand Lake. From Station 5/95, which station bears S. 74° 31' W., a distance of 1262.2 feet from the North quarter-corner of Section 9, T. 3 N., R. 75 W., 6th Principal Meridian, to Station 3/92.50, the inlet is a reinforced concrete, earth covered conduit with an outside width of 20'-6", and has two rectangular passages each 9 feet wide and 10'-6" high. From Station 3/92.50 the inlet structure fans out to an arc width of 300 feet at Station 2/39.00 which arc is the point of entrance of water from Grand Lake. The flow of water through the inlet into the Alva B. Adams Tunnel is controlled by two steel radial gates located in a gate structure at Station 5/88.

The said Alva B. Adams Tunnel is concrete lined, with a diameter of nine feet nine inches, throughout its entire length of 69,029.94 feet (13.1 miles) with a slope of 1.55 feet per 1,000 feet of length. Station 700/59.00 is the outlet or eastern portal of said Tunnel and said station bears S. 11° 13' 25" E., a distance of 1,967.7 feet from the Northwest corner of Section 9, T. 4 N., R. 73 W., 6th Principal Meridian. The Tunnel discharges water into the East Portal Reservoir.

8. The Estes Park Aqueduct and Power System transports Colorado River water from the outlet of the Alva B. Adams Tunnel into Lake Estes, formed by Olympus Dam across the Big Thompson River. The system develops hydroelectric power enroute through conduits more specifically described as follows:

The East Portal Reservoir is located approximately five miles in a southwesterly direction, from the town of

Estes Park, in Larimer County, Colorado and more particularly in part of Section 9, T. 4 N., R. 73 W., 6th Principal Meridian. The reservoir is formed by the construction of a rock-fill dam, having a concrete corewall, across Wind River. The dam is 82 feet in height from the lowest point of excavation; crest length is 245 feet including the spillway and outlet works; crest width is 30 feet; the capacity of East Portal Reservoir is 20 acre-feet.

Aspen Creek Siphon has its beginning at the right end of the East Portal Dam. It extends from the East Portal Reservoir to a 70.6 foot flume section located immediately west of the west portal of Rams Horn Tunnel. The said siphon has a reinforced concrete barrel ten feet nine inches diameter, with a capacity of 550 cubic feet per second.

Rams Horn Tunnel extends from the above-described flume at the east end of the Aspen Creek Siphon to the head-works of the Marys Lake Penstock, a distance of approximately 1.3 miles and has a carrying capacity of 550 cubic feet per second.

Marys Lake Penstock has its beginning at Station 845/80, located 96 feet from the outlet portal of Rams Horn Tunnel. The penstock is ninety-six inches in diameter and is designed to operate under a maximum head of 201.5 feet, with a capacity of 550 cubic feet per second. It enters the Marys Lake Powerplant at Station 850/46. A fixed wheel gate controls the flow into the penstock.

Marys Lake Powerplant is located on the southwest side of Marys Lake Reservoir at Station 850/80. The powerplant is a reinforced concrete building and houses one main generating unit and station-service equipment. The main generating

unit is an 8,100 kilowatt vertical shaft generator directly connected to an 11,300 horsepower hydraulic turbine. Water passing through the powerplant discharges directly into Marys Lake Reservoir.

Marys Lake Reservoir is located approximately two miles, in a southerly direction, from the town of Estes Park, in Larimer County, Colorado. The reservoir is formed by the construction of dikes along the east shore and south shore of the existing Marys Lake basin. The storage capacity of Marys Lake Reservoir is 952 acre-feet.

Prospect Mountain Conduit extends from Marys Lake Reservoir to the Prospect Mountain Tunnel. The conduit is twelve feet six inches in diameter and has a capacity of 1,300 cubic feet per second.

Prospect Mountain Tunnel is twelve feet six inches in diameter, with a reinforced concrete lining. It has a capacity of 1,300 cubic feet per second.

Estes Penstocks begin at the outlet portal of Prospect Mountain Tunnel and lead to the Estes Powerplant.

Estes Powerplant is located on the south bank of the Big Thompson River about one-half mile east of Estes Park, Larimer County, Colorado. It consists of three 15,000 kilowatt electric generators and three 21,300 horsepower hydraulic turbines fed by the three above-described penstocks. The total installed rated capacity of the powerplant is 45,000 kilowatts. Water passing through the Estes Powerplant is discharged directly into Lake Estes.

Lake Estes is located about one and one-half miles east of the town of Estes Park, in Larimer County, Colorado. It is the diversion works for the Estes-Foothills Aqueduct

and Power System, and controls the flow of water into the Big Thompson River, by means of a spillway. The lake is formed by the construction of Olympus Dam across the Big Thompson River. The dam is 60 feet in height from the lowest point of excavation with the crest at elevation 7481. The crest width is 30 feet. The crest length is 1,880 feet (including the diversion headworks). The total storage capacity of Lake Estes is 3,368 acre-feet.

9. The Estes-Foothills Aqueduct and Power System conveys water diverted from the Colorado River, excess waters of the Big Thompson River, and Big Thompson River water to be used for power from Lake Estes to the Flatiron Reservoir. Big Thompson River water used only for power is returned to the Big Thompson River at the Big Thompson wasteway. The system is more specifically described, starting at the headworks and continuing in an easterly direction, or the direction of flow, to the discharge into Flatiron Reservoir, as follows:

Olympus Siphon is a closed conduit section, 0.8 of a mile in length extending in an easterly direction. The conduit is designed for a capacity of 550 cubic feet per second and delivers water to the intake portal of Olympus Tunnel.

Olympus and Pole Hill Tunnels are continuous except for a short section of closed conduit at the common point and extend in an easterly direction for a distance of 7.2 miles, beginning at Station 88/80 which bears S. 23° 53' 22" E., a distance of 2,041.4 feet from the Northwest corner of Section 28, T. 5 N., R. 72 W., 6th Principal Meridian. The common point of the tunnels bears S. 45° 24' 05" W. a distance of 705.0 feet from the Northeast corner of Section 27, T. 5 N., R. 72 W. The tunnels are horseshoe shaped, nine feet nine inches in diameter,

with a capacity of 550 cubic feet per second, and convey water to Pole Hill Canal.

Pole Hill Canal, 0.5 of a mile in length with a capacity of 550 cubic feet per second, has its beginning at the outlet portal of Pole Hill tunnel. The canal delivers water to the headgate structure of Pole Hill Powerplant Penstock.

Pole Hill Penstock is a steel pipe having a diameter of ninety-six inches, is 0.35 of a mile in length, and leads in an easterly direction to its terminal in the Pole Hill Powerplant.

Pole Hill Powerplant is located in the canyon of Little Hell Creek at Station 517/18 on the centerline of the above-described penstock extended, which point bears N. 39° 02' 34" E., a distance of 636.6 feet from the Southwest corner of Section 26, T. 5 N., R. 71 W., 6th Principal Meridian. The powerplant is an insulated metal panel building 70 feet wide by 85 feet long and houses one main generating unit. The generating unit is a 33,250 kilowatt vertical shaft generator directly connected to a 47,500 horsepower turbine. Water passing through the power plant discharges into a very small afterbay and thence into Rattlesnake Tunnel.

Rattlesnake Tunnel, which is 1.7 miles in length, has a capacity of 550 cubic feet per second, is horseshoe-shaped and has a diameter of nine feet nine inches. The tunnel delivers water from the afterbay of Pole Hill Powerplant to Rattlesnake Reservoir. The tunnel has its beginning at Station 9/15, which point bears N. 70° 40' 56" E., a distance of 1,000.32 feet from the Southwest corner of Section 26, T. 5 N., R. 71 W., 6th Principal Meridian and passes through the mountains in an easterly direction to Station 96/78

which bears N. 35° 40' 32" W., a distance of 1,424.1 feet from the Southwest corner of Section 25, T. 5 N., R. 71 W., 6th Principal Meridian, at which point the water is delivered into Rattlesnake Reservoir.

Rattlesnake Reservoir is located in Larimer County, Colorado, and more particularly in parts of Section 25, T. 5 N., R. 71 W.; and in Sections 30 and 31, T. 5 N., R. 70 W., 6th Principal Meridian. This reservoir acts as pondage for, and re-regulation of, water between the Pole Hill and Flatiron Powerplants. The reservoir is formed by the construction of Rattlesnake Dam across the lower valley of Rattlesnake Park. It is an earth and rock-fill dam having an impervious earth core with rock stabilizing sections on both the upstream and downstream faces. The total storage capacity of Rattlesnake Reservoir is 2,381 acre-feet.

Bald Mountain Tunnel is a circular lined tunnel ten feet six inches in diameter that extends through the mountains in an easterly direction for a distance of about 1.3 miles. The capacity of this tunnel is 960 cubic feet per second. It delivers water to the penstock gate structure at the beginning of Flatiron Penstocks.

"Flatiron Penstocks begin in the penstock gate house which is at Station 88 + 00 which point bears S. 37° 44' 15" W., a distance of 1917.5 feet from the Northeast Corner of Section 32, T. 5 N., R. 70 W., 6th Principal Meridian. Two steel penstocks approximately 1.11 miles in length deliver water to the Flatiron powerplant.

Flatiron Powerplant is located in Chimney Hollow Valley. The plant consists of two 48,000 horsepower turbines directly connected to two 31,500 kilowatt electric generators and a combination pump-turbine.

Flatiron Reservoir is located in Larimer County,

Colorado, and more particularly in parts of Sections 27 and 28, T. 5 N., R. 70 W., 6th Principal Meridian.

Flatiron Dam is approximately 86 feet in height from the lowest point of excavation with the crest at elevation 5486. The crest width is 30 feet. The crest length is approximately 1,725 feet, including the spillway section. The total storage capacity of Flatiron Reservoir is 830 acre-feet.

Big Thompson Powerplant will be located approximately seven and one-half miles west of the town of Loveland, Larimer County, Colorado and near the intersection of the Horsetooth Feeder Canal and the Big Thompson River. The powerplant will have a generating capacity of 4500 kilowatts. Water which passes through the turbines will be discharged into the Big Thompson River.

10. The Foothills Reservoirs and Feeder Canals transport Eastern and Western Slope diverted water from the Estes-Foothills Aqueduct and Power System to the Eastern Slope storage reservoirs for storage and release to irrigators as required or for restoration of diversional fluctuations in the Big Thompson River and to return like flows as will be withdrawn for power development purposes at Lake Estes.

From Flatiron Reservoir, water may be either discharged by gravity into the Horsetooth Feeder Canal or be pumped to Carter Lake. Water may be transported into or out of Carter Lake through the same pumping plant discharge tube and pressure tunnel hereinafter discussed.

The Flatiron Pumping Plant is located approximately 9 miles northwesterly from the town of Berthoud, in Larimer County, Colorado, in Section 28, T. 5 N., R. 70 W., 6th Principal Meridian. The one motor-generator in the Pumping Plant has a capacity of 370 cubic feet per second at a pumping head of 240 feet. When operated as a generator, using water from Carter Lake, the unit has a capacity of 8500 kilowatts.

Flatiron Pumping Plant takes water from Flatiron Reservoir and pumps it through a discharge pipe and pressure tunnel which has a diameter of eight feet and a maximum capacity of 550 cubic feet per second. Carter Lake Pressure Conduit and Pressure Tunnel extends to a trasa-rack structure in Carter Lake. The stored water in Carter Lake may be released through the Carter Lake Pressure Tunnel and Conduit and the Flatiron Pumping Plant into Flatiron Reservoir.

Carter Lake is located in Larimer County, Colorado, in all or parts of Sections 34 and 35, T. 5 N., R. 70 W., and Sections 2, 3, 4, 9, 10, 15 and 16, T. 4 N., R. 70 W., 6th Principal Meridian. The reservoir is formed by placing an earth and rock-fill dam across an unnamed stream which is a tributary of Dry Creek, and by placing two earth and rock-fill dams across saddles.

The sources of supply of Carter Lake are project appropriated waters delivered through the inlet tunnel and tributaries of Carter Lake. The total storage capacity of Carter Lake is 112,830 acre-feet.

All project water and natural flows to Carter Lake Reservoir are utilized by the project through the outlet (which is also the inlet) and delivered to Flatiron Reservoir through the Flatiron Pumping Plant and/or through an outlet works at the right abutment of Carter Lake Dam No. 1 for delivery of water to the St. Vrain Supply Canal for purposes of irrigation.

Horsetooth Feeder Canal has its beginning in Flatiron Reservoir. The canal has various sections, as necessary, and has an initial capacity of 930 cubic feet per second, extends in a northerly direction a distance of 3.5 miles to a control

structure, at which point water is delivered from Tunnel No. 1; the beginning point of which is at a diversion works on the Big Thompson River. The Horsetooth Feeder Canal continues from said Tunnel No. 1, with a capacity of 930 cubic feet per second for 0.2 of a mile, at which point a control-flume delivers either that amount of water diverted through Tunnel No. 1, or that amount of water flowing from Flatiron Reservoir which is in excess of 550 cubic feet per second, or a combination of both, into the Big Thompson River, or to the Big Thompson Powerplant.

The Horsetooth Feeder Canal proceeds in a northerly direction by means of various sections, as necessary, and has a capacity of 550 cubic feet per second for a distance of 9.3 miles, delivering water in Horsetooth Reservoir.

The Horsetooth Reservoir is located in Larimer County, Colorado, and more particularly in all or parts of Sections 5, 6 and 8, T. 6 N., R. 69 W., Sections 6, 7, 18, 19, 20, 29, 30, 31 and 32, T. 7 N., R. 69 W., and Sections 1, 12 and 13, T. 7 N., R. 70 W., 6th Principal Meridian.

The source of supply of the reservoir is the project water delivered by the Horsetooth Feeder Canal, and intermittent streams intercepted by the reservoir. The total storage capacity of Horsetooth Reservoir is 153,252 acre-feet.

11. The Irrigation Supply Canals are the project features constructed by the Government for the delivery of water from the storage reservoirs. These canals deliver water to the North Poudre Ditch, the Cache la Poudre River, Big and Little Thompson Rivers, St. Vrain Creek, Lefthand Creek, Boulder Creek and South Platte River.

The St. Vrain Supply Canal has its beginning in Carter Lake. It extends from its point of beginning, in a southerly direction, with an initial capacity of 625 cubic feet per second, for a distance of 5.2 miles to a diversion works where 50 cubic feet per second may be delivered to the Little Thompson River. The canal continues in a southerly direction, with a capacity of 575 cubic feet per second, for a distance of 4.5 miles where the water is delivered to St. Vrain Creek.

The Boulder Creek Supply Canal, an extension of the St. Vrain Supply Canal, has its point of beginning in turnout of Station 518/00 St. Vrain Supply Canal which is Station 518/0580 Boulder Creek Supply Canal. It extends from its point of beginning, in a southerly direction, with a capacity of 200 cubic feet per second for a distance of approximately 16.2 miles to a diversion works where 25 cubic feet per second may be delivered to the Boulder & Lefthand Creek and Boulder & Whiterock Creek Ditches. The canal, with a capacity of 175 cubic feet per second, continues in a southerly direction for a distance of approximately .1 mile, where the water is delivered to Boulder Creek.

The South Platte Supply Canal has its beginning in the headgate of a diversion works across Boulder Creek, which is easterly and approximately three miles downstream, from the end of the Boulder Creek Supply Canal. It extends from its point of beginning, in an easterly direction with an initial capacity of 230 cubic feet per second and a terminal capacity of 125 cubic feet per second, for a distance of approximately 24.9 miles. It delivers water to the South Platte River at Station 1796/00 that bears S. 19° 41' E. a

distance of 1044.7 feet from the South 1/4 corner of Section 19, T. 2 N., R. 66 W., 6th Principal Meridian.

The Poudre Supply Canal has its beginning in Horse-tooth Reservoir. It extends from its point of beginning, in a northerly direction, with an initial capacity of 1,500 cubic feet per second, for a distance of 5.2 miles to a bifurcation structure which is Poudre Supply Canal Station 283/36.6 - Poudre Supply Canal-Windsor Extension Station 0/00. The Poudre Supply Canal continues, with a capacity of 1,500 cubic feet per second, in a northerly direction from the bifurcation structure, through a series of flumes and chutes for 0.1 of a mile, at which point the water is delivered to the Cache la Poudre River.

The Poudre Supply Canal-Windsor Extension has its point of beginning in the bifurcation structure at Poudre Supply Canal Station 283/36.6. The canal extends from its point of beginning, in a northerly direction, with a capacity of 250 cubic feet per second, for a distance of 0.5 of a mile, where the water is delivered to the Windsor Canal and Reservoir Company Canal.

The North Poudre Supply Canal has its point of beginning in a diversion dam across the Cache la Poudre River, extending from its point of beginning in a northeasterly direction, with a capacity of 250 cubic feet per second, for a distance of 12.6 miles where the water is delivered to the North Poudre Ditch.

At the above-described principal points of delivery to the Cache la Poudre River, Big Thompson River, Little Thompson River, St. Vrain Creek, Lefthand Creek, Boulder Creek, South Platte River and the North Poudre Ditch, project

waters are delivered to the Northern Colorado Water Conservancy District for delivery and distribution to the water users for purposes of irrigation through existing, enlarged, improved or new irrigation facilities.

METHOD OF OPERATION OF THE COLORADO BIG-THOMPSON PROJECT

13. The Colorado River water delivered to the Northern Colorado Water Conservancy District consists of both direct-flow water from that stream and its tributaries and waters impounded in Shadow Mountain Lake, Grand Lake, Willow Creek Reservoir, and Lake Granby, also known as Granby Reservoir. Water is pumped from Lake Granby in the manner described under the heading of "General Physical Description" of the Colorado-Big Thompson Project. It then flows by gravity from Shadow Mountain Lake into Grand Lake, and from there it is delivered through the Continental Divide by means of the Alva B. Adams tunnel.

14. After leaving the eastern portal of the Alva B. Adams tunnel the Colorado River water diverted to the Eastern slope is conducted by gravity through a system of conduits and powerplants where it has been utilized to the full capacity of the structures described under "General Physical Description" for the generation of electrical energy. Having been thus utilized through its course down the Eastern Slope of the Rocky Mountains for the generation of electrical energy, the Colorado River water is delivered by the United States of America at Horsetooth Reservoir and Carter Lake above described to the Northern Colorado Water Conservancy District for distribution to and utilization by the consumers within the service area of that District. Colorado River water delivered through the Alva B. Adams tunnel is also

used in Estes Park, Colorado. Water from the Big Thompson River is likewise diverted through the power structure above described, and, like the Colorado River water, is utilized by the United States of America for the generation of electrical energy.

15. Colorado River water was first diverted through the Alva B. Adams Tunnel in the year 1947. The following were trans-mountain deliveries of Colorado River water: 1947 - 6,014 A.F.; 1948 - 9,390 A.F.; 1949 - 15,920 A.F.; 1950 - 28,060 A.F.; 1951 - 69,480 A. F.; 1952 - 74,480 A.F.; 1953 - 204,580 A. F.; 1954 - 320,140 A.F.; 1955 (to Sept. 30), 180,830 A.F.

The following are deliveries of Colorado River water for beneficial purposes within the Northern Colorado Water Conservancy District: 1947 - 6,009 A.F.; 1948 - 8,819 A.F.; 1949 - 15,160 A.F.; 1950 - 25,683 A. F. ; 1951 - 638 A. F.; 1952 - 41,141 A.F.; 1953 - 177,594 A.F.; 1954 - 301,486 A.F.; 1955 (to Sept.30) 221,486 A.F.

WATER USES ON THE WESTERN SLOPE FROM THE COLORADO-BIG THOMPSON PROJECT

16. Green Mountain Reservoir located on the Blue River, a tributary of the Colorado River, impounds water of that stream and Elliott Creek for later release to replace Colorado River water being impounded in Lake Granby, Shadow Mountain Reservoir, Willow Creek Reservoir, or Grand Lake, or diverted directly from the Colorado River and its tributaries through Shadow Mountain Lake, Grand Lake, and thence through the Alva B. Adams Tunnel. Water impounded in Green Mountain Reservoir is also utilized for the purposes specified in said Senate Document No. 80. There has been constructed and operated by the United States of America in conjunction with the Green Mountain Reservoir a powerplant by the same name. Through that powerplant there has been diverted 1726 c.f.s. of the direct flow of the Blue River and Elliott Creek. There has likewise been used through that powerplant 154,645

acre-feet of storage for the purpose of generation of electrical energy. There has likewise been impounded and used in addition to the 154,645 acre-feet above mentioned approximately 6,316 acre-feet, which is in addition to the full storage capacity of Green Mountain Reservoir and came about by reason of the subsequent storage after initial releases from said reservoir in question.

17. The Green Mountain Reservoir has been operated by the Secretary of the Interior in a manner which meets the replacement requirements and the other operational features of the project, all of which are specified in Senate Document No. 80, 75th Congress, 1st Session, and set forth under the heading of that document "Manner of Operation of Project Facilities and Auxiliary Features". (See in that connection the Final Judgment and Final Decree entered by this Court predicated upon these Findings of Fact and Conclusions of Law.)

STIPULATION OF OCTOBER 5, 1955, FILED WITH THIS COURT ON THAT DATE AND THE AMENDMENT TO THAT STIPULATION, DATED OCTOBER 10, 1955

In an effort to resolve the conflict among the parties to these consolidated cases extensive conferences have been held. The result of those conferences has been an agreement among the parties pursuant to which the respective rights have been set forth and the basis of an amicable settlement declared. There follows a verbatim copy of the Stipulation, together with a copy of the Amendment to it.

"STIPULATION

"The [parties through their respective counsel] hereby stipulate and agree as follows:

"1. That they and each of them hereby approve the Final Judgment and the Final Decree to which this Stipulation is attached and into which this Stipulation is incorporated by reference; and

"Further stipulate and agree to move the Court before which these consolidated cases are pending to enter the Final Judgment and the Final Decree.

"2. It is further stipulated and agreed by and between the parties to this cause that they and each of them recognize the rights to the use of water and priorities set forth in the Final Judgment and Final Decree in these cases.

"3. It is further stipulated and agreed by and between the parties to this cause that the City and County of Denver and the City of Colorado Springs are in need of adequate supplies of water for municipal purposes both present and future. Likewise recognized by the parties is that the Blue River constitutes a source of supply to which each must look in the future if the respective municipalities are to reach their greatest potential.

"4. Notwithstanding their priority dates, the parties hereto further stipulate and agree that the parties to this cause will recognize the right to divert Blue River water by the City and County of Denver and the City of Colorado Springs for municipal purposes only, including domestic, industrial, yard, ground and park care, storage, fire, sewage, military and governmental, excluding, however, water for purposes of irrigation for agriculture, their rights as set forth in the decrees entered by the District Court of Summit County, Colorado, Water District No. 36, Civil Actions Nos. 1805 and 1806, which are part of the

record in consolidated Cases Nos. 5016 and 5017; subject nevertheless to the following limitations:

"(a) The rights of the City and County of Denver and the City of Colorado Springs are limited solely to municipal purposes as herein described and subject to the rights of the United States of America to fill each year the Green Mountain Reservoir to a capacity of 154,645 acre feet for utilization by the United States of America in accordance with the "Manner of Operation of Project Facilities and Auxiliary Features", contained in Senate Document No. 80, 75th Congress, 1st Session.

"This right to fill the reservoir as herein provided requires an amount of water (after provision for all prior rights) which added to the water in the storage in said Green Mountain Reservoir on a date between April 1st and May 15, to be fixed by the Secretary of the Interior each year in accordance with the plan of operation, would equal 154,645 acre feet had there been no releases from the storage in Green Mountain Reservoir. Provided, however, subject to the decision of the Secretary of the Interior that it will not adversely affect the ability of Green Mountain Reservoir to fulfill its function as set forth in the "Manner of Operation of Project Facilities and Auxiliary Features", contained in Senate Document No. 80, 75th Congress, 1st Session, except only as to the production of power, diversions by the City and County of Denver and Colorado Springs may be made from time to time as approved by the Secretary of the Interior after the snow pack estimate by the United States of America and a determination has been made that it is reasonably probable that the Green Mountain Reservoir will be filled

during the season to the aforesaid capacity of 154,645 acre: feet as measured herein.

"(b) The City and County of Denver and the City of Colorado Springs in consideration of the agreement by the United States of America to permit the use of rights to the use of water by those municipalities as provided in this Stipulation will

"(1) Deliver or cause to be delivered to the United States of America electrical energy at Green Mountain Substation or such other place or places to be designated by the Secretary of the Interior within a radius of eighty-five miles airline from Denver and all costs of delivery to be borne by the aforesaid municipalities.

"(2) The electrical energy herein provided for will be delivered to the United States in substantially the same amounts, at approximately the same hours and at substantially the same rates of delivery that would have been generated by the Green Mountain Powerplant had it not been for the diversions of the waters by the municipalities in question.

"Should the City and County of Denver and the City of Colorado Springs or either of them decide to let any other person, corporation or entity use the power drop from such water at any time, such agreement for such use shall be subject to the regulation and approval of the Secretary of the Interior of the United States.

"(c) The City and County of Denver and the City of Colorado Springs will at all times bypass water in quantities sufficient to meet all legal calls of downstream water rights on the Blue River, and within Colorado below the confluence of that stream with the main stream of the Colorado River,

having priorities earlier than the respective priority dates of said cities. This obligation adequately to provide water for the priorities on the Blue River and the Colorado River antedating the respective priority dates of said two cities, may be fulfilled by replacement storage by and on the Blue River or on the Williams River, subject nevertheless to the requirement that the parties provide that the plans for replacement storage will first have been approved by the Secretary of the Interior or his designated representative. Insofar as any proposed replacement storage on Williams River will adversely affect the Parshall Unit of the Cliffs Divide Project duly authorized representatives of the Petitioners in Civil Actions Nos. 5016 and 5017 shall have the right to also approve the proposal or submit it to this Court for adjudication as to legal rights. The water to be exchanged shall be on hand and in storage when the exchange is proposed. Any exchange approved shall not relieve said cities from the obligation to deliver electrical energy for the amount of water diverted from the Blue River.

"(d) The City and County of Denver and the City of Colorado Springs agree to hold harmless the United States of America for the full amount of any claims of any kind or character which may be finally determined by reason of their diversions from the Blue River.

"(e) To the extent that the importation and the use of water from the Colorado River System, over and above the quantity of water diverted from that source during the last year being October 1st, 1954 to September 30, 1955, by reason of the return flow from the municipal systems of said cities increase the amount of water said cities may lawfully utilize

from all sources in order to supply their municipal needs, through exchange or otherwise, to that same extent the right to divert water from the Blue River shall be correspondingly decreased, if such exchange is not exercised; provided, however, that the obligation to utilize water from the Colorado River System by exchange or otherwise shall be subject to the conditions, limitations, and safeguards as set forth in the following subdivision, the same being subdivision (f) of this paragraph.

"(f) In order to accomplish the objectives set forth in the immediately preceding subdivision hereof, the same being lettered (e), each city undertakes to exercise due diligence, within legal limitations and subject to economic feasibility. To that end, the City and County of Denver and the City of Colorado Springs shall, respectively, submit to the Secretary of the Interior on or before December 31st of each calendar year, beginning with the year 1957, a report showing by months for the water year ended September 30th last past, the quantities of water diverted by the reporting city from the Colorado River System, and whether and to what extent such water was used directly or placed in storage. After each city commences use of Blue River water said report shall also show by months for the same period the quantities of return flow from their municipal uses of such Colorado River water accruing to the South Platte River and to Fountain Creek, respectively, as measured at the gauging stations provided for herein. Each such report shall also show what steps, by legal action or otherwise, the reporting city has taken during the period covered by the report to utilize such return flow by exchange or otherwise to the extent water of

the Colorado River System is included therein, so as to reduce or minimize the demands of such city upon Blue River water. The United States of America reserves the right, at any time after use of Blue River water commences hereunder, to apply to this Court for injunctive or other remedial orders, suspending or proportionately reducing diversions or imposing conditions upon the taking of Blue River water by the particular city, if the United States shall establish as a fact that the particular city has failed to exercise due diligence in taking, with respect to return flow of water of the Colorado River System, all steps which, in view of legal limitations and economic feasibility, might reasonably be required of such city in establishing, enforcing, utilizing or operating a plan designed to accomplish said reduction by such city of its Blue River water use.

"(g) The City and County of Denver and the City of Colorado Springs will utilize Blue River water for municipal purposes and no other within their metropolitan areas. Such metropolitan area shall be limited to such an area as is reasonably integrated with the development of Denver or Colorado Springs, as the case may be. To the extent that those municipalities utilize water beyond their respective metropolitan areas from sources other than the Blue River, or lease or permit others to utilize waters from other sources for purposes other than municipal in character, the Blue River water diversions will be reduced pro tanto. Provided that the limitations in this subparagraph shall not apply in the case where electrical energy is produced by such water as an incident to its use for municipal purposes.

"(h) A reasonable number of gauging stations

including any relocations designated by the Secretary of the Interior will be installed, operated and maintained by the City and County of Denver and the City of Colorado Springs for the purposes of measuring 1 the quantities of water actually diverted from the Blue River; 2 the increased return flow water into the South Platte River and other streams by reason of the diversion of Colorado River System. Within two years after the date of this Stipulation the cities will install said gauging stations to measure the return flow. As soon as gauging stations are established periodic reports of the flow of water at such stations will be reported to the Secretary of the Interior.

"5. The United States does not claim a priority, in connection with the Colorado-Big Thompson Project, senior to the City and County of Denver for the Upper Ute Park Reservoir on the Williams River referred to on pages 21 and 22 in the statements of claim of the United States respecting the Colorado-Big Thompson Project filed in Civil Action 5016 and 5017.

"6. Periodic plans for the operation of the Green Mountain Reservoir shall be developed by the duly authorized representatives of the Secretary of Interior in accordance with this Stipulation and submitted to the parties for comments within thirty days after the submission and then transmitted to the Secretary of Interior for his revision and adoption.

"7(a) As between the City and County of Denver and the City of Colorado Springs, and without affecting the rights of the other parties hereto, the City of Colorado Springs, under its priorities of May 13, 1948, shall be entitled to divert water from the Blue River and its tributaries,

notwithstanding the Denver rights of June 24, 1946; provided that all diversions from the Blue River and its tributaries under all rights heretofore decreed to or acquired by Colorado Springs, shall not exceed in any calendar year ten percent of the natural flow of the Blue River near Dillon below its confluence with the Snake River and Ten Mile Creek.

"7(b) The parties hereto agree to recognize that the City and County of Denver has the following priorities, both conditional and final:

"DIRECT RIGHTS:

<u>Name</u>	<u>Priority Dates</u>
Platte Canon Ditch	7-30-1861
Nevada Ditch	8-30-1861
Platte Canon Ditch	12-30-1863
Platte Canon Ditch	12-30-1864
Nevada Ditch	12-30-1865
*Borden Ditch	5- 1-1866
City Rights	12-20-1870
City Rights	12-31-1874
City Ditch	(11-28-1860 (11- 1-1873 (3- 7-1882
*Weed Ditch #42	5-1-1875
City Right	9-10-1878
** High Line Canal	1-18-1879
* 1/2 Weed Ditch #102	6-1- 1879
City Right	6-30-1880
*Love & Rayner Ditch	5- 8-1881
*1/2 Little Channel Ditch	5- 1-1882
*Island Ditch	5-20-1885
City Right	10- 1-1889

City Right 9-1 -1892
 City Right 5-1 -1899
 City Right 12-6 -1910
 Cherry Creek Galleries 5-1 -1887

Harriman Ditch:
Undivided One-half:

Turkey Creek 4-16-1868
 Bear Creek 3-16-1869
 Bear Creek 5- 1-1871
 Bear Creek 3- 1-1882

Entire:

Bear Creek 12-5 -1889
 Bear Creek 12-5- 1889
 Turkey Creek 2-1- 1890
 Turkey Creek 2-1- 1890
 Bear Creek 8-15-1892
 Bear Creek 8-15-1892
 Turkey Creek 8-15-1892
 Turkey Creek 8-15-1892
 South Boulder Diversion Conduit . . . 1- 1-1930
 Moffat Tunnel Diversion Unit . . . 7- 4-1921
 Williams Fork Diversion Unit . . . 7- 4-1921

Storage Rights:

<u>Name</u>	<u>Date</u>
Antero Reservoir	10- 8-1907
11-Mile Canon Reservoir	7-10-1926
Lake Cheesman	(6-27-1889 9-24-1893)
Platte Canon Reservoir	9- 5-1902
Marston Lake	4- 1-1911
Soda Lakes	2-11-1893

Ralston Reservoir	(1 -1-1930 (10-31-1932
Reservoir No. 22	7- 4-1921 5-10-1945
Williams Fork Reservoir	11-10-1935***
Two Forks Reservoir (To the extent the same is to be filled from the South Platte River.)	(1-18-1905 (5- 1-1926
Grant Reservoir	
Strontia Reservoir	
Esterbrook Reservoir	
Vasquez Reservoir	(7 - 4-1921 7 - 7-1926
Steeleman Reservoir	9-22- 1937
St. Louis Reservoir	7- 4-1921

*Divertible only from April 15 to August 10, inclusive.

**City Right in High Line Canal is variable and intermittent.

***Subject to limitation herein provided in paragraph 4(c) respecting the Parshall Unit of the Cliffs Divide Project and the right to contest said decree because of the failure of the City and County of Denver to exercise due diligence.

The right is reserved to the parties to this Stipulation to contest the conditional decrees on the grounds that the City and County of Denver has failed from the date of this Judgment to prosecute its claims with due diligence provided further that the conditional decree to the Williams Fork Reservoir may be contested for failure to exercise due diligence at any time, subject to any applicable statutes of limitation.

"8. The City of Englewood shall have a right to divert up to 19,500 acre-feet of water annually from the sources and by means hereafter described; provided, however, that such diversion shall not be exercised by the City of

Englewood when the natural flow of the Colorado River is less than 1,250 c.f.s. at the Shoshone diversion dam, and required to fill vested rights, and its right to divert shall at all times be subject to diminution to the extent necessary to fill all senior rights and shall not be exercised at any time so as to interfere with any uses of water by the United States in connection with the Colorado-Big Thompson Project or in carrying out any part of the "Manner of Operation of Project Facilities and Auxiliary Features", contained in Senate Document 80, 75th Congress, 1st Session. The City of Englewood in connection with its right to divert as herein set forth shall have the right to construct replacement reservoirs to the extent required to meet all senior rights with which its diversions may be in conflict: Subject, nevertheless, to the approval of the Secretary of the Interior of any proposal thus to provide replacement storage.

"The rights to divert by the City of Englewood are as follows:

a. Hamilton-Cabin Creek Ditch:

70 c.f.s. having as its source Hamilton Creek and all intermediate drainage channels or slopes between Hamilton Creek and North Ranch Creek, including Cabin Creek, Little Cabin Creek and all named and unnamed streams but not from North Ranch Creek itself.

b. Extension and Enlargement of Hamilton-Cabin Creek Ditch:

25 c.f.s. having as its source Meadow Creek and intermediate drainage channels or slopes between said Meadow Creek and Hamilton Creek, including Trail Creek and Hurd Creek, and any and all unnamed and other named streams

but not from Hamilton Creek itself.

c. Cabin Creek Reservoir (Regulatory only):

4,250 acre-feet with its source Cabin Creek.

d. Meadow Creek Reservoir (Regulatory only):

5,100 acre-feet with its source Meadow Creek.

"Provided, however, that the rights to the use of water herein recognized in the City of Englewood may be diverted only for municipal purposes: Subject nevertheless to the right of all parties to this Judgment to contest the conditional decrees on the grounds that the City of Englewood has failed after the date of this Judgment to prosecute its claims with due diligence.

"9. The City of Englewood will transfer to the United States all of its rights to the use of water previously claimed by the City of Englewood as follows: In Ranch Creek Reservoir of July 15, 1933, for 478,079,187 cubic feet annually, source of water from Ranch Creek and Hurd Creek; in the Enlargement of Ranch Creek Reservoir, with a priority date of October 1, 1933, for 483,858,406 cubic feet annually, the source of water, Ranch Creek, Hurd Creek, Meadow Creek and Fraser River.

"10. The City and County of Denver and the City of Colorado Springs agree that if the State of Colorado is required by reason of the Colorado River Compact, the Upper Colorado River Basin Compact, the Boulder Canyon Project Act as supplemented and amended, or any other compacts or laws, to deliver any water from the State, they will discontinue their diversions from the Blue River under the provisions of this Stipulation in advance of the discontinuance of the diversions and utilization of water by the Colorado-Big

Thompson Project or any of its components or units on the Eastern or Western Slopes of Colorado. The City of Englewood agrees to a similar limitation on its rights of diversion under the provisions of this Stipulation.

"11. It is stipulated and agreed by and between the parties to this Stipulation that the Secretary of the Interior shall promptly present to the Speaker of the House of Representatives and the Vice President for transmittal to the proper Committees copies of this Stipulation, informing them of the course that has been adopted in regard to the subject matter of this Stipulation. If no Committee of the Congress has reported a bill disapproving this Stipulation and Final Decree entered thereon within 120 days from the date the 84th Congress, Second Session convenes, or if such a bill in any event is not passed and approved during said Congress, the agreements contained herein shall become binding and of full force and effect as among the parties.

"12. It is understood and agreed between the parties to this Stipulation that if the proposed arrangement cannot be effectuated because of events described in Paragraph 11 of this Stipulation, then, and in that event without affecting the finality of the Judgment in these cases, the City and County of Denver and the City of Colorado Springs, or either of them shall have the right to present within a reasonable time to this Court for trial on the merits the sole question of whether, by reason of claimed "domestic" use they have a preferential right under the Colorado Constitution Article XVI, Section 6, or the Colorado River Compact, Article IV, irrespective of the prior rights of the United States of America in the Blue

River for the purpose of generation of electrical energy to take and divert that water for their claimed "domestic" use.

"Dated this 5th day of October, 1955."

Signatures of respective counsel.

"AMENDMENT TO STIPULATION DATED OCTOBER 5, 1955 AND FILED WITH THE COURT ON THAT DATE

"The parties hereto stipulate and agree that the priority date of September 14, 1933, of the United States of America in the Blue River and its tributaries set forth in the Final Judgment referred to in paragraph numbered 1 of the Stipulation of October 5, 1955, and filed as of that date, be and the same is hereby amended by substituting in lieu thereof a priority date of August 1, 1935.

"Dated this 10th day of October, 1955."

Signatures of respective counsel

RIGHTS OF THE CITY AND COUNTY OF DENVER AND
THE CITY OF COLORADO SPRINGS TO THE USE OF
WATER IN THE BLUE RIVER AND ITS TRIBUTARIES

19. There were decreed to the City and County of Denver by the District Court of Summit County, Colorado, Water District No. 36, in Civil Actions No. 1805 and 1806 the following rights to the use of water:

- a. Montezuma Tunnel 6-24-46 788 Sec. Ft.
- b. Dillon Reservoir 6-24-46 252,678 Acre-feet.

Reference to the Stipulation, as amended, which is set forth above, is made in regard to these rights to the use of water.

The rights of the City and County of Denver to the use of water in the Blue River and its tributaries are more

fully described in the decrees entered in Water District No. 36, Civil Actions No. 1805 and 1806. Insofar as they describe the rights to the use of water adjudicated to the City and County of Denver those decrees are incorporated into these Findings of Fact and Conclusions of Law by reference and made a part of them as fully as though they were set forth in full herein.

20. Colorado Springs has had decreed to it by the District Court of Summit County, Colorado, Water District No. 36, the following rights to the use of water:

a. Continental-Hoosier Diversion System, August 5, 1929, a final decreed right of 77 c.f.s., and a conditional right of 10 c.f.s. of August 5, 1929.

b. Continental-Hoosier Diversion System, May 13, 1948, 400 c.f.s.;

c. Continental-Hoosier Diversion System, May 13, 1948, total storage 5,306 acre-feet.

Reference is here made to the Stipulation, as amended, and hereinabove set forth, which, with the exception herein noted, pertains only to the Colorado Springs 1948 rights described in subparagraphs b. and c. last above; the 1929 priority rights mentioned in subparagraph a. last above apply and are pertinent only for the purpose of computing the division of water between Denver and Colorado Springs as provided in paragraph 7(a) of said Stipulation.

Provided, however, that those diversions described in subparagraphs a, b, and c above, will be made solely for municipal purposes; subject nevertheless to the right of the parties to the Final Decree to contest the conditional decrees on the grounds that the City of Colorado Springs has

failed from and after the date of the Final Decree to prosecute its claims with due diligence.

The rights to the use of water by the City of Colorado Springs are more fully described in the Decree entered in Water District No. 36 in connection with the aforesaid rights and these descriptions are incorporated herein and made a part hereof as though they were set forth in full,

21. The City and County of Denver holds rights to the use of water in the Williams Fork River, the Fraser River, the South Platte River and their respective tributaries identified by the decrees listed in paragraph 7(b) of the stipulation, as amended, and as set forth above.

22. The references to the Williams Fork River and the Williams River throughout these Findings of Fact and Conclusions of Law, the Stipulation, as amended, the Final Judgment and the Final Decree in these consolidated cases means the same stream, which is a tributary to the Colorado River and enters that stream near Parshall, Colorado.

RIGHTS OF THE CITY OF ENGLEWOOD TO
THE USE OF WATER FROM THE COLORADO
RIVER AND ITS TRIBUTARIES

Heretofore there has been decreed in Water District No. 51 by the District Court in and for the County of Grand, State of Colorado, in Civil Action No. 657, to the Moffat Tunnel Water and Development Company, a Colorado corporation, predecessor in interest to the City of Englewood, the following conditional rights:

Hamilton Cabin Creek Ditch, priority July 2, 1932, 70 c.f.s.; Extension and Enlargement of Hamilton Cabin Creek Ditch, priority July 2, 1932, 25 c.f.s.; Cabin Creek Reservoir, priority date July 2, 1932, 4,250 acre-feet; Meadow

Creek Reservoir, priority July 2, 1932, 5,100 acre-feet; Ranch Creek Reservoir, priority date July 15, 1933, 478,079,187 cubic feet; Enlargement of Ranch Creek Reservoir, priority October 1, 1933, 483,858,406 cubic feet; Fraser Ditch, priority October 1, 1933, 30 c.f.s.

The aforesaid court has entered formal decrees of diligence in each even-numbered year beginning with 1940 to and including the year 1954. All of said rights of the Moffat Tunnel Water and Development Company have been conveyed to the City of Englewood, a municipal corporation of the State of Colorado.

The sources of supply for the above-named structures are Hamilton Creek, Cabin Creek, Ranch Creek, Hurd Creek, Meadow Creek, Fraser River, and other unnamed tributaries of the Colorado River. These rights to the use of water are more particularly described in and they are subject to the Stipulation, as amended, as set forth above, and in the Final Decree which is predicated upon these Findings of Fact and Conclusions of Law;

24. On August 1, 1935, the United States of America and the Northern Colorado Water Users Association initiated the Colorado-Big Thompson Project and all of its component parts described under the heading "General Physical Description", including Green Mountain Reservoir and Powerplant, and thereafter the United States of America prosecuted the Project to completion with due diligence. The United States of America within a reasonable time has diverted, impounded and applied to the beneficial uses specified in said Senate Document No. 80 the waters of the Colorado River and its tributaries, including the Blue River and its tributaries

to the full capacity of all of the structures of that project. The rights to the use of water of the United States of America are set forth specifically in the Final Judgment and in the Final Decree, both of which are predicated upon these Findings of Fact and Conclusions of Law. Reference is made to the Stipulation, as amended, which is set forth above in regard to the rights to the use of water of the United States of America. The United States of America shall have a priority for the Colorado-Big Thompson Project of August 1, 1935, in the Colorado River and its tributaries and in the Blue River and its tributaries.

25. Neither these Findings of Fact nor any single Finding of Fact contained herein shall be binding upon the intervenors in Civil Action No. 2782 of these consolidated cases. Findings of Fact and conclusions of law in regard to each of the intervenors shall be entered following the final hearing of the issues raised by their respective pleadings, and the responsive pleadings of the United States of America in the cases of the intervenors are not disposed of on motion and the cases are actually tried on the merits.

Based upon the preceding Findings of Fact, including the Stipulation as amended, as set forth above, the following conclusions of law are entered:

CONCLUSIONS OF LAW

Based upon the evidence adduced in these consolidated cases and the stipulation, as amended, and set forth in the Findings of Fact, it is concluded:

(1) The parties to these consolidated cases are entitled to the priorities of rights to the use of water in the Colorado River, Williams Fork River, Fraser River, Blue

River and South Platte River, and their respective tributaries, all as set forth in the Findings of Fact, for the amounts and as of the priority dates therein specified. Those priorities are set forth in the Final Judgment and the Final Decree which are predicated upon these Findings of Fact and Conclusions of Law.

(2) The Secretary of the Interior is required to operate and administer the Colorado-Big Thompson Project in accordance with the provisions of said Senate Document No. 80 which are set forth under the heading of that document designated "Manner of Operation of Project Facilities and Auxiliary Features", the Stipulation as amended and set forth above, the Final Judgment and the Final Decree in these consolidated cases.

3. The Final Judgment and Final Decree attached to and accompanying these Findings of Fact and Conclusions of Law are predicated upon those findings and conclusions. Moreover, in the event the Stipulation, as amended, or any part of it should at any time be declared invalid the finality of the Final Judgment and the Final Decree respecting the priorities of the parties to these consolidated cases will in no way be affected by such a determination, reserving nevertheless the right of the City and County of Denver and the City of Colorado Springs to move for the resolution of the question saved as set forth in paragraph 12 of the Stipulation, as amended, or to take such other steps as may be saved to said cities under said paragraph 12.

Entered this 12 day of October, 1955.

A True Copy, TESTE:
G. WALLEN BOWMAN, Clerk

By Paula J. Erdman
Deputy Clerk

William Lee Knous

WILLIAM LEE KNOUS
District Judge

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

CONSOLIDATED CASES

IN THE MATTER OF THE ADJUDICATION
OF PRIORITIES OF WATER RIGHTS IN
WATER DISTRICT NO. 36 FOR PURPOSES
OF IRRIGATION

CIVIL NO. 5016

PETITIONERS: THE COLORADO RIVER WATER
CONSERVATION DISTRICT, THE GRAND VALLEY
WATER USERS ASSOCIATION, ORCHARD MESA
IRRIGATION DISTRICT, PALISADE IRRIGA-
TION DISTRICT AND GRAND VALLEY IRRIGA-
TION COMPANY

IN THE MATTER OF THE ADJUDICATION OF
PRIORITIES OF WATER RIGHTS IN WATER
DISTRICT NO. 36 FOR PURPOSES OTHER
THAN IRRIGATION

CIVIL NO. 5017

PETITIONERS: THE COLORADO RIVER WATER
CONSERVATION DISTRICT, THE GRAND VALLEY
WATER USERS ASSOCIATION, ORCHARD MESA
IRRIGATION DISTRICT, PALISADE IRRIGA-
TION DISTRICT AND GRAND VALLEY IRRIGA-
TION COMPANY

FINAL JUDGMENT

This matter having come on for trial, both oral and documentary evidence having been adduced by the United States of America in support of its claimed rights to the use of water for the Colorado-Big Thompson Project in the Colorado River and its tributaries, including the Blue River and its tributaries, with a priority date of August 1, 1935 and the parties named in this Final Judgment having expressly stipulated and agreed that the United States of America is entitled to have a priority date of August 1, 1935, and the City and County of Denver and the City of Colorado Springs having adduced evidence showing their priorities as herein provided, all as set forth in the Findings

of Fact and Conclusions of Law, which have been duly entered,

NOW, THEREFORE, IT IS ORDERED, ADJUDGED AND DECREED

AS FOLLOWS:

1. The United States of America shall have a priority date of August 1, 1935, for the Colorado-Big Thompson Project in the Blue River and its tributaries for 1726 c.f.s. direct-flow right for the generation of electricity at the Green Mountain Powerplant; it shall have a storage right to impound and store annually with the priority aforesaid in the amount of 154,645 acre-feet with the right to refill in the amount of 6,316 acre-feet in Green Mountain Reservoir for the purpose of generating electrical energy at the Green Mountain Powerplant and for the purposes hereafter set forth in the quoted excerpts from Senate Document No. 80, 75th Congress, 1st Session, all in accordance with the Findings of Fact and Conclusions of Law entered in these consolidated cases. The Green Mountain Reservoir and Powerplant and the structures comprising the other units of the Colorado-Big Thompson Project are described with particularity in those Findings of Fact and Conclusions of Law under the heading of "General Physical Description", that description being incorporated into this Judgment and by reference made a part hereof as fully as set forth in its entirety. The United States of America shall operate the Colorado-Big Thompson Project and all of its units to which this Final Decree pertains in conformity with the hereafter set forth provisions of Senate Document No. 80, 75th Congress, 1st Session, and the "Stipulation" dated October 5, 1955, as amended and filed in this Court, which are set forth in the Findings of Fact and Conclusions of Law and by this reference incorporated herein as if fully set forth. The provisions of Senate Document 80, 75th Congress, 1st Session, prescribing the manner in which the Secretary of the Interior will operate the Colorado-Big-Thompson Project are as follows:

"MANNER OF OPERATION OF PROJECT FACILITIES AND

AUXILIARY FEATURES.

"The construction and operation of this project will change the regimen of the Colorado River below the Granby Reservoir. The project contemplates the maximum conservation and use of the waters of the Colorado River, and involves all of the construction features heretofore listed. In addition thereto certain supplemental construction will be necessary. This will be for the primary purpose of preserving insofar as possible the rights and interests dependent on this water, which exist on both slopes of the Continental Divide in Colorado. The project, therefore, must be operated in such a manner as to most nearly effect the following primary purposes:

"1. To preserve the vested and future rights in irrigation.

"2. To preserve the fishing and recreational facilities and the scenic attractions of Grand Lake, the Colorado River, and the Rocky Mountain National Park.

"3. To preserve the present surface elevations of the water in Grand Lake and to prevent a variation in these elevations greater than their normal fluctuation.

"4. To so conserve and make use of these waters for irrigation, power, industrial development, and other purposes, as to create the greatest benefits.

"5. To maintain conditions of river flow for the benefit of domestic and sanitary uses of this water.

"In order to accomplish these purposes the project should be operated by an unprejudiced agency in a fair and efficient manner, equitable to all parties having interests therein, and in conformity with the following particular stipulations:

"(a) The Green Mountain Reservoir, or similar facilities, shall be constructed and maintained on the Colorado River above the present site of the diversion dam of the Shoshone power plant, above Glenwood Springs, Colo., with a capacity of 152,000 acre-feet of water, with a reasonable expectancy that it will fill annually. Of said capacity, 52,000 acre-feet of water stored therein shall be available as replacement in western Colorado, of the water which would be usable there if not withheld or diverted by said project; 100,000 acre-feet shall be used for power purposes; and all of said stored waters shall be released under the conditions and limitations hereinafter set forth.

"(b) Whenever the flow in the Colorado River at the present site of said Shoshone diversion dam is less than 1,250 cubic feet per second, there shall, upon demand of the authorized irrigation division engineer or other State authority having charge of the distribution of the waters of this stream, be released from said reservoir as a part of said 52,000 acre-feet, the amount necessary with other waters available, to fill the vested appropriations of water up to the amount concurrently being diverted or withheld from such vested appropriations by the project for diversion to the eastern slope.

"(c) Said 100,000 acre-feet shall be stored primarily for power purposes, and the water released shall be available, without charge, to supply existing irrigation and domestic appropriations of water, including the Grand Valley reclamation project, to supply all losses chargeable in the delivery of said 52,000 acre-feet of water, and for future use for domestic purposes and in the irrigation of lands there-

after to be brought under cultivation in western Colorado.

It shall be released within the period from April 15 to October 15 of each year as required to supply a sufficient quantity to maintain the specified flow of 1,250 cubic feet per second of water at the present site of said Shoshone diversion dam, provided this amount is not supplied from the 52,000 acre-feet heretofore specified. Water not required for the above purposes shall also be available for disposal to agencies for the development of the shale oil or other industries.

"(d) The cost of construction and perpetual operation and maintenance of said reservoir or reservoirs shall be a charge against the project and shall be paid from revenues collected from this project as may be provided in contracts between the Secretary of the Interior and the beneficiaries of the project in eastern Colorado, and any other contracting parties.

"(e) In the event said reservoir or reservoirs are not maintained with a capacity of 52,000 acre-feet, the Secretary of the Interior should withhold the diversion of water from the western to the eastern slope of Colorado until such storage capacity is made available.

"(f) The Secretary of the Interior shall have the option to require the transfer to the United States of any and all rights initiated or acquired by the appropriation or use of water through the works of the project in eastern Colorado, at any time: Provided, however, that the title so taken shall be subject to a beneficial use of such water as may be provided in the repayment contract or contracts; and the rights to store water to the extent of said 152,000 acre-

feet shall be initiated, acquired, and held by the appropriate authorities for use in western Colorado, for replacement of water diverted to the eastern slope, and for other purposes contemplated for this project.

"(g) The Secretary of the Interior shall operate this project in accordance with the following stipulations as to priorities of water use as between the parties claiming or using project water and within the limits of his legal authority. Said 52,000 acre-feet of replacement storage in Green Mountain or other reservoirs shall be considered to have a date of priority for the storage and use of replacement water earlier than that of the priorities for the water diverted or stored for delivery to the eastern slope. The 100,000 acre-feet of storage in said reservoir shall be considered to have the same date of priority of appropriation as that for water diverted or stored for transmountain diversion.

"(h) Said Green Mountain Reservoir, or such other replacement reservoirs as provided in paragraph (a) herein, as are planned as a part of the project, shall be constructed at the same time as the other parts of the project and shall be completed before any water is diverted to the eastern slope of the Continental Divide by means of said project.

"(i) Inasmuch as the State of Colorado has ratified the Colorado River Compact, and inasmuch as the construction of this project is to be undertaken by the United States, the project, its operation, maintenance, and use must be subject to the provisions of said Colorado River Compact of November 24, 1922 (42 Stat. 171), and of section 13 of the

Boulder Canyon Project Act, dated December 21, 1928 (45 Stat. 1057-1064). Notwithstanding the relative priorities specified in paragraph (g) herein, if an obligation is created under said compact to augment the supply of water from the State of Colorado to satisfy the provisions of said compact, the diversion for the benefit of the eastern slope shall be discontinued in advance of any western slope appropriations.

"(j) An adequate system, as determined by the Secretary of the Interior, shall be provided for the irrigation of the lands in the vicinity of Kremmling, now irrigated by either natural or artificial means, and the installation made therefor shall be a part of this project. The rights to the use of water for the irrigation of these lands shall be considered to have a date priority earlier than that of the rights to the use of water to be diverted through the works of this project to the eastern slope. This system shall be designed and built in a manner requiring the least possible continuing annual expense for operation and maintenance but the cost thereof shall not exceed \$300,000; and said system shall be provided and in operation before any water is stored for transmountain diversion. In addition, the Secretary shall protect, add to, or improve the source of supply of domestic waters for the municipalities of Kremmling and Hot Sulphur Springs in the manner and to the extent which he may determine to be necessary to provide a source of supply not less than that now available for these municipalities. The cost of these features shall be included in the total project cost.

"(k) To compensate Grand County for the loss of taxes through the transfer of property to the United States for the construction of this project, \$100,000 shall be paid to said Grand County. This payment shall be made in 10 annual installments of \$10,000 each, commencing upon the date when 10 percent of the total property in Grand County required for said project has been removed from taxation.

"(l) The project and all of its features shall be operated in a manner determined by the Secretary of the Interior as necessary to provide the water to preserve at all times that section of the Colorado River between the reservoir to be constructed near Granby and the mouth of the Fraser River as a live stream, and also to insure an adequate supply for irrigation, for sanitary purposes, for the preservation of scenic attractions, and for the preservation of fish life. The determination of the need for and the amount and times of release of water from Granby Reservoir to accomplish these purposes shall be made by the Secretary of the Interior, whose findings shall be final.

"In order to facilitate compliance with the stipulation in paragraphs (j), (k), and (l) hereof a representative may be selected and designated by the interests dependent thereon in Grand County, Colo., and when so designated he will be recognized as the official spokesman of said interests in all matters dealing with project operations affecting Grand County.

"The principles and provisions expressed in these stipulations have been approved by the Western Colorado Protective Association, representing interests in Western Colorado, and the Northern Colorado Water Users Association as evidenced by the letters hereto attached."

2. The City and County of Denver shall have the following priorities:

RIGHTS TO THE USE OF WATER IN THE BLUE RIVER

- a. Montezuma Tunnel 6-24-46 788 Sec. Ft.
- b. Dillon Reservoir 6-24-46 252,678 Acre-feet.

Provided, however, that diversions pursuant to a. and b. above will be made solely for municipal purposes; subject nevertheless to the right of the parties to this Judgment to contest the conditional decrees on the grounds that the City and County of Denver has failed from and after the date of this Judgment to prosecute its claims with due diligence.

The rights to the use of water of the City and County of Denver in the Blue River are more fully described in the decrees entered in Water District No. 36, Civil Actions No. 1805 and 1806. Insofar as they describe the rights to the use of water adjudicated to the City and County of Denver those decrees are incorporated into this Judgment by reference and made a part hereof as fully as though they were set forth in full herein.

3. The City of Colorado Springs shall have the following priorities in the Blue River:

- a. Continental-Hoosier Diversion System, August 5, 1929, a final decreed right of 77 c.f.s. as said rights are affected by the decree changing their point of diversion; 10 c.f.s. conditionally decreed.
- b. Continental-Hoosier Diversion System, May 13, 1948, 400 c.f.s.
- c. Continental-Hoosier Diversion System, May 13, 1948, total storage, 5,306 acre-feet.

Reference is here made to the "Stipulation", as amended, and hereinabove set forth, which, with the exception herein noted, pertains only to the Colorado Springs 1948 rights described in sub-paragraphs b. and c. last above; the 1929 priority rights mentioned in sub-paragraph a. last above apply and are pertinent only for the purpose of computing the division of water between Denver and Colorado Springs as provided in paragraph 7(a) of said Stipulation.

Provided, however, that those diversions will be made solely for municipal purposes as defined in the "Stipulation", as amended; subject nevertheless to the right of the parties to this Judgment to contest the conditional decrees on the grounds that the City of Colorado Springs has failed from and after the date of this Judgment to prosecute its claims with due diligence.

The rights to the use of water of the City of Colorado Springs are more fully described in the decrees entered in Water District No. 36 in connection with the aforesaid rights and those descriptions are incorporated herein and made a part hereof as though they were set forth in full.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that this Judgment shall constitute a final determination of the priorities between the United States of America, the City and County of Denver and the City of Colorado Springs, their successors in interest and assigns, and they and each of them, as against every other one, are hereby adjudged to be the owners of the rights to the use of water hereinabove set forth and are entitled and allowed to divert and utilize

from the Colorado River and its tributaries, including the Blue River, in the amounts and for the purposes as herein provided, and in accordance with the provisions hereof.

CIVIL ACTION NO. 5016

In Civil Action No. 5016 IT IS HEREBY ORDERED, ADJUDGED AND DECREED that there be allowed to flow into the Elliott Creek Feeder Canal, No. 267-1, from said Elliott Creek, for the use aforesaid and for the benefit of the parties lawfully entitled thereto, under and by virtue of appropriation by original construction Priority No. ~~267-1~~ ^{3411 15/24.7.7} 90, 90 cubic feet of water per second of time, relating back to and dating from August 1, 1935.

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IT IS FURTHER ORDERED, ADJUDGED AND DECREED that there is hereby awarded to the Green Mountain Reservoir, No. 4A, and that there be allowed to flow into said reservoir from Elliott Creek and the Blue River, under and by virtue of original construction, Reservoir Priority No. 4A for 154,645 acre-feet, together with the right to refill in the additional amount of 6,316 acre-feet, with priority date of August 1, 1935, for beneficial purposes ^{for 15/24.7.7} other than irrigation.

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CIVIL ACTION NO. 5017

As to Civil Action No. 5017 IT IS HEREBY ORDERED, ADJUDGED AND DECREED that there be allowed to flow into the Elliott Creek Feeder Canal No. 110A, from said Elliott Creek, for beneficial purposes other than irrigation for the benefit of the parties lawfully entitled thereto, under and by virtue of appropriation by original construction, Priority No. 122A, 90 cubic feet of water per second of time, relating back to and dating from the first day of August, A. D. 1935.

15/24.7.7

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that there is hereby awarded to the Green Mountain Reservoir No. 74A and that there be allowed to flow into said reservoir from Elliott Creek and the Blue River, under and by virtue of original construction, Reservoir Priority No. 74A for 154,645 acre-feet, together with the right to refill in the additional amount of 6,316 acre-feet, with priority date of August 1, 1935, for beneficial purposes other than irrigation.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that there be allowed to flow into the Green Mountain Hydroelectric Plant, No. 110B, under and by virtue of appropriation by original construction, Priority No. 122B, 1,726 cubic feet of water per second of time from the Blue River for the generation of electrical energy, with priority right relating back to and dating from August 1, 1935.

CIVIL ACTIONS NUMBERED 5016 and 5017

As to Civil Action No. 5016 and as to Civil Action No. 5017 IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the amount of water specified in the priorities awarded to the Elliott Creek Feeder Canal as a direct-flow right and the amount awarded to the Green Mountain Reservoir as a storage right in Civil Action No. 5016 and in Civil Action No. 5017 in this court shall not be for duplicate quantities of water, but the priority rights so awarded are for multiple purposes and for the same volume of water.

The physical description of Green Mountain Reservoir, powerplant, and Elliott Creek Feeder Canal set forth in the Findings of Fact, supra, are incorporated in these decretal orders by reference.

All general provisions of the adjudication decree

of the District Court of Summit County, Colorado, entered March 10, 1952, shall be deemed a part of and apply to the water rights decreed hereby.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the titles to the rights to the use of water of the respective parties, the United States of America, the City and County of Denver and the City of Colorado Springs, be and the same are hereby quieted, and the respective parties and their successors or assigns are forever enjoined and restrained from asserting or claiming as against each other any different priorities than those specified in this Final Judgment.

If the Stipulation as amended or any part of it should at any time be declared invalid, the finality of the Final Judgment respecting the priorities of the parties to these consolidated cases will in no way be affected by such a determination, reserving the right of the City and County of Denver and the City of Colorado Springs to move for the resolution of the question saved as set forth in paragraph 12 of the Stipulation, as amended, or to take such other steps as may be saved to said cities under said paragraph 12.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that this Court retains continuing jurisdiction for the purpose of effectuating the objectives of this Judgment.

DATED this 12 day of October, 1955.

William Lee Knous

WILLIAM LEE KNOUS
District Judge

A True Copy, TESTE:
G. WALTER BOWMAN, Clerk

By Paula J. Erdman
Deputy Clerk

ENTERED
ON THE DOCKET

OCT 12 1955

G. Walter Bowman
260

Exhibit B to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

U.S. District Court,
District of Colorado
Civil Nos. 2782, 5016
& 5017

Final Decree
10/12/1955

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

UNITED STATES OF AMERICA v. NORTHERN COLORADO WATER CONSERVANCY DISTRICT, et al.,)	<u>CONSOLIDATED CASES</u>
)	CIVIL NO. 2782
IN THE MATTER OF THE ADJUDICATION OF PRIORITIES OF WATER RIGHTS IN WATER DISTRICT NO. 36 FOR PURPOSES OF IRRIGATION)	CIVIL NO. 5016
PETITIONERS: THE COLORADO RIVER WATER CONSERVATION DISTRICT, THE GRAND VALLEY WATER USERS ASSOCIATION, ORCHARD MESA IRRIGATION DISTRICT, PALISADE IRRIGA- TION DISTRICT AND GRAND VALLEY IRRIGA- TION COMPANY)	
IN THE MATTER OF THE ADJUDICATION OF PRIORITIES OF WATER RIGHTS IN WATER DISTRICT NO. 36 FOR PURPOSES OTHER THAN IRRIGATION)	CIVIL NO. 5017
PETITIONERS: THE COLORADO RIVER WATER CONSERVATION DISTRICT, THE GRAND VALLEY WATER USERS ASSOCIATION, ORCHARD MESA IRRIGATION DISTRICT, PALISADE IRRIGA- TION DISTRICT AND GRAND VALLEY IRRIGA- TION COMPANY)	

FINAL DECREE

This matter having come on for trial, both oral and documentary evidence having been adduced by the United States of America in support of its claimed rights to the use of water for the Colorado-Big Thompson Project in the Colorado River and its tributaries, including the Blue River and its tributaries, with a priority date of August 1, 1935 and the parties named in this Final Decree having expressly stipulated and agreed that the United States of America is entitled to have a priority date of August 1, 1935, and the City and County of Denver and the City of Colorado Springs having adduced evidence showing their priorities as herein provided, all as set forth in the Findings of Fact and Conclusions of

law, which have been duly entered:

NOW, THEREFORE, IT IS HEREBY ORDERED, ADJUDGED
AND DECREED THAT:

1. The United States of America shall have a priority date of August 1, 1935, for the Colorado-Big Thompson Project from the Colorado River for these units of that Project:

Alva B. Adams Tunnel - Direct Diversion Right	- 550 c.f.s.
Granby Reservoir - Storage Right	543,758 acre-feet
Granby Pump Canal - Direct Diversion Right	- 1,100 c.f.s.
Willow Creek Reservoir - Storage Right	- 10,653 acre-feet
Willow Creek Feeder Canal - Direct Diversion Right	- 400 c.f.s.
Shadow Mountain and Grand Lakes - Storage Right	19,669 acre-feet

all situated in Grand County, State of Colorado;

Lake Estes - Storage Right	3,368 acre-feet
Horsetooth Reservoir - Storage Right	- 153,252 acre-feet
Carter Lake Reservoir - Storage Right	- 112,830 acre-feet

situated in Larimer County, State of Colorado;

together with such other rights to the use of water with the priority date of August 1, 1935, to utilize, divert and store water from the Colorado River and its tributaries in such quantities and for such purposes, all as more specifically set forth under the heading of "General Physical Description" contained in the Findings of Fact and Conclusions of Law duly entered by this Court in these consolidated cases and upon which this Final Decree is predicated.

2. The United States of America shall have a priority date of August 1, 1935, for the Colorado-Big Thompson Project from the Blue River and its tributaries

for 1726 second feet direct-flow right for the generation of electrical power at the Green Mountain Powerplant; a storage right with the priority aforesaid in the amount of 154,645 acre feet with the right to refill to the extent of an additional 6,316 acre-feet, all as set forth in the Findings of Fact and Conclusions of Law entered in these consolidated cases.

The United States of America shall operate the Colorado-Big Thompson Project and all of its units to which this Final Decree pertains in conformity with the hereafter set forth provisions of Senate Document No. 80, 75th Congress, 1st Session, and the "Stipulation" dated October 5, 1955, as amended and filed in this Court, which are set forth in the Findings of Fact and Conclusions of Law and by this reference incorporated herein as if fully set forth. The provisions of Senate Document 80, 75th Congress, 1st Session, prescribing the manner in which the Secretary of the Interior will operate the Colorado-Big Thompson Project are as follows:

"MANNER OF OPERATION OF PROJECT FACILITIES
AND AUXILIARY FEATURES.

"The construction and operation of this project will change the regimen of the Colorado River below the Granby Reservoir. The project contemplates the maximum conservation and use of the waters of the Colorado River, and involves all of the construction features heretofore listed. In addition thereto certain supplemental construction will be necessary. This will be for the primary purpose of preserving insofar as possible the rights and interests dependent on this water, which exist on both slopes of the Continental

Divide in Colorado. The project, therefore, must be operated in such a manner as to most nearly effect the following primary purposes:

"1. To preserve the vested and future rights in irrigation.

"2. To preserve the fishing and recreational facilities and the scenic attractions of Grand Lake, the Colorado River, and the Rocky Mountain National Park.

"3. To preserve the present surface elevations of the water in Grand Lake and to prevent a variation in these elevations greater than their normal fluctuation.

"4. To so conserve and make use of these waters for irrigation, power, industrial development, and other purposes, as to create the greatest benefits.

"5. To maintain conditions of river flow for the benefit of domestic and sanitary uses of this water.

"In order to accomplish these purposes the project should be operated by an unprejudiced agency in a fair and efficient manner, equitable to all parties having interests therein, and in conformity with the following particular stipulations:

"(a) The Green Mountain Reservoir, or similar facilities, shall be constructed and maintained on the Colorado River above the present site of the diversion dam of the Shoshone power plant, above Glenwood Springs, Colo., with a capacity of 152,000 acre-feet of water, with a reasonable expectancy that it will fill annually. Of said capacity, 52,000 acre-feet of water stored therein shall be available as replacement in western Colorado, of the water which would be usable there if not withheld or diverted by said project; 100,000 acre-feet shall be used for power purposes; and all of said stored waters shall be released under the conditions

and limitations hereinafter set forth.

"(b) Whenever the flow in the Colorado River at the present site of said Shoshone diversion dam is less than 1,250 cubic feet per second, there shall, upon demand of the authorized irrigation division engineer or other State authority having charge of the distribution of the waters of this stream, be released from said reservoir as a part of said 52,000 acre-feet, the amount necessary with other waters available, to fill the vested appropriations of water up to the amount concurrently being diverted or withheld from such vested appropriations by the project for diversion to the eastern slope.

"(c) Said 100,000 acre-feet shall be stored primarily for power purposes, and the water released shall be available, without charge, to supply existing irrigation and domestic appropriations of water, including the Grand Valley reclamation project, to supply all losses chargeable in the delivery of said 52,000 acre-feet of water, and for future use for domestic purposes and in the irrigation of lands thereafter to be brought under cultivation in western Colorado. It shall be released within the period from April 15 to October 15 of each year as required to supply a sufficient quantity to maintain the specified flow of 1,250 cubic feet per second of water at the present site of said Shoshone diversion dam, provided this amount is not supplied from the 52,000 acre-feet heretofore specified. Water not required for the above purposes shall also be available for disposal to agencies for the development of the shale oil or other industries.

"(d) The cost of construction and perpetual operation and maintenance of said reservoir or reservoirs shall

be a charge against the project and shall be paid from revenues collected from this project as may be provided in contracts between the Secretary of the Interior and the beneficiaries of the project in eastern Colorado, and any other contracting parties.

"(e) In the event said reservoir or reservoirs are not maintained with a capacity of 52,000 acre-feet, the Secretary of the Interior should withhold the diversion of water from the western to the eastern slope of Colorado until such storage capacity is made available.

"(f) The Secretary of the Interior shall have the option to require the transfer to the United States of any and all rights initiated or acquired by the appropriation or use of water through the works of the project in eastern Colorado, at any time: Provided, however, that the title so taken shall be subject to a beneficial use of such water as may be provided in the repayment contract or contracts; and the rights to store water to the extent of said 152,000 acre-feet shall be initiated, acquired, and held by the appropriate authorities for use in western Colorado, for replacement of water diverted to the eastern slope, and for other purposes contemplated for this project.

"(g) The Secretary of the Interior shall operate this project in accordance with the following stipulations as to priorities of water use as between the parties claiming or using project water and within the limits of his legal authority. Said 52,000 acre-feet of replacement storage in Green Mountain or other reservoirs shall be considered to have a date of priority for the storage and use of replacement water earlier than that of the priorities for the water

diverted or stored for delivery to the eastern slope. The 100,000 acre-feet of storage in said reservoir shall be considered to have the same date of priority of appropriation as that for water diverted or stored for transmountain diversion.

"(h) Said Green Mountain Reservoir, or such other replacement reservoirs as provided in paragraph (a) herein, as are planned as a part of the project, shall be constructed at the same time as the other parts of the project and shall be completed before any water is diverted to the eastern slope of the Continental Divide by means of said project.

"(i) Inasmuch as the State of Colorado has ratified the Colorado River Compact, and inasmuch as the construction of this project is to be undertaken by the United States, the project, its operation, maintenance, and use must be subject to the provisions of said Colorado River Compact of November 24, 1922 (42 Stat. 171), and of section 13 of the Boulder Canyon Project Act, dated December 21, 1928 (45 Stat. 1057-1064). Notwithstanding the relative priorities specified in paragraph (g) herein, if an obligation is created under said compact to augment the supply of water from the State of Colorado to satisfy the provisions of said compact, the diversion for the benefit of the eastern slope shall be discontinued in advance of any western slope appropriations.

"(j) An adequate system, as determined by the Secretary of the Interior, shall be provided for the irrigation of the lands in the vicinity of Kremmling, now irrigated by either natural or artificial means, and the installation

made therefor shall be a part of this project. The rights to the use of water for the irrigation of these lands shall be considered to have a date of priority earlier than that of the rights to the use of water to be diverted through the works of this project to the eastern slope. This system shall be designed and built in a manner requiring the least possible continuing annual expense for operation and maintenance but the cost thereof shall not exceed \$300,000; and said system shall be provided and in operation before any water is stored for transmountain diversion. In addition, the Secretary shall protect, add to, or improve the source of supply of domestic waters for the municipalities of Kremmling and Hot Sulphur Springs in the manner and to the extent which he may determine to be necessary to provide a source of supply not less than that now available for these municipalities. The cost of these features shall be included in the total project cost.

"(k) To compensate Grand County for the loss of taxes through the transfer of property to the United States for the construction of this project, \$100,000 shall be paid to said Grand County. This payment shall be made in 10 annual installments of \$10,000 each, commencing upon the date when 10 percent of the total property in Grand County required for said project has been removed from taxation.

"(l) The project and all of its features shall be operated in a manner determined by the Secretary of the Interior as necessary to provide the water to preserve at all times that section of the Colorado River between the reservoir to be constructed near Granby and the mouth of the Fraser River as a live stream, and also to insure an adequate

supply for irrigation, for sanitary purposes, for the preservation of scenic attractions, and for the preservation of fish life. The determination of the need for and the amount and times of release of water from Granby Reservoir to accomplish these purposes shall be made by the Secretary of the Interior, whose findings shall be final.

"In order to facilitate compliance with the stipulation in paragraphs (j), (k), and (l) hereof a representative may be selected and designated by the interests dependent thereon in Grand County, Colo., and when so designated he will be recognized as the official spokesman of said interests in all matters dealing with project operations affecting Grand County.

"The principles and provisions expressed in these stipulations have been approved by the Western Colorado Protective Association, representing interests in western Colorado, and the Northern Colorado Water Users Association as evidenced by the letters hereto attached."

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the City and County of Denver, the City of Colorado Springs, and the City of Englewood shall have rights to the use of water in the Colorado River and its tributaries, and in the Blue River and its tributaries, with the priorities and in the quantities as follows:

1. The City and County of Denver shall have the following priorities:

RIGHTS TO THE USE OF WATER IN THE BLUE RIVER

- | | | |
|---------------------|---------|--------------------|
| a. Montezuma Tunnel | 6-24-46 | 738 Sec. Ft. |
| b. Dillon Reservoir | 6-24-46 | 252,678 Acre-feet. |

Provided, however, that diversions pursuant to a. and b. above will be made solely for municipal purposes as defined in said "Stipulation", as amended; subject nevertheless to the right of the parties to this Decree to contest the conditional decrees on the grounds that the City and County of Denver has failed from and after the date of this Decree to prosecute its claims with due diligence.

The rights to the use of water of the City and County of Denver in the Blue River are more fully described in the decrees entered in Water District No. 36, Civil Actions No. 1805 and 1806. Insofar as they describe the rights to the use of water adjudicated to the City and County of Denver those decrees are incorporated into this Decree by reference and made a part hereof as fully as though they were set forth in full herein.

2. The City of Colorado Springs shall have the following priorities in the Blue River:

a. Continental-Hoosier Diversion System, August 5, 1929, a final decreed right of 77 c.f.s.; 10 c.f.s. conditionally decreed.

b. Continental-Hoosier Diversion System, May 13, 1948, 400 c.f.s.

c. Continental-Hoosier Diversion System, May 13, 1948, total storage, 5,306 acre-feet.

Reference is here made to the Stipulation, as amended, and hereinabove set forth, which, with the exception herein noted, pertains only to the Colorado Springs 1948 rights described in subparagraphs b. and c. last above; the 1929 priority rights mentioned in subparagraph a. last above apply and are pertinent only for the purpose of

computing the division of water between Denver and Colorado Springs as provided in paragraph 7(a) of said Stipulation.

Provided, however, that those diversions described in subparagraphs a, b and c above will be made solely for municipal purposes as defined in said "Stipulation", as amended; subject nevertheless to the right of the parties to this Final Decree to contest the conditional decrees on the grounds that the City of Colorado Springs has failed from and after the date of this Final Decree to prosecute its claims with due diligence.

The rights to the use of water of the City of Colorado Springs are more fully described in the decrees entered in Water District No. 36 in connection with the afore-said rights and those descriptions are incorporated herein and made a part hereof as though they were set forth in full.

3. The City of Englewood shall have a right to divert up to 19,500 acre-feet of water annually from the sources and by means hereafter described with a priority date of July 2, 1932: provided, however, that such diversion shall not be exercised by the City of Englewood when the natural flow of the Colorado River is less than 1,250 c.f.s. at the Shoshone diversion dam, and required to fill vested rights, and its right to divert shall at all times be subject to diminution to the extent necessary to fill all senior rights and shall not be exercised at any time so as to interfere with any uses of water by the United States in connection with the Colorado-Big Thompson Project or in carrying out any part of the "Manner of Operation of Project Facilities and Auxiliary Features", contained in Senate Document 80, 75th Congress, 1st Session. The City of

Englewood in connection with its right to divert as herein set forth shall have the right to construct replacement reservoirs to the extent required to meet all senior rights with which its diversions may be in conflict: Subject, nevertheless, to the approval of the Secretary of the Interior of any proposal thus to provide replacement storage.

The rights to divert by the City of Englewood are as follows:

a. Hamilton-Cabin Creek Ditch:

70 c.f.s. having as its source Hamilton Creek and all intermediate drainage channels or slopes between Hamilton Creek and North Ranch Creek, including Cabin Creek, Little Cabin Creek and all named and unnamed streams but not from North Ranch Creek itself.

b. Extension and Enlargement of Hamilton-Cabin Creek Ditch:

25 c.f.s. having as its source Meadow Creek and intermediate drainage channels or slopes between said Meadow Creek and Hamilton Creek, including Trail Creek and Hurd Creek, and any and all unnamed and other named streams but not from Hamilton Creek itself.

c. Cabin Creek Reservoir, 4,250 acre-feet with its source Cabin Creek.

d. Meadow Creek Reservoir, 5,100 acre-feet with its source Meadow Creek.

Provided, however, that the rights to the use of water herein recognized in the City of Englewood may be diverted only for municipal purposes, ~~as defined in said "Stipulation", as amended;~~ subject nevertheless to the right

of all parties to this Final Decree to contest the conditional decrees on the grounds that the City of Englewood has failed after the date of this Final Decree to prosecute its claims with due diligence.

4. The City of Englewood will transfer to the United States all of its rights to the use of water previously claimed by the City of Englewood as follows: In Ranch Creek Reservoir of July 15, 1933, for 478,079,187 cubic feet annually, source of water from Ranch Creek and Hurd Creek; in the Enlargement of Ranch Creek Reservoir, with a priority date of October 1, 1933, for 483,858,406 cubic feet annually, the source of water, Ranch Creek, Hurd Creek, Meadow Creek and Fraser River; and from the Fraser River in the Fraser Ditch with a priority date of October 1, 1933, for 30 c.f.s.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the City and County of Denver has the following rights to the use of water in the South Platte River, the Fraser River and the Williams Fork River and their respective tributaries, identified by priority dates and designation as follows, including both conditional and final decrees:

DIRECT RIGHTS:

<u>Name</u>	<u>Priority Dates</u>
Platte Canon Ditch	7-30-1861
Nevada Ditch	8-30-1861
Platte Canon Ditch	12-30-1863
Platte Canon Ditch	12-30-1864
Nevada Ditch	12-30-1865
*Borden Ditch	5- 1-1866
City Rights	12-20-1870
City Rights	12-31-1874

South Boulder Diversion Conduit 1-1-1930
 Moffat Tunnel Diversion Unit 7-4-1921
 Williams Fork Diversion Unit 7-4-1921

Storage Rights:

<u>Name</u>	<u>Date</u>
Antero Reservoir	10-8-1907
11-Mile Canon Reservoir	7-10-1926
Lake Cheesman	(6-27-1889 (9-24-1893
Platte Canon Reservoir	9- 5-1902
Marston Lake	4- 1-1911
Soda Lakes	2-11-1898
Ralston Reservoir	(1-1-1930 (10-31-1932
Reservoir No. 22	(7- 4-1921 (5-10-1945
*** Williams Fork Reservoir	11-10-1935
Two Forks Reservoir (To the extent the same is to be filled from the South Platte River.)	(1-18-1905 (5- 1-1926
Grant Reservoir	
Strontia Reservoir	
Esterbrook Reservoir	
Vasquez Reservoir	(7-4-1921 (7-7-1926
Steeleman Reservoir	9-22-1937
St. Louis Reservoir	7- 4-1921

*Divertible only from April 15 to August 10, inclusive.

**City Right in High Line Canal is variable and intermittent.

***Subject to limitation herein provided in Paragraph 4(c) of Stipulation set forth in the Findings of Fact respecting the Parshall Unit of the Cliffs Divide Project and the right to contest said decree because of the failure of the City and County of Denver to exercise due diligence.

The right is reserved to the parties to this

litigation to contest the conditional decrees on the grounds that the City and County of Denver has failed from the date of this Final Decree to prosecute its claims with due diligence, provided further that the conditional decree to the Williams Fork Reservoir may be contested for failure to exercise due diligence at any time, subject to any applicable statutes of limitation.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that this Final Decree shall constitute a final determination of the priorities between the United States of America, the City and County of Denver, the City of Colorado Springs and the City of Englewood, their successors in interest and assigns, and they and each of them, as against every other one, are hereby adjudged to be the owners of the rights to the use of water hereinabove set forth and are entitled and allowed to divert and utilize from the Colorado River and its tributaries, including the Blue River, in the amounts, for the purposes as herein provided, and in accordance with the provisions hereof.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the titles to the rights to the use of water of the respective parties, the United States of America, the City and County of Denver and the City of Colorado Springs and the City of Englewood, be and the same are hereby quieted, and the respective parties and their successors or assigns are forever enjoined and restrained from asserting or claiming as against each other any different priorities than those specified in this Final Decree.

The Final Decree and Final Judgment in these consolidated cases shall not affect in any way the issues presented

or raised by the intervenors, or any of them, in Civil Action No. 2782.

This Final Decree does not determine the question of whether or not there should be imposed in the decree relating to the Colorado-Big Thompson Project a limitation on the maximum diversion through the Alva B. Adams Tunnel in any year or series of years, and if there is a limitation, the amount thereof. Said question without affecting the finality of this Decree is reserved for future determination upon motion of any of the parties asking such determination.

If the stipulation, as amended, or any part of it should at any time be declared invalid, the finality of the Final Decree respecting the priorities of the parties to these consolidated cases will in no way be affected by such a determination, reserving the right of the City and County of Denver and the City of Colorado Springs to move for the resolution of the question saved as set forth in paragraph 12 of the Stipulation, as amended, or to take such other steps as may be saved to said cities under said paragraph 12.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that this Court retains continuing jurisdiction for the purpose of effectuating the objectives of this Final Decree.

DATED this 12 day of October, 1955.

William Lee Knous

WILLIAM LEE KNOUS
District Judge.

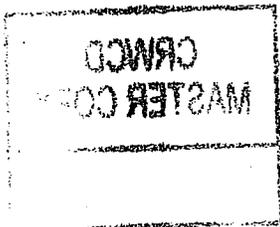


Exhibit C to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

AGREEMENT CONCERNING THE WINDY GAP PROJECT
AND THE ABURE RESERVOIR AND POWER PROJECT

PART I

PARTIES

MAY 2 1980

COLORADO RIVER WATER
CONSERVATION DISTRICT

The following named entities and persons are the Parties to this Agreement:

A. Municipal Subdistrict, Northern Colorado Water Conservancy District, herein designated as "Subdistrict" is a political subdivision of the State of Colorado, created under the provisions of C.R.S. 1973, 37-45-101, et seq., for the purposes stated therein, and by Order of the Weld County District Court, pursuant to said statute, on July 6, 1970.

B. Colorado River Water Conservation District, herein designated as "River District," is a political subdivision of and a body corporate under the laws of Colorado, created by the provisions of C.R.S. 1973, 37-46-101, et seq., for the purposes stated therein. The River District was the only protestant in the hereinafter referred to proceedings in Civil Action No. 1763.

C. Northwest Colorado Council of Governments, herein designated as "NWCCOG," is a regional planning commission organized pursuant to C.R.S. 1973, 30-23-105, and an association of local governments contracting pursuant to Article XIV, Section 13 of the Constitution of Colorado and C.R.S. 1973, 29-1-201 et seq., encompassing the Colorado counties of Grand, Eagle, Summit, Jackson, Routt and Pitkin.

D. Grand County is a county of the State of Colorado created by Article XIV of the Colorado Constitution and C.R.S. 1973, 30-5-128, for the purposes stated therein.

E. Middle Park Water Conservancy District, herein designated as "Middle Park" is a political subdivision of the State of Colorado, created under the provisions of C.R.S. 1973, 37-45-101, et seq. for the purposes stated therein.

F. Three Lakes Water and Sanitation District, herein designated as "Three Lakes" is a special district created under the provisions of and for the purposes set forth in C.R.S. 1973, 32-10-101, et seq.

G. Ritschard Cattle Co., Inc.; Joseph McElroy; Isabel McElroy; Olga Hill; Clayton Hill; Howard K. Schmuck, Jr.; Richard P. Doucette; Christine O. Doucette; Jacques Ranch I and Jacques Ranch II, Illinois limited partnerships; Gene Ritschard; David Mayhoffer; John H. McElroy; Mary K. McElroy; Edna L. Palmer; Lloyd A. Palmer; Leo Marte; Eunice Marte; Jessie Joyce Thompson; David Howard Thompson; John Sheriff; Ida L. Sheriff; H. Grady Culbreath; J. Gail Culbreath; John L. Kemp; Crockett C. Kemp; William Henry Thompson; Anita Lewis Thompson; Skylark Ranch Company, a Colorado corporation; Charles G. Broady; Phyliss Broady; Blanche Cowperthwaite dba Gore Canyon, Ltd.; Colorado River Land Corporation; Sunset Associates, a partnership; (herein designated as "Ranchers,"), their successors and assigns, are, among others, owners of ranches on the Colorado River below its confluence with the Fraser River and above its confluence with the Blue River, which in some manner may be affected injuriously by the construction of the Subdistrict's Windy Gap Project.

H. The Town of Granby, the Town of Hot Sulphur Springs, Stanley Broome, Richard P. Doucette and Winter Park Water and Sanitation District and several of the Ranchers are objectors or have entered their appearance in Case No. W-4001, Water Division 5.

PART II

DEFINITIONS

A. Windy Gap Project. A water diversion storage and conveyance system commencing at a point on the Colorado River just below its confluence with the Fraser River and

terminating at Lake Granby, which lake is a part of the Colorado - Big Thompson Project.

B. Azure Reservoir and Power Project. A proposed water storage and hydroelectric power project located on the main stem of the Colorado River approximately 8-1/2 miles west of the Town of Kremmling.

C. Una Reservoir. A proposed water storage and hydroelectric project on the mainstem of the Colorado River located in DeBeque Canyon near the Town of DeBeque.

PART III

RECITALS

A. In 1968, Ralph H. Price, as trustee for the cities of Boulder, Longmont, Estes Park, Loveland, Fort Collins, and Greeley filed claims for certain conditional water rights for the Windy Gap Water System, hereinafter termed the "Windy Gap Project" in the District Court for Grand County in a supplemental water adjudication, Civil Action No. 1768, and under the provisions of the 1943 Adjudication Act. The claims were subsequently assigned and deeded to Subdistrict upon its creation.

B. In April, 1972, hearings on the claims were held by Michael D. White, a Referee, appropriately appointed to conduct such hearings. On April 8, 1974, Referee White entered his findings, conclusions of law and recommendations, and subsequently, after several additional hearings before both Charles F. Stewart and George E. Lohr, Water Judges for Water Division 5, Judge Lohr by Order dated February 23, 1978, granted the conditional decrees sought by Subdistrict.

C. Upon the granting of the conditional decrees for Subdistrict's Windy Gap Project, River District appealed Judge Lohr's decision to the Supreme Court of Colorado, Docket No. 28417, where on September 14, 1979, the Supreme Court reversed Judge Lohr's decision and remanded the action

to the Water Court of Water Division 5 for further proceedings. Upon Petition of the Parties, the Supreme Court has now extended the time for filing petitions for rehearing to May 1, 1980.

D. Since the decision of the Supreme Court on September 14, 1979, representatives of Subdistrict, River District, NWCCOG, Grand County, Middle Park, and the Ranchers have met upon numerous occasions to resolve the differences existing between the Parties in an effort to reach an agreement which would permit Subdistrict to construct its Windy Gap Project by devising a plan for the design, construction and operation of the Project which would comply with the provisions of C.R.S. 1973, 37-45-118(1)(b)(IV) and to mitigate any and all adverse impacts thereof.

E. On December 12, 1978, Subdistrict filed an application for water right in the Water Court for Water Division 5 (Case No. W-4001) seeking an enlargement of its conditional decree for the Windy Gap Pump, Pipeline and Canal by 100 cubic feet per second. This application has been objected to or entries of appearance made, by NWCCOG, River District, Middle Park, Town of Granby, Jacques Ranch I and Jacques Ranch II, Richard P. Doucette, Town of Hot Sulphur Springs, Winter Park Water and Sanitation District, Board of Grand County Commissioners for Grand County, Ritschard Cattle Co., Inc. and Stanley Broome. The application is presently pending in Water Division 5.

F. The Parties have reached an agreement as a result of such meetings and discussions referred to above in Part III, paragraph D, and now wish to execute this Agreement specifying the terms and conditions thereof.

THEREFORE, in view of the foregoing, the Parties hereby agree as follows:

PART IV

PURPOSE OF AGREEMENT

1. The purpose of this Agreement is (1) to permit the Subdistrict immediately to commence and complete the construction of its Windy Gap Project, as evidenced by its decrees, and (2) to permit the immediate planning of the Azure Reservoir and its power features, herein designated as the "Azure Reservoir and Power Project," in order that the Project may be under construction within fifteen (15) years from the date hereof or sooner.

2. Implementation of the provisions of this Agreement satisfies and constitutes compliance by Subdistrict of its obligations under C.R.S. 1973, 37-45-118(1)(b)(IV), insofar as the Parties hereto are concerned, and is in compliance with all requirements for obtaining valid conditional water rights for all components of the Windy Gap Project.

3. Implementation of the provisions of this Agreement will constitute compliance with all objections to the Draft Environmental Impact Statement for the Windy Gap Project by any Party hereto, furnishes satisfactory mitigation measures for the development of the Windy Gap Project and following a hearing and decision of the Grand County Commissioners under paragraph 36 (assuming the decision is favorable) will constitute compliance with all valid permitting requirements imposed by any of the Parties.

4. Implementation of the provisions of this Agreement, specifically Part V, paragraph 16, is to insure that Subdistrict will plan, design and construct such facilities as are necessary to allow Ranchers to continue to divert their existing senior decrees at no additional cost other than that which would have occurred had the Windy Gap Project not have been constructed.

5. The Agreement constitutes a desirable and practical method and approach for the financing and construction

of the Azure Reservoir and Power Project for the benefit of the prospective users of Colorado River water for irrigation and other beneficial consumptive uses, and, further implementation of this Agreement by all Parties is a further step in providing continued cooperation of both the East and West Slopes of Colorado in the development of all of Colorado's water resources for the beneficial use of all citizens of the State of Colorado.

PART V

AGREEMENTS OF SUBDISTRICT

6. Subdistrict, as expeditiously as reasonably possible, will use its best efforts to cause the Azure Reservoir and Power Project to be constructed at or near its decreed location on the Colorado River to its maximum feasible capacity at the Subdistrict's sole cost and at no cost to the River District, except as hereinafter provided, or to any citizen or entity of Colorado West of the Continental Divide, including Jackson County. Provided, however, that determination of the maximum feasible capacity of Azure Reservoir (estimated to be 28,000 to 30,000 acre feet) shall include an evaluation of the cost effectiveness of protective works and facilities required to prevent interference with the maintenance and use of the Denver and Rio Grande Railroad. In determining cost effectiveness, if the incremental value (over the life of the Azure Project) of the gain in storage capacity and power production by construction of protective works exceeds the cost of such works, such protective works shall be included as part of the Project. All necessary Federal, State or local permits and licenses required by law shall be obtained by Subdistrict at its sole cost. River District will cooperate and aid, including participation as a joint applicant, Subdistrict in obtaining such permits and licenses. Costs incurred by the River District in cooperating, aiding, or as a joint applicant, in the obtaining of necessary permits or licenses shall be borne by River District.

7. All water released from Azure Reservoir shall, unless impracticable, be released through the power plant, and all power produced from Azure Power Plant shall be marketed upon terms and conditions mutually satisfactory to the Subdistrict and River District by an entity to be selected by the Subdistrict and River District. Revenues produced from the marketing of said power shall be applied in the following order:

First: To payment of all annual operation and maintenance costs associated with Azure Reservoir and Power Project including the maintenance of adequate contingency funds.

Second: To payment of annualized debt service (including therein preconstruction costs and those costs incurred by Subdistrict pursuant to paragraph 16) incurred by the Subdistrict in the construction of Azure Reservoir and Power Plant for the repayment period of any bonds issued to finance the Azure Reservoir and Power Project.

Third: To payment to Middle Park for hydroelectric power produced from Middle Park water released pursuant to paragraph 9, subparagraph First.

Fourth: All sums remaining after the payments contemplated in subparagraphs First, Second and Third (or after retirement of all debt described in subparagraph Second) shall be divided equally between Subdistrict and River District to be utilized as they may individually determine; or, Subdistrict may elect to receive its one half of the revenues in electrical energy or to have its one half of any such revenues applied to the payment of its power costs for the Windy Gap Project.

8. Title to the Azure Reservoir and Power Project facilities or alternate facilities contemplated hereunder will be transferred by Subdistrict to River District upon

repayment of all advance costs incurred by Subdistrict following the date of this Agreement in the development of said Project or as may be provided for or required by any bond covenants entered into by Subdistrict for the financing of the Azure Reservoir and Power Project.

9. The capacity of Azure Reservoir, with due regard being given to Project hydroelectric capabilities, shall be allocated as follows:

First: An amount not to exceed 2000 acre feet of water to Middle Park to be marketed by that entity within the geographic area of Middle Park or as may be authorized by statute. On or before the first day of each water year Middle Park shall notify the entity operating Azure Reservoir and Power Plant, the Subdistrict and the River District, of the quantity of water to be allocated to Middle Park for which Middle Park has or expects contracts for the use thereof in the coming water year. Such quantity of water will be retained to Middle Park's account, to be released as directed by Middle Park. The volume of water, if any, not disposed of by Middle Park up to said 2000 acre feet shall be disposed of pursuant to the provisions of subparagraph Third of this paragraph 9, provided, however, that all power revenues produced from said 2000 acre feet shall be credited to the account of Middle Park pursuant to paragraph 7, subparagraph Third. In the event Middle Park exercises its option upon completion of Azure Reservoir to utilize its additional 1000 acre feet of water in Azure Reservoir as set forth in paragraph 17, then the figure of 2000 acre feet herein shall be changed to 3000 acre feet.

Second: An amount not to exceed 3000 acre feet of water to Subdistrict to be used as replacement for out-of-priority diversions of the Windy Gap Project;

provided, if not so needed on an annual basis on or before October 31 of each year, then such water will be subject to the provisions of subparagraph Third of this paragraph 9. The amount of water herein allocated to Subdistrict may be reduced to 2000 acre feet depending on the election of Middle Park as provided in Paragraph 17.

Third: The balance of the water yield of Azure Reservoir shall be marketed by River District in Colorado for the benefit of western Colorado on terms and conditions to be determined by River District. All revenues derived from the marketing of this water shall be the property of River District. Provided, the allocations herein made shall be subject to the operational priorities established in paragraph 10 hereof. Should a dispute arise between the Parties hereto concerning any conflict between the operating priorities described in paragraph 10 and a specific contract for disposition of Azure water, it shall be resolved by the Water Judge for Water Division 5, subject to appeal as provided by law. The Ranchers to the extent of their interest, if any, shall be represented in any such proceeding by Middle Park and River District pursuant to said District's statutory obligations at no cost to the Ranchers.

10. Azure Reservoir and Power Project shall be operated by an entity to be selected by mutual agreement between Subdistrict and River District. The reservoir shall be operated by the selected entity as nearly as practicable according to the following priorities:

First: To comply with and satisfy the terms and provisions of C.R.S. 1973, 37-45-118(1)(b)(IV).

Second: To satisfy future beneficial consumptive uses of water in Colorado for the benefit of western Colorado and to replace out-of-priority Windy Gap Project diversions as set forth in paragraph 9, subparagraph Second hereof.

Third: To generate hydroelectric power.

Fourth: To the extent compatible with the foregoing primary priorities, for aesthetic, recreational and other nonconsumptive uses, provided, that the operational integrity of the Azure Reservoir and Power Project is maintained and the safety of the public is protected. The governmental entity making use of the Project for these purposes shall assume in a separate agreement with Subdistrict and River District all resulting operational and maintenance costs and all liability of any nature arising from the use of the Project for such public purposes.

11. During preconstruction, design and construction activities, it may be necessary to modify project design or relocate project features. Should such situation arise, decisions related thereto will be made by mutual agreement of Subdistrict and River District with advice of all such changes to Middle Park.

12. At any time during a period of 15 years, or of any extended time mutually agreed upon by Subdistrict and River District, from the date of initiation of construction of the Windy Gap Project, the Subdistrict and the River District may by mutual agreement determine that it is no longer feasible to pursue the construction of Azure Reservoir and Power Project for engineering or other reasons. Should Subdistrict and River District so mutually agree, then likewise by mutual agreement of such parties, an alternate facility shall be selected for construction at the cost of the Subdistrict, which facility shall be located, if practicable, within the geographic area of Middle Park. Said alternate facility shall be comparable to Azure Reservoir in the sense that it can provide substantially similar benefits to the Parties hereto; provided, the hydroelectric features may be omitted if not feasible and the costs and benefits related

thereto likewise may be omitted from the alternate selected. If hydroelectric features are constructed as a part of such alternate facility, the power revenues therefrom shall be distributed and allocated as set forth in paragraph 7. The nonreimbursable costs of construction of such alternate facility shall not exceed, so far as the obligation of Subdistrict is concerned, excluding the costs of compliance with paragraph 16, the sum of \$10,000,000 escalated or deescalated from the date of this Agreement in accordance with the ENR (Engineering News Record) "Irrigation and Hydro Cost Index for the West" to the date of award of contract for the construction of the alternate facility. If said alternate facility has included therein hydroelectric features, Subdistrict shall include in said \$10,000,000 the previously incurred costs relating to the Azure Reservoir and Power Project and the costs of compliance with paragraph 16.

Should construction of the Azure Reservoir and Power Project not be initiated within 15 years from the date of initiation of construction of the Windy Gap Project, or in the case of an alternate facility, within 20 years of said date, and any extension thereof mutually agreed to by River District and Subdistrict, then the Subdistrict shall have the right to apply to the Water Judge for Water Division 5, subject to the right of appeal, for a determination that under the then extant conditions, the Subdistrict's actions hereunder, other than construction of the Azure Project or the alternate facility, constitute adequate compliance with C.R.S. 1973, 37-45-118(1)(b)(IV) to the end that Subdistrict shall be relieved from any further duty in relation to its Windy Gap Project diversions and said statute.

Should the parties hereto agree to forego additional work toward construction of the Azure Reservoir and Power Project or the alternate facility contemplated hereunder, and/or the Water Court should relieve the Subdistrict from any further duty, the Subdistrict shall forthwith assign to

the River District all permits, licenses, engineering plans, drawings, specifications and other material acquired or produced by the Subdistrict or others in connection with the Azure Project or said alternate facility. River District shall have the right to proceed with said Project(s) free of the obligations of this Agreement with respect thereto. To the extent the failure to initiate construction within the periods herein contemplated for Azure Reservoir and Power Plant, or the alternate facility, is due to reasonably avoidable fault or delay on the part of Subdistrict, the time within which construction was to have been initiated shall be extended a like period. For the purposes of this Agreement, the initiation of construction shall be deemed to have occurred on the date construction contracts are signed which result in physical onsite work on the facilities contemplated hereunder. All lands and rights-of-way, if any, acquired by Subdistrict for said Project may be acquired by River District at cost, plus interest thereon at the rate being paid by Subdistrict thereon, if notice of River District's desire to obtain said lands and rights-of-way is given to Subdistrict in writing within six months after any agreement to forego said additional work.

13. Windy Gap Project diversions will be made strictly under the priority system (including exchanges), thus protecting all conditional and absolute water rights senior in priority, unless specifically subordinated to Windy Gap decrees.

14. Subdistrict will comply with all terms and provisions of Senate Document 80 in the design, construction and operation of the Windy Gap Project.

15. The Parties acknowledge and agree that Subdistrict may initiate immediately the construction of its Windy Gap Project prior to the construction of Azure Reservoir and Power Project, which latter facility is intended to comply with the provisions of C.R.S. 1973, 37-45-118(1)(b)(IV);

provided that no water may be diverted from the western slope of Colorado (from streams west of the Continental Divide) through said Windy Gap Project facilities prior to the initiation of construction of such facilities contemplated in paragraphs 6 and 12 hereof, or it is determined that such facilities will not be constructed pursuant to the provisions of paragraph 12; provided, however, that in the event of actual requirements by any or all of the Windy Gap Project participants for water for initial domestic, municipal or power purposes within the boundaries of the Subdistrict, directly or by exchange, diversions to the extent of such requirements may be made with the prior consent of River District and such consent shall not be unreasonably withheld.

Subdistrict shall have the right to make the maximum diversion necessary or possible, pursuant to paragraph 3(d) of that Carriage Contract, Contract No. 14-06-700-7497, between the Northern Colorado Conservancy District, United States of America and Subdistrict, dated October 3, 1973, in any one year only and when the diversion will not interfere with any beneficial consumptive use of water from the Colorado River and its tributaries in western Colorado.

Diversions by the Windy Gap Project prior to completion of adequate facilities for diversion of water by Ranchers shall not interfere with the delivery into Ranchers' diversion facilities of their presently decreed prior rights to water.

16. Subdistrict within one year after initiation of the construction of the Windy Gap Project is under construction, will advance a sum sufficient for the following purposes:

(1) payment of \$25,000 to Grand County for salinity studies of the Colorado River (the results thereof to be made available without cost to all other parties hereto), (2) payment to the Town of Hot Sulphur Springs of \$150,000 for assistance in improving its water treatment facility and \$270,000 for assistance in improving its waste water treatment facility,

and (3) such additional sums as needed for Subdistrict to plan, design and construct facilities needed by the Ranchers for the diversion and delivery of the Ranchers' senior decreed water rights from the Colorado River. Said sums, when paid by the Subdistrict and expended or obligated, shall not be recoverable in the event the Subdistrict voids this Agreement under the terms of paragraph 41 below. Subdistrict shall design and construct such facilities in accordance with specifications approved by the State Engineer. Ranchers agree that the design of any such facility when approved by the State Engineer, constitutes compliance of the design requirements by Subdistrict. Subdistrict agrees to replace and reconstruct such facilities at its own cost if the same prove to be defective at any time within seven (7) years after completion of the Windy Gap Project. If the efficiency or purpose of such facility is rendered ineffective or defective for delivery of existing decreed water to a Rancher because of any action by or operation of Subdistrict, the Subdistrict agrees to correct such defect at its own cost. Subdistrict agrees to process and obtain such permits as necessary to permit construction of Ranchers' facilities.

Individual contracts shall be negotiated with each Rancher in order to meet the requirements of this paragraph, including necessary construction easements, subject, however, to the limitations contained in this Agreement. The contracts for construction of such facilities shall be finalized within 90 days after the Windy Gap Project is under construction, and if not finalized within said period, Subdistrict may proceed to construct said facilities as designed by Subdistrict and approved by the State Engineer.

17. Subdistrict will dedicate and set aside annually, but noncumulatively, the following amounts of water produced from the Windy Gap water supplies to be stored as follows:

(a) Prior to the construction of Azure Reservoir and Power Project, or alternate facility, the Subdistrict will place 3000 acre feet of water in Granby Reservoir for beneficial use, without waste, in Middle Park and will release 2000 acre feet thereof for all beneficial uses, except for instream uses and industrial uses (unless the industrial use is within a municipality and through its municipal water system), and the additional 1000 acre feet of such water for municipal and domestic uses in Middle Park. The release of this 1000 acre feet shall be made only if domestic and municipal uses in Middle Park have not been met adequately from the 2000 acre feet of water previously released.

(b) After the Azure Reservoir and Power Project, or alternate facility, has been constructed, the Subdistrict will place 2000 acre feet of water in Granby Reservoir for beneficial use, without waste, in Middle Park and will release said 2000 acre feet for all beneficial uses, except for instream uses and industrial uses (unless the industrial use is within a municipality and through its municipal water system). Subdistrict will additionally place, at the direction of Middle Park, 1000 acre feet of water in either (1) Azure Reservoir, or the alternate facility, for all beneficial uses in Middle Park and thereby reduce the 3000 acre foot capacity reserved to Subdistrict in paragraphs 9 Second and 29 to 2000 acre feet, or (2) Granby Reservoir for municipal and domestic uses in Middle Park. If said 1000 acre feet is placed in Granby Reservoir, all pumping costs incurred by Subdistrict to store said water in Granby Reservoir shall be reimbursed annually to Subdistrict by Middle Park.

These waters shall be released by Subdistrict, upon request of Middle Park and subject to operational criteria

established by the United States. Any water so stored in Granby Reservoir shall be the last of any Subdistrict water to be spilled from Granby Reservoir, if such spill is required.

18. Subdistrict will not claim the use of Green Mountain Reservoir for replacement purposes for the Windy Gap Project operation.

19. Subdistrict will apply for an NPDES permit for diversion and carriage of water to Granby Reservoir if the same is required by law.

20. Subdistrict will pay its proportionate share of any direct mitigation costs attributable to salinity on the Colorado River which legally may be imposed at a future date by any competent authority and which is proportionately required of all users in Colorado of Colorado River water.

21. Subdistrict agrees to a water classification for Granby Reservoir, Shadow Mountain Reservoir and Grand Lake which will permit all present beneficial uses of these reservoirs or lakes, but reserves its right to contest imposition of water quality regulations on its activities.

22. Subdistrict will not oppose the dredging of Shadow Mountain Reservoir for water quality purposes, provided that such work is scheduled in such a manner as to not interfere with the essential operations of the Colorado-Big Thompson Project and the Windy Gap Project.

23. Subdistrict shall withdraw its opposition to any present River District Water Court proceedings in Water Division 5 and 6. As long as Subdistrict is proceeding diligently in the planning and construction of the Azure Reservoir and Power Project, or its alternate, or the same is constructed, River District agrees not to make a call on Subdistrict water rights for the benefit of any of its present conditional decrees with diversion points on the main stem of the Colorado River above the confluence of the Colorado and Roaring Fork Rivers, nor as to storage below such point on the Colorado

River to the extent the same will probably fill from other sources as determined by mutual agreement between the River District and Subdistrict. In the event of disagreement, such determination shall be made by the Division Engineer, Water Division No. 5. Provided, further, however, that to the extent that vacant capacity in Una Reservoir is created by power releases only, and the water so released not beneficially consumptively used in Colorado, that capacity shall be subordinated to the Windy Gap Project. This Agreement not to call shall become ineffective, except as to the capacity in Una Reservoir created by water releases for power purposes only, in the event of release by the Water Court of Subdistrict's duty to construct Azure Reservoir and Power Project, or its alternate facility. Further, Subdistrict will not oppose any present or future applications of River District in Water Division 5 and 6 unless the same may affect the administration of the Subdistrict's Windy Gap water rights on the main stem of the Colorado River.

24. Subdistrict agrees to bypass at the Windy Gap Reservoir diversion site at all times the lesser of the following: (1) Such amount as may be necessary to satisfy all senior decrees of the Ranchers and to provide such minimum stream flow in that stream segment of the Colorado River below the Windy Gap Project and above the confluence of the Blue River and the Colorado River as may be determined by the Colorado Division of Wildlife and subsequently decreed to the Colorado Water Conservation Board pursuant to C.R.S. 1973, 37-92-102(3), or (2) the natural flow of the river at the Windy Gap Reservoir diversion site if the natural flow is less than (1) hereof. It is the intent of the Parties that the amount of bypass by Subdistrict contemplated herein is based upon valid existing decrees and shall not be increased by future changes in stream regimen caused by changes in point of diversion, changes in type, place or extent of use, or

future junior decrees on this segment of the River, including tributaries thereto. Further, it is not the intent of this provision to preclude Ranchers from exercising their senior rights against any or all junior existing conditional or future rights on the Colorado River or its tributaries or to supersede those rights guaranteed to Ranchers by C.R.S. 1973, 37-86-113.

Further, Subdistrict agrees not to oppose the application for minimum stream flow made by the Colorado Water Conservation Board for this purpose if the same is not in conflict with the provisions hereof, and to assist in supporting the integrity thereof, if necessary.

Subdistrict agrees to the installation, at no cost to Ranchers, of a stream gaging station on the Colorado River in the vicinity of the present diversion structure of the Kinney-Barriger Ditch, and at such other points on the Colorado River as may be necessary as determined by State Engineer and the Colorado Water Conservation Board, to adequately monitor the minimum stream flows as set forth in this paragraph.

25. Subdistrict agrees to subordinate its Windy Gap decrees to all present and future in-basin irrigation, domestic and municipal uses, excluding industrial uses, on the Colorado and Fraser Rivers and their tributaries above the Windy Gap Reservoir site.

26. Subdistrict agrees that no additional water or water supplies will be carried through the Windy Gap facilities unless such conveyance complies with the provisions of C.R.S. 1973, 37-45-118(1)(b)(IV).

27. Subdistrict will cooperate with all parties in permitting public use for recreational purposes of the land owned by Subdistrict at the Windy Gap Reservoir site upstream of the diversion dam, provided that the operational integrity of the Windy Gap Project is maintained and the safety of the public is protected. Grand County, or other responsible

governmental agency, in a separate agreement with Subdistrict shall assume all operation and maintenance costs and all liability of any nature for use of the facility by the public for recreational purposes. Subdistrict will maintain the Windy Gap Reservoir full at all times following the termination of diversions in the fall and prior to the start of diversions in the spring, provided, however, that the reservoir may be temporarily drained during this period for any maintenance or improvements.

28. Three Lakes intends to construct a sewer project that will collect sewage effluent presently discharging into Grand Lake, Shadow Mountain Reservoir and Lake Granby and will carry such effluent to new treatment facilities to be constructed in the Willow Creek drainage. At the request of the Northern Colorado Water Conservancy District, Three Lakes has agreed to construct such ditches and related facilities as are necessary to allow the effluent from its proposed new treatment facilities to flow by gravity to a point on Willow Creek above the headgate of the Bunte Highline Ditch in order to reduce the quantity of water required to be released from Willow Creek Reservoir to meet the call of said ditch. Northern Colorado Water Conservancy District has agreed that the construction of such facilities will satisfy any obligation of Three Lakes that might be asserted to arise because of depletions to Colorado-Big Thompson Project water rights and storage facilities resulting from construction of the Three Lakes project. Except for the costs of the initial construction of the treatment facilities, the ditches and related facilities, and maintenance of them, Subdistrict shall pay any and all costs required to implement the exchange, or incurred as a result of such exchange, of Three Lakes sewage effluent for water that would otherwise be required to be released from Willow Creek Reservoir to meet the call of the Bunte Highline Ditch, including all costs incurred to

obtain any permits or other approvals required by law in order to implement such exchange.

PART VI

AGREEMENTS OF RIVER DISTRICT

29. River District and Middle Park agree to provide for the purpose and subject to the limitation contained in paragraph 9, subparagraph Second, 3,000 acre feet of capacity in Azure Reservoir or substitute facility built pursuant to this Agreement for the use and benefit of the Subdistrict, thereby reducing the entitlement of Middle Park in Azure Reservoir to 2000 acre feet.

30. River District will make satisfactory arrangements to permit joint or other appropriate use by Subdistrict of its pending Federal Energy Regulatory Commission (FERC) application for a preliminary permit for the Azure Reservoir power features or for such other appropriate arrangement as may be agreed upon by River District and Subdistrict.

31. For the purposes of this Agreement the following decrees for Azure Reservoir and Power Plant shall be utilized:

<u>Structure</u>	<u>Water District</u>	<u>Case No.</u>	<u>Adjudicated Date</u>
a. The Azure Reservoir	53	1277	10-19-62
b. First Enlargement of Azure Reservoir	53	1416	9-13-67
c. Azure Reservoir Power Conduit and Power Plant, First Enlargement	Division 5	W-3991	-
d. Such other decrees as may be necessary to operate the Azure Project in accordance with this Agreement.			

<u>Appropriation Date</u>	<u>Priority No.</u>	<u>Amt. Decreed</u>
a. 7-21-58	433	25,583.6 a.f.
b. 7-21-58	482	63,803.5 a.f.
c. 9-29-78	-	1,000 c.f.s.

PART VII

MUTUAL AGREEMENTS OF ALL PARTIES

32. Each Party to this Agreement agrees not to object to the Subdistrict obtaining any and all licenses, permits, rights-of-way or other approvals required to permit the immediate construction of the Windy Gap Project. All such Parties agree to withdraw any former opposition to any such licenses, permits, rights-of-way or other approvals and further to not make any further objections or adverse comments concerning the granting thereof.

33. Each Party to this Agreement will cooperate in obtaining all licenses, permits, rights-of-way, or other approvals necessary or required to permit the construction of the Azure Reservoir and Power Project. If any person or entity not a party to this Agreement should oppose the construction of the Azure Reservoir and Power Project in such a manner that said Project cannot be under construction within 15 years, each Party, to the best of its ability, will do everything possible to encourage the withdrawal of any such objections so as to permit the construction of the Azure Reservoir and Power Project as expeditiously as possible.

34. Each Party hereto will not oppose the granting of Subdistrict's 1967 and 1978 appropriation dates for the various features of the Windy Gap Project and for a new appropriation of not to exceed 200 c.f.s. if such enlargement is necessitated by reason of a need for a bypass imposed by virtue of the provisions of paragraph 24 hereof. Subdistrict may divert under its decrees an amount of water not in excess of 90,000 acre feet in any one year, and not to exceed an average of 65,000 acre feet per year in any consecutive ten year period. It is anticipated by the Parties that the long term annual yield of water to the Subdistrict will be approximately 54,000 acre feet.

35. All Parties agree that Subdistrict may proceed immediately to construct the Windy Gap Project upon filing of a final Environmental Impact Statement by the Water and Power Resources Service (formerly United States Bureau of Reclamation) for the Windy Gap Project and after the appropriate 30 day waiting period has expired, and each agrees to not request or require that a draft Environmental Impact Statement simultaneously be prepared for the Azure Reservoir and Power Project as each Project is a separate and distinct Project which is not dependent upon any other Project for construction. The Parties recognize that if Azure Reservoir and Power Project cannot be built for any reason, an appropriate alternative project may then be selected under the terms of this Agreement and it is impossible now to determine which project, if any, will be built. The Subdistrict and River District agree that the Subdistrict will furnish all data and information necessary to enable the appropriate federal entity to comply with NEPA requirements for the Azure Reservoir and Power Project, or alternative thereto, as a separate project. All environmental concerns among the Parties regarding the Windy Gap Project have been resolved by this Agreement regardless of whether none, all or only one facility is constructed and operated.

36. Grand County, NWCCOG, and Subdistrict further agree that this Agreement is an intergovernmental agreement pursuant to Article XIV, Sec. 18 of the Colorado Constitution and Sec. 29-1-201 to 203, inclusive, among all governmental entities hereto and contains all standards upon which Grand County will base any or all decisions for the Windy Gap Project, including 1041, zoning and environmental decisions. Each governmental entity, however, reserves the right to contest any 1041 and zoning regulations or actions which at any later time may be adopted or pursued by Grand County or others if such regulations or actions would in any manner affect the construction or operation of any such facility or

facilities. If the decision of Grand County is not in accord with this Agreement, it is understood and agreed to by all parties hereto that the Subdistrict reserves the right to contest the application of any or all Grand County requirements, including 1041, zoning or environmental application, permit or approval requirements as to Subdistrict activities pursuant to this Agreement.

37. Within the limits and conditions contained herein, Subdistrict may build and operate such facilities as needed to accomplish the purposes of this Agreement.

38. All Parties agree that this Agreement shall not bind Ranchers to any financial commitment for implementation thereof.

39. The Parties agree that upon request of any party to this Agreement they will join with Subdistrict, and other interested parties, in the defense of any litigation against the construction or operation of either the Windy Gap Project or Azure Reservoir and Power Project, or alternative project, by persons or entities who are not parties to this Agreement. However, this provision shall not be construed to require any financial participation of any type from Ranchers or Three Lakes.

40. Within 30 days after the issuance of a 1041 permit and any other necessary Grand County approvals pursuant to paragraph 36, Subdistrict and the Northern Colorado Water Conservancy District will withdraw from Civil Action 79CV173, Denver District Court, and from Civil Action 79CV5133, presently pending in the Denver District Court, Denver, Colorado by stipulation of the Northern Colorado Water Conservancy District and Subdistrict and all parties defendant to these actions, which stipulation shall embody the terms of this Agreement, and agree that the actions and claims represented thereby shall not be refiled except in accordance with the rights reserved to Subdistrict under the terms of this Agreement.

41. The Parties hereto agree that this Agreement shall be either void or extended in certain circumstances. Therefore, unless conditions (a) and (b) are met, this Agreement shall be void:

(a) All signatory parties identified herein have validly executed this Agreement by June 30, 1980 unless the necessity thereof has been specifically waived by Subdistrict.

(b) Approval of Agreement by all six of Subdistrict participants by June 30, 1980.

To the extent that the conditions in the following subparagraphs (c), (d), (e) and (f) delay beyond June 30, 1983 the initiation of construction of the Windy Gap Project and the implementation of this Agreement, all time periods provided for in paragraph 12 herein shall be extended for a time equal to the period of delay.

(c) A determination has been made that NEPA compliance for the Azure Reservoir and Power Project is not required as a condition precedent for NEPA compliance for the Windy Gap Project.

(d) Approval is given by Subdistrict Bond Counsel on the legality and appropriateness of Subdistrict issuing revenue bonds for the construction of the Windy Gap Project and Azure Reservoir and Power Project, all as set forth herein, and if necessary, confirmation of this Agreement by the District Court for Weld County, Colorado, pursuant to C.R.S. 1973, 37-45-143, and enactment of such legislation as may be needed to permit Subdistrict to accomplish the purpose and substance of this Agreement.

(e) A final Environmental Impact Statement and all necessary federal, state and local permits and clearances for the Windy Gap Project are issued, no litigation is pending, and the Subdistrict is able to proceed with completion and operation of the Windy Gap Project in accordance with the terms of this Agreement.

(f) Approval of this Agreement by the Water Judge, Water Division 5, State of Colorado in accord with the terms of this Agreement, and entry of final decrees to Subdistrict for a total of 600 c.f.s. of water for the Windy Gap Project.

42. This Agreement may be filed by any Party hereto in any court or administrative proceedings as a Stipulation of and between the appropriate parties to any such proceedings.

THIS AGREEMENT may be executed in counterparts, each of which must be executed by Subdistrict and River District, and shall inure to and be binding upon the Parties, their personal representatives, successors and assigns, as appropriate.

Dated and signed as of the 30th day of April, 1980.

ATTEST:

Sam Shiman
Secretary

MUNICIPAL SUBDISTRICT, NORTHERN
COLORADO WATER CONSERVANCY DISTRICT

By W.A. Jahn
President

ATTEST:

John H. ...
Secretary

COLORADO RIVER WATER CONSERVATION
DISTRICT

By G. Thomas Brown
President

ATTEST:

John Lee Patten
Clerk of the Board

BOARD OF COUNTY COMMISSIONERS OF
THE COUNTY OF GRAND, COLORADO

By Herbert A. Ritschard
Herbert Ritschard, Chairman

ATTEST:

Tom Isaac
Tom Isaac,
Secretary/Treasurer

NORTHWEST COLORADO COUNCIL OF
GOVERNMENTS

By Keith Troxel
Keith Troxel, Chairman

ATTEST:

Secretary

THREE LAKES WATER AND SANITATION
DISTRICT

By David J. ...
President

ATTEST:

Lawrence Henry
Secretary

WINTER PARK WATER AND SANITATION
DISTRICT

By Jack D. ...
President

ATTEST:

W. H. C. [Signature]
Secretary

MIDDLE PARK WATER CONSERVANCY DISTRICT

By [Signature]
President

ATTEST:

[Signature]
Town Clerk

TOWN OF HOT SULPHUR SPRINGS,
COLORADO

By [Signature]
Mayor

ATTEST:

[Signature]
Town Clerk

TOWN OF GRANBY, COLORADO

By [Signature]
Mayor

ATTEST:

[Signature]
Secretary

RITSCHARD CATTLE CO., INC.

By [Signature]
President

ATTEST:

Secretary

SKYLARK RANCH COMPANY, a Colorado
corporation

By _____
President

ATTEST:

Secretary

GORE CANYON, LTD., a Colorado
corporation

By _____
President

ATTEST:

[Signature]
Secretary

COLORADO RIVER LAND CORPORATION

By [Signature]
President

JACQUES RANCH I, a limited
partnership

By _____
General Partner

JACQUES RANCH II, a limited
partnership

By _____
General Partner

David Mayhoffer

[Signature]
Lloyd A. Palmer

[Signature]
Edna L. Palmer

[Signature]
Leo Marté

[Signature]
Eunice Marté

[Signature]
Jessie Joyce Thompson

[Signature]
Joseph McElroy

[Signature]
Isabel McElroy

[Signature]
John H. McElroy

David Howard Thompson
David Howard Thompson

Mary K. McElroy
Mary K. McElroy

John Sheriff
John Sheriff

Olga Hill
Olga Hill

Ida L. Sherriff
Ida L. Sherriff

Howard K. Schmuck, Jr.
Howard K. Schmuck, Jr.

H. Garry Culbreath
H. Garry Culbreath

Richard P. Doucette
Richard P. Doucette

J. Gail Culbreath
J. Gail Culbreath

Christine O. Doucette
Christine O. Doucette

John L. Kemp
John L. Kemp

Gene Ritschard
Gene Ritschard

Crockett C. Kemp
Crockett C. Kemp

Charles G. Broady
Charles G. Broady

William Henry Thompson
William Henry Thompson

Phyllis Broady
Phyllis Broady

Anita Lewis Thompson
Anita Lewis Thompson

Stanley Broome
Stanley Broome

SUNSET ASSOCIATES, a partnership

Blanche Cowperthwaite
Blanche Cowperthwaite

By _____
General Partner

CORRAL CREEK RANCHES, INC.

John Taussig
John Taussig

By _____

RIGMOR MARION SCHMUCK

By Howard K. Schmuck, Jr.
Her Attorney-in-Fact

SUPPLEMENT TO AGREEMENT OF APRIL 30, 1980

The Agreement of April 30, 1980, entitled "Agreement Concerning the Windy Gap Project and the Azure Reservoir and Power Project" is hereby amended and supplemented as follows:

RECITALS

It has been determined by the undersigned parties that the Azure Project should not be pursued further by Subdistrict for the purpose of providing water for western Colorado. The term "western Colorado" means any area within the geographical boundaries of River District.

Moreover, the undersigned parties have determined that the provisions of the April 30, 1980 Agreement regarding subdistrict construction of an alternate facility do not set forth a desirable method of proceeding.

Instead, it is desirable from the standpoint of western Colorado and the Subdistrict that funds, in a sum certain, be provided to the River District for the purpose of assisting western Colorado in the planning and construction of a facility that the River District determines shall be of benefit to the water users of that District, to be located as set forth in this Supplement in full and complete satisfaction of the Subdistrict's obligation to set forth and complete a plan which satisfies §37-45-116(1)(b)(IV) of the Water Conservancy Act. Further, the undersigned parties enter into this Supplement as a means to settle a current dispute regarding the Subdistrict's and the River District's

rights and obligations under the April 30, 1980 Agreement. Absent this Supplement, litigation regarding the terms of the April 30, 1980 Agreement would have been likely.

While there are several signatories to the Agreement of April 30, 1980 in addition to the undersigned parties, the rights of those additional signatories under the Agreement of April 30, 1980 are not altered by this Supplement.

PURPOSE

The first purpose of this Supplement is to provide western Colorado with financial assistance to enable the River District to construct a water-storage facility or facilities in Water Division No. 5 for the benefit of water users in western Colorado, in full and complete satisfaction of the Subdistrict's obligation to set forth and complete a plan which satisfies §37-45-118(1)(b)(IV) of the Water Conservancy Act.

The second purpose of this Supplement is to remove from the Subdistrict any obligation it had under the April 30, 1980 Agreement to construct the Azure Reservoir and Power Project or an alternate facility for the benefit of western Colorado, and, at the same time, to remove restrictions on Windy Gap diversions as provided in paragraph 10 in this Supplement, which restrictions and conditions were imposed for the purpose of ensuring performance by the Subdistrict of its obligation to construct the Azure Project or an alternate facility.

Paragraphs 1 and 5 of the April 30, 1980 Agreement are superceded by this Supplement.

AGREEMENTS OF SUBDISTRICT

1. The Subdistrict shall, at the Closing provided for in this Supplement, pay into escrow Ten Million Two Hundred Thousand Dollars (\$10,200,000.00) in cash, which sum, when paid to the River District from the escrow account, shall be in complete satisfaction of any obligation Subdistrict has under the April 30, 1980 Agreement to construct the Azure Reservoir and Power Project, or an alternate facility, for western Colorado. The escrowed funds shall be held in an escrow account in the First National Bank in Grand Junction, Colorado, or such other bank as River District and Subdistrict mutually agree upon, pursuant to the escrow instructions attached hereto as Exhibit A, with the escrowed funds and all interest which accrues thereon being dedicated for payment to the River District, as provided for by this Supplement. The River District may, at its sole discretion, demand and receive partial withdrawals of the escrowed funds as is specifically provided for in the escrow instructions. Any such partial withdrawals received by River District are not refundable, but Subdistrict shall receive credit therefor as provided in paragraph 18. Upon any partial withdrawal and upon payment and discharge of the escrow account to the River District, this money shall be utilized by the River District to construct a water-storage project or projects in Water

Division No. 5, as provided for in paragraph 17 of this Supplement. If the final order, not subject to appeal or further appeal, does approve this Supplement, the parties agree to obtain discharge of the escrow account as soon as practicable. If the final order, not subject to appeal or further appeal, does not approve this Supplement, all monies in escrow, plus accrued interest thereon, shall be returned to Subdistrict pursuant to the Escrow Instructions.

2. The Subdistrict will dedicate and set aside annually, but noncumulatively, at no cost to Middle Park, 3,000 acre feet of water in Granby Reservoir that is produced each water year from Subdistrict water supplies, for beneficial use without waste, either directly or by exchange or substitution, in Middle Park. Subdistrict will release this 3,000 acre feet of water for all beneficial uses, except for instream uses and industrial uses (unless the industrial use is within a municipality and through its municipal system). These waters shall be released by Subdistrict, upon request of Middle Park and subject to operational criteria established by the United States. Any water so stored in Granby Reservoir shall be the last of any Subdistrict water to be spilled from Granby Reservoir, if such spill is required. The provisions of this paragraph 2 replace and supersede the provisions of paragraph 17 of the April 30, 1980 Agreement. The word "divert" in paragraph 34 of the April 30, 1980

Agreement means diversion to northeastern Colorado measured through the Adams Tunnel.

3. Subdistrict will subordinate its Windy Gap water rights, for 600 c.f.s. from the Colorado River, to: (1) the Rock Creek Project for the purpose of storing the natural flow of Rock Creek only; or (2) the Wolford Mountain Project or any other project on Muddy Creek for the purpose of storing the natural flow of Muddy Creek only, if the River District elects to construct the Wolford Mountain Project with funds received pursuant to this Supplement; or (3) the first 28,000 acre feet of total storage of such other project or projects which the River District elects to build below the confluence of the Blue River and the Colorado River on the mainstem, or on tributaries which join the Colorado River below such confluence, utilizing the funds provided by Subdistrict under this Supplement.

MUTUAL AGREEMENTS OF ALL PARTIES

4. Except as specifically provided by this Supplement, all terms and conditions of the April 30, 1980 Agreement shall remain in full force and effect.

5. Paragraphs 6, 7, 8, 9, 10, 11, 12 and 29 of the April 30, 1980 Agreement are deleted and superseded by this Supplement.

6. The River District intends to utilize the funds received from Subdistrict pursuant to paragraph 1 of this Supplement in order to construct the Rock Creek Reservoir, a

water-storage facility on Rock Creek, a tributary of the Colorado River, substantially in accordance with the application filed by the River District in Case No. 83CW320 (Water Division No. 5) or the Wolford Mountain Project, a water-storage project on Muddy Creek. or another project at such other alternate site which, after further investigation, may prove to be feasible and provide the same or greater benefits as the Rock Creek Reservoir provides.

If the River District determines that Rock Creek Reservoir is not technically or economically feasible, or that another project at an alternate site provides the same or greater benefits, then the River District shall file with Water Court for Water Division No. 5 an application, for approval of the proposed alternate action, with notice as provided by law.

7. The first 2,000 acre feet of water stored each year in the water-storage project constructed by the River District pursuant to paragraph 6 of this Supplement shall be allocated to Middle Park to be utilized by that entity and any entity that it contracts with for use, directly or by exchange or replacement. On or before the first day of each water year, Middle Park shall notify the River District of the quantity of water to be allocated to Middle Park that Middle Park or its assigns expects to utilize in the coming water year. Such quantity of water will be retained to Middle Park's account, to be released as directed by Middle

Park. Except to the extent that operation and maintenance costs are paid pursuant to paragraph 8 of this Supplement, Middle Park shall be obligated to pay the River District ten percent of all of the operation and maintenance costs incurred in operating and maintaining the water-storage project. The volume of water, if any, not disposed of by Middle Park up to said 2,000 acre feet per year shall be utilized by the River District, according to the terms and conditions set forth in paragraph 9 of this Supplement. In return for the rights acquired under this paragraph and paragraph 2 of this Supplement, Middle Park relinquishes to the River District its rights to utilize up to 5,000 acre feet of water per year that were reserved to Middle Park in quit claim deed dated August 17, 1964 regarding the Azure Reservoir, recorded at book 149, page 431 of the real property records of Grand County, Colorado.

8. If the water-storage project that is constructed pursuant to paragraph 6 of this Supplement has hydro-electric generating features paid for by the funds received by the River District pursuant to this Supplement, then any revenues derived from the sale of hydroelectric power produced by these features shall be first utilized to pay the entire operation and maintenance costs of the water-storage and hydroelectric project. Middle Park shall be entitled to payment of that portion of the net proceeds (beyond those required to pay operation and maintenance costs) from the

sale of hydroelectric power that is attributable to the water released for the benefit of Middle Park pursuant to paragraph 7 of this Supplement. If hydro-electric generating features are later included in the project, Middle Park will be afforded the opportunity to participate, up to ten percent, in the financial and proportionate benefits, based upon its contribution.

9. The remainder of the yield of the water-storage project constructed by the River District pursuant to paragraph 6 of this Supplement shall be utilized by the River District in accordance with C.R.S. §37-45-118(1)(b)(IV) and 37-46-101 et seq. on terms and conditions to be determined by the River District. Any revenues derived from the utilization of this water shall be the property of the River District. Subdistrict shall have no rights to or in any of the water stored in, nor shall Subdistrict be entitled to any of the revenues derived or obtained from, the water-storage project constructed by the River District pursuant to paragraph 6 of this Supplement.

10. Upon entry of the final order not subject to appeal or further appeal contemplated by this Supplement, Subdistrict shall be entitled to divert water under its Windy Gap decrees without any requirement to construct the Azure Reservoir and Power Project, or an alternate facility for the benefit of western Colorado, which requirements were set forth in the April 30, 1980 Agreement. At such time, the

provisions of this paragraph shall also satisfy, replace, and supersede the conditions and restrictions on Windy Gap diversions which were contained in paragraph 15 of the April 30, 1980 Agreement, except that Subdistrict shall continue to meet the requirements of paragraph 15 regarding Ranchers' diversion facilities.

11. Subdistrict will withdraw all currently pending statements of opposition and entries of appearance, and will not oppose, directly or indirectly, any application of the River District, for the project or projects to which the Windy Gap Project is subordinated under the provisions of paragraph 3. Subdistrict will also withdraw all currently pending statements of opposition and entries of appearance, and will not oppose, directly or indirectly, the following proceedings currently pending in District Court for Water Division No. 5: 83CW70, 83CW71, 83CW72, 83CW73, 83CW74, 83CW383, 83CW384, and 84CW70. Subdistrict also will not oppose, directly or indirectly, subsequent proceedings involving substantially the same projects in these listed cases wherein the River District and/or another signatory to this Supplement seeks a finding of reasonable diligence or to make a conditional decree absolute. Subdistrict reserves its right to object to changes of water rights of the above listed claims which would cause injury to the water rights of Subdistrict, except that Subdistrict will not object to any change of water right of the River District's Azure

Storage decrees to the extent of the first 28,000 a.f. of storage thereunder at sites below the confluence of the Blue and Colorado Rivers, in order to implement the subordination provision of paragraph 3(3) of this Supplement.

12. The provisions of paragraph 23 of the April 30, 1980 Agreement shall remain in effect, except the language which incorporates Subdistrict's obligation to build the Azure Reservoir and Power Project or an alternate facility.

13. Paragraphs 30, 31, 33, 35 and 39, of the April 30, 1980 Agreement are deleted and superseded by this Supplement.

14. Subdistrict may keep, develop, or dispose of, in its discretion, all engineering, land, rights of way, license applications, water rights, or anything else of value that Subdistrict obtained or developed as a result of its expenditures in pursuing the Azure Reservoir and Power Project, and for which the Subdistrict currently has legal ownership. Any and all revenue or consideration which Subdistrict may obtain from any development, use, sale, lease, or other arrangement it may make regarding such items of value, shall belong solely to Subdistrict. Subdistrict recognizes and acknowledges that it has no right, title or interest in the River District's decrees listed in paragraph 31 of the April 30, 1980 Agreement.

15. The undersigned parties will not oppose Subdistrict's applications for due diligence and, after entry of a final decree approving this Supplement not subject to appeal

or further appeal, for an absolute decree for the Windy Gap Project. The undersigned parties also will not oppose, or protest, and will withdraw any statements of opposition or protests they have filed in the following cases currently pending in the District Court for Water Division No. 5: 83CW347, 83CW348, 84CW110, 84CW111, and 84CW112. The undersigned parties also will not oppose, directly or indirectly, subsequent proceedings involving substantially the same projects as those involved in these listed cases, wherein Subdistrict seeks a finding of reasonable diligence or to make a conditional decree absolute. The undersigned parties will not object to any permits, licenses or approvals for a pumpback storage project on the Colorado River which Subdistrict, or persons or entities acting under an agreement with Subdistrict, or succeeding to the rights or interests of Subdistrict by assignment or otherwise, may seek. No water storage or diversion facilities for the purpose of assisting diversions, or obtaining water for beneficial uses, other than for power uses, shall ever be constructed in the vicinity of the Azure site by Subdistrict or its successors in interest or assigns, unless consent is given by River District prior to any construction.

16. All of the undersigned parties agree that the April 30, 1980 Agreement, as amended and supplemented hereby, upon approval by the Court not subject to appeal or further appeal, constitutes full and complete satisfaction of the

requirement for a "plan" under C.R.S. §37-45-118(1)(b)(IV) and Colorado River Water Conservation District v. Municipal Subdistrict, 198 Colo. 352, 610 P.2d 81 (1979).

17. The funds which Subdistrict pays to River District under paragraph 1 of this Supplement shall be utilized by the River District only for the purpose of planning and constructing a water-storage project or projects in Water Division No. 5 which will satisfy the Subdistrict's obligation under C.R.S. §37-45-118(1)(b)(IV), including all necessary and appropriate activities in connection with such project or projects, including but not limited to such planning, studies, construction, operation, and maintenance (including all reasonably related legal, financial and engineering work) of such project or projects. Subdistrict shall not have any right to determine how the funds paid pursuant to this Supplement are utilized by the River District, if the funds are utilized as provided by this Supplement. Any remaining funds after completion of the project or projects described above shall be the property of the River District for use and disposition as it determines. Subdistrict shall not be entitled to exercise any control over the project or projects that are planned, studied, constructed, operated, and maintained with funds received pursuant to this Supplement, nor shall Subdistrict be entitled to any revenues from the project or projects that

are planned, studied, constructed, operated, and maintained pursuant to this Supplement.

18. Subdistrict and the River District shall jointly apply for, and use their best efforts to obtain approval of this Supplement by the District Court for Water Division No. 5 and any other court which considers this Supplement, so that this Supplement will be incorporated into the Windy Gap decrees entered in Civil Action No. 1768, Grand County District Court, and Case Nos. W-4001 and 80CW108, Water Division No. 5, and they shall jointly apply in the same court or courts for a ruling that Subdistrict's obligation under this Supplement, constitutes full and complete satisfaction of all requirements placed on Subdistrict by C.R.S. §34-45-118(1)(b)(IV) and Colorado River Water Conservation District v. Municipal Subdistrict, 198 Colo. 352, 610 P.2d 81 (1979) in connection with the Windy Gap Project. Time is of the essence in obtaining judicial approval of this Supplement and both Subdistrict and the River District shall use their best efforts to attempt to obtain judicial approval as soon as possible. If the District Court for Water Division No. 5 does not enter a final decree approving this Supplement, and appellate review fails to obtain entry to such decree, then this Supplement shall be of no further force and effect, except for the provisions of the immediately succeeding sentence. If a final decree approving this Supplement is not entered following proceedings in Water

Division No. 5 and appellate review, then the April 30, 1980 Agreement shall remain in full force and effect, unaltered by this Supplement, except that the (1) Subdistrict shall receive credit under the April 30, 1980 Agreement for all money paid to the River District pursuant to this Supplement, (2) Subdistrict's execution of this Supplement and performance thereunder shall constitute diligence under the April 30, 1980 Agreement, (3) River District's and Subdistrict's rights and obligations under paragraphs 6 and 12 of the April 30, 1980 Agreement shall be considered tolled in the interim as of April 1, 1983, to be resumed if and when final appellate review fails to obtain entry of a decree approving this Supplement, and (4) except as explicitly provided for by clauses (1), (2) and (3) of this sentence, nothing in this Supplement, or in the negotiations leading to this Supplement, shall be construed to affect or as affecting any of the rights or obligations of the signatories to this Supplement in subsequent litigation concerning the April 30, 1980 Agreement.

19. Until such time as the final order not subject to appeal or further appeal contemplated by this Supplement enters and so long as Subdistrict is not in default in its obligations under this Supplement, River District hereby consents to Windy Gap Project diversions in priority by the subdistrict. In the event of default by Subdistrict of its payment or other obligations under this Supplement, River

District may, at its option, withdraw such consent, and Subdistrict shall have no right to divert water by means of the Windy Gap Project until such default is cured.

20. This Supplement shall become effective upon Closing. The Closing shall be held at the offices of Davis, Graham & Stubbs, of Denver, Colorado, on March 29, 1985, at the hour of 10 o'clock a.m.. At Closing all parties listed below shall deliver to each other duly executed copies of this Supplement, and the Subdistrict shall perfect payment of the sums required by this Supplement into the escrow account by wire transfer.

Dated this 29 day of March, 1985.

Signed

MUNICIPAL SUBDISTRICT, NORTHERN
COLORADO WATER CONSERVANCY
DISTRICT

ATTEST:

By William Stott
President

[Signature]
Secretary

COLORADO RIVER WATER
CONSERVATION DISTRICT

ATTEST:

By Chris P. Joullas
President

[Signature]
Secretary

BOARD OF COUNTY COMMISSIONERS
OF THE COUNTY OF GRAND,
COLORADO

ATTEST:

By Herbert A. Ritschard
Chairman

[Signature]
Secretary
Clerk and Recorder

NORTHWEST COLORADO COUNCIL OF
GOVERNMENTS

ATTEST:

Don Falkner
Secretary

By *Robert C. ...*
Chairman

MIDDLE PARK WATER CONSERVANCE
DISTRICT

ATTEST:

A. W. ...
Asst. Secretary

By *Redwood ...*
President



BISHOP-BROGDEN ASSOCIATES, INC.

Michael A. Saylor
Christopher J. Sanchez
Jeffrey A. Clark
Charles E. Stanzione
Robert E. Brogden

Exhibit E to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

December 23, 2008

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Sullivan Green Seavy
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Boulder, CO 80303

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P.O. Box 1120
Glenwood Springs, CO 81602

RE: Concerns and Comments on the Windy Gap Firming Project DEIS

Dear Barb, Dave and Peter:

This letter report provides a summary of our primary concerns and comments regarding the water resource aspects of the Draft Environmental Impact Statement (DEIS) for the Windy Gap Firming Project (WGFP), dated August 2008, and the potential impacts to the upper Colorado River basin. We have reviewed this report on behalf of our clients Grand County, Colorado and the Colorado River Water Conservation District. For purposes of this letter report, we have reviewed the DEIS in general (dated August 2008), but have focused our review on the Water Resources Technical Report (WRTR) and Technical Report Appendices, dated December 2007. We have also reviewed prior drafts reports, supporting engineering or technical reports, records of the Colorado State Engineers Office, published information, information in our files and information available on-line.

This letter report presents an overall summary of our concerns with the information presented in the DEIS and its overall conclusions, followed by detailed comments regarding the Water Resources Technical Report. This letter report also presents a summary of recommended mitigation measures that should be included in any permit approval associated with an Action Alternative for the WGFP.

Overall Principal Concerns

We believe that both the analysis and the overall conclusions of the DEIS are flawed. The DEIS derives its conclusions based on inaccurate modeling and inappropriate methodology. This conclusion regarding the DEIS flaws is based on the following primary concerns:

1. The DEIS does not accurately portray the effects of prior water diversion projects in the Upper Colorado River basin. An EIS analysis is intended to compare the proposed actions to the past, current and future environmental conditions. The upper reaches of the Colorado River in Grand County have been heavily depleted by existing water development projects. The information contained in the DEIS is insufficient to present an accurate representation of the changes in hydrology that have occurred over time.

The table below presents a summary of the historic water development projects as they have affected the native and remaining streamflows. As the table shows, the current average annual streamflow volume at the Hot Sulphur Springs streamgauge (USGS Gage No. 09034500) is approximately 26% of the historical native supplies. With the projected depletions from the WGFP, coupled with the foreseeable action of the Moffat Expansion Project, the remaining streamflow will be approximately 17% of the historical native supplies. Figure 1 below shows similar information presented as the average annual hydrographs before and after the development of key water diversion projects. This figure also compares the actual existing hydrology from the USGS gaging stations following completion of the Windy Gap Project to the average streamflow for the five "Dry Years" used in the DEIS. As can be seen on Figure 1, the actual existing average streamflow hydrology is very close to the Dry Year average flow compared to historic flow conditions. The DEIS does not present any substantive information beyond Figure 5 (page 19, WRTR) to represent the true past and present conditions for comparison to the projected depletions. The projected depletions from the WGFP, as well as the proposed Moffat Expansion project, will further deplete the remaining streamflows such that this section of the Colorado will be approach a 'dry year' in a majority of the years in the future.

Summary of Colorado River Streamflow and Diversions

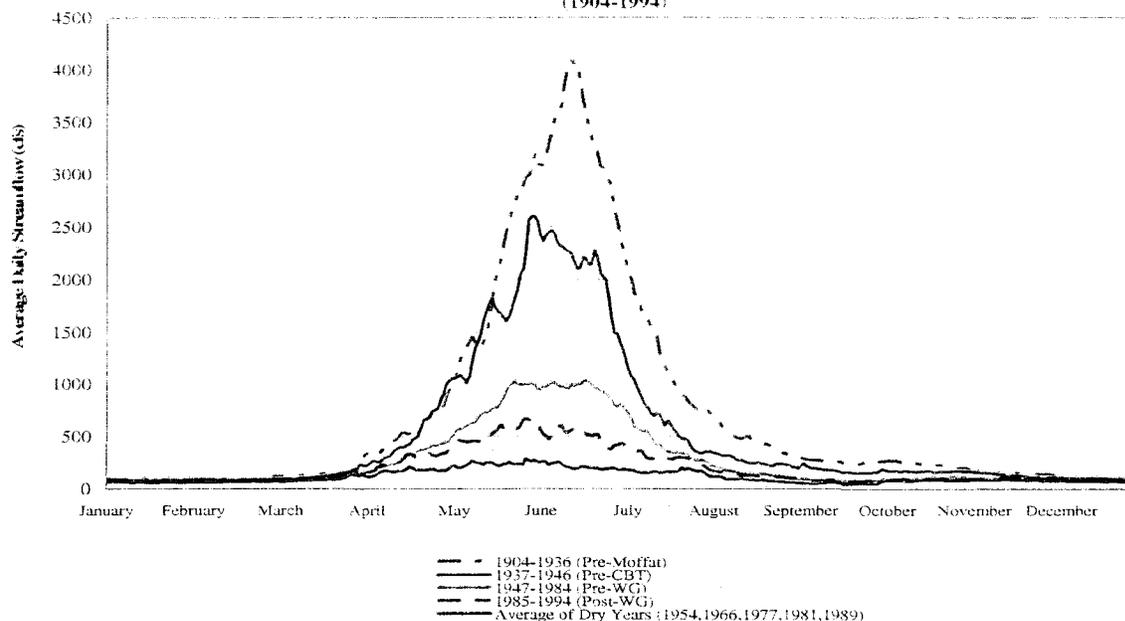
Colorado River at Hot Sulphur Springs, CO

	Approx Avg Annual Flow Volume (ac-ft)	Remaining Avg Annual Flow (ac-ft)	% of Native Flow Remaining	Notes
Native Flow	540,000		100%	Colorado River flow at Hot Sulphur Springs from 1904-1936 (pre-Moffat, adjusted for approximate Grand River Ditch diversions).
Grand River Ditch	18,500	521,500	97%	Based upon CDSS recorded annual diversions from 1975-2007.
Moffat Diversions	57,000	464,500	86%	Based upon Denver Water diversion records at the East Portal from 1975-2006.
CBT Diversions	228,800	235,700	44%	Based upon 1985-2005 diversions as shown in the WGFP EIS (Table 5).
CBT Evaporation	15,500	220,200	41%	Based upon 1975-2007 avg Granby content from BOR and SAC tables from NCWCD, plus full SMR, WC & WG acres
Windy Gap Grand County Uses	11,100	209,100	39%	Based upon 1975-2004 diversions as shown in the Windy Gap Firming Project (WGFP) EIS.
	1,200	207,900	39%	Based on current Grand County demands (3,100 af, UPCO 2003) with assumed 60% return flows
Current Flow	138,700		26%	Based upon SEO streamflow records at Hot Sulphur Springs (1985-1994). Note measured flows less than calculated remaining flows.
Windy Gap Firming Project	35,000	103,700	19%	Based upon projected additional future diversions projected in the WGFP EIS.
Moffat Expansion	9,300	94,400	17%	Based upon projected additional future diversions projected in the WGFP EIS.
Future Flow	94,400		17%	Equal to the current flow less additional projected diversions.

Notes: CBT evaporation is replaced at confluence with Blue River

This table may be revised with information presented in pending EIS information for the Moffat Expansion Project

Figure 1
Colorado River Average Daily Flows at Hot Sulphur Springs
(1904-1994)



2. The DEIS inaccurately represents Existing Conditions for the Alternatives Analysis. The spectrum of hydrologic effects contained in the DEIS for the WGFP (i.e. water diversions, operations, storage, releases, changes in storage and changes in streamflow) for all project alternatives are modeled by comparing the alternatives to the Existing Condition. Further, the evaluation of all water-based effects associated with an alternative, such as water quality, aquatics, stream morphology, ground water, wetlands, etc., are based on the predicted changes in hydrology. However, the DEIS presents an Existing Condition that is not accurate.

Specifically, the DEIS states that "The purpose of the Existing Conditions scenario is to model current conditions as if they occurred under the same hydrologic conditions or baseflows that existed throughout the study period (1950 through 1996)." All future alternatives are compared to the Existing Condition as shown on Table 3-2 of the EIS (Table 18 WRTR), which shows an average annual Windy Gap (for both WGFP participants and non-participants) diversion of 36,532 acre-feet (af). This presentation of the Existing Condition is contrary to Table 3 (WRTR) which states that the Windy Gap project historic diversions since construction have averaged 11,080 af per year (1985-2005). This level of historic diversions of the Windy Gap project correspond with the CDSS diversions records, which show average annual diversions of 11,987 af.

Based on the text of the WRTR, it appears that the model used indicates diversions of Windy Gap water into Granby Reservoir even though it may spill in upcoming months. However, it is impossible to tell from the results presented in the DEIS for a comparison of how much water is later spilled versus how much is diverted to the Windy Gap users directly or into storage for later delivery. Based on the total average flow quantification upstream and downstream of Windy Gap, it appears that, on average, the flow in the Colorado River will be depleted by 36,532 af/year – indicating that this number is inclusive of Granby spills. Based on this information, the Existing Conditions number used in the DEIS overstates the actual existing conditions by over 300%, and therefore understates future depletions by 25,452 af/year.

Further, the model indicates that there are three nodes, or points of quantification, upstream of the Windy Gap diversion dam (Colorado River above Windy Gap); Colorado River below Lake Granby,

Willow Creek at the confluence with the Colorado River and Fraser River at the confluence with the Colorado River. However, the sum of these three nodes under the Existing Conditions is approximately 19,200 af/year less than the indicated flow at this location. The sum of these three nodes should be nearly identical to the flow available at Windy Gap (allowing for some minor local inflows or diversions).

The Technical Appendices to the WRTR presents the modeled average streamflow at various locations. Table D-16 shows the average monthly streamflow for Average, Dry and Wet conditions at Hot Sulphur Springs. We compared the 'Existing Conditions' average monthly streamflows (1950-1996) to the USGS streamgage data for this same location (1950-1994), and note several significant differences:

**Comparison of Modeled and Actual Average Monthly Flow
Colorado River at Hot Sulphur Springs
(all values in cfs)**

Data Source	April	May	June	July	Aug	Sept	Oct	Nov	Annual
USGS Gage	276	664	793	403	152	90	96	93	256
DEIS Model	146	278	953	482	170	87	87	83	216

DEIS flows from WRTR Table D-16 for Existing Conditions
USGS data for Colorado River at Hot Sulphur Springs (No. 09034500)

This table indicates that the streamflow used in the DEIS for Existing Conditions is significantly lower in most months than the actual hydrology at this location. This also indicates that, on average, the modeled streamflow is 40 cfs less than the actual streamflow. Thus, the DEIS understates the actual effects of the action alternatives.

For these and other reasons described herein, we believe that the alternatives comparison methodology is flawed and inaccurately represents the effects from the proposed project.

3. The DEIS modeling does not accurately represent the impacts associated with the WGFP

3.1. Model Time-Step We have significant concerns regarding the model time step used to evaluate West Slope impacts as described in DEIS. We believe that it is inappropriate to use a detailed daily model to evaluate the projected new water yield from additional facilities and additional diversions under the WGFP, and then use an independent, monthly model to evaluate the hydrologic effects to the source area of the water supplies. In Colorado, water rights are typically administered on a daily basis. As a result, the upper Colorado River basin can experience dramatic flow changes due to daily changes in both natural conditions and water administration, as well as the operations of several large-scale water facilities within the modeling area. For example, a Shoshone Powerplant 'call' coming on or off within a month may result in significant changes in streamflow that would not be accurately represented by a monthly time-step.

Currently, there are four other EIS documents being prepared or under review associated with Federal permit applications for major water projects in Colorado;

- NCWCD's NISP Project
- Denver Water's Moffat Expansion Project
- Fort Collins/Greeley's Haligan-Seaman Enlargement Project, and

- Colorado Springs Utilities' Southern Delivery System (SDS)

Three out of these four projects, the Moffat, Haligan-Seaman and SDS projects, are being evaluated using a daily operations model. Only the NISP project, also being initiated by NCWCD, uses a monthly model to evaluate effects.

The Moffat Project and the WGFP both propose additional diversions from essentially the same source; the Fraser River (since Colorado River flows above Windy Gap are largely captured by the Colorado-Big Thompson (CBT) project). Further, the depletions from both projects affect essentially the same general area and stream segments, aquatic environment, recreation, water quality, etc. In our opinion, it is both inaccurate and inappropriate to use a monthly model, when a daily model already exists for the exact same study area (DW's PACSM model, which was also originally constructed by Boyle Engineering). For this and other reasons described herein, we believe that the effects from both projects should be considered together using the same daily model.

- 3.2. Model Study Period We also have significant concerns regarding the modeling period used to evaluate WGFP effects (1950 – 1996). We recommend that any model used to evaluate the effects of the WGFP should include hydrologic and water operations data up through at least 2005. The drought during the early part of this decade, which we may still be suffering from, is well-documented as being the most severe on record at many locations. We understand that during single drought years, such as 2002, the WGFP may not have been able to divert (although this may not be true in the future due to the Shoshone call relaxation agreement discussed below), however the record-low streamflows in 2002 can have carry-over effects on water operations, water storage, water administration, water quality, recreation and other aspects of the WGFP. The dramatic changes in water operations and water supplies in the years following 2002 are an example of why this period needs to be included in the assessment of impacts. For example, the four highest total annual diversions for the Windy Gap project occurred in the years immediately following 2002; 2003, 2005, 2006 and 2007. This is likely due to significantly increased demand for water to refill Windy Gap users' reservoirs, coupled with significant storage space available in general and, in particular, in Lake Granby. This may also be partially due to the fact that in 2002 the CBT project was unable to deliver its annual "Quota" to its shareholders for the first and only time in the 60-year history of the project. As the operations of the Windy Gap project are intertwined with CBT operations, these significant modeling events need to be included in any analysis of effects. For example, the end of month storage records for Horsetooth Reservoir, a CBT project reservoir, show that it reached the lowest monthly levels of all-time in 8 of the 12 months in 2002 in 2003. This is likely a component of the record diversions of the Windy Gap project in 2003. Further, many streamgages in the upper Colorado River basin, including the WGFP modeling area, recorded the lowest streamflows ever during this time period. In particular, 2002 and/or 2004 are in the "Top 5" driest years at several locations throughout the basin of impact, and should be modeled as part of their dry-year averages (see table below). Any evaluation of effects to streamflow, water operations, water quality, stream morphology, recreation, etc. may be significantly inaccurate without considering this data.

We also note that the model relied upon for West Slope impacts, CRDSS, has been extended to include 2005 data and is presently available.

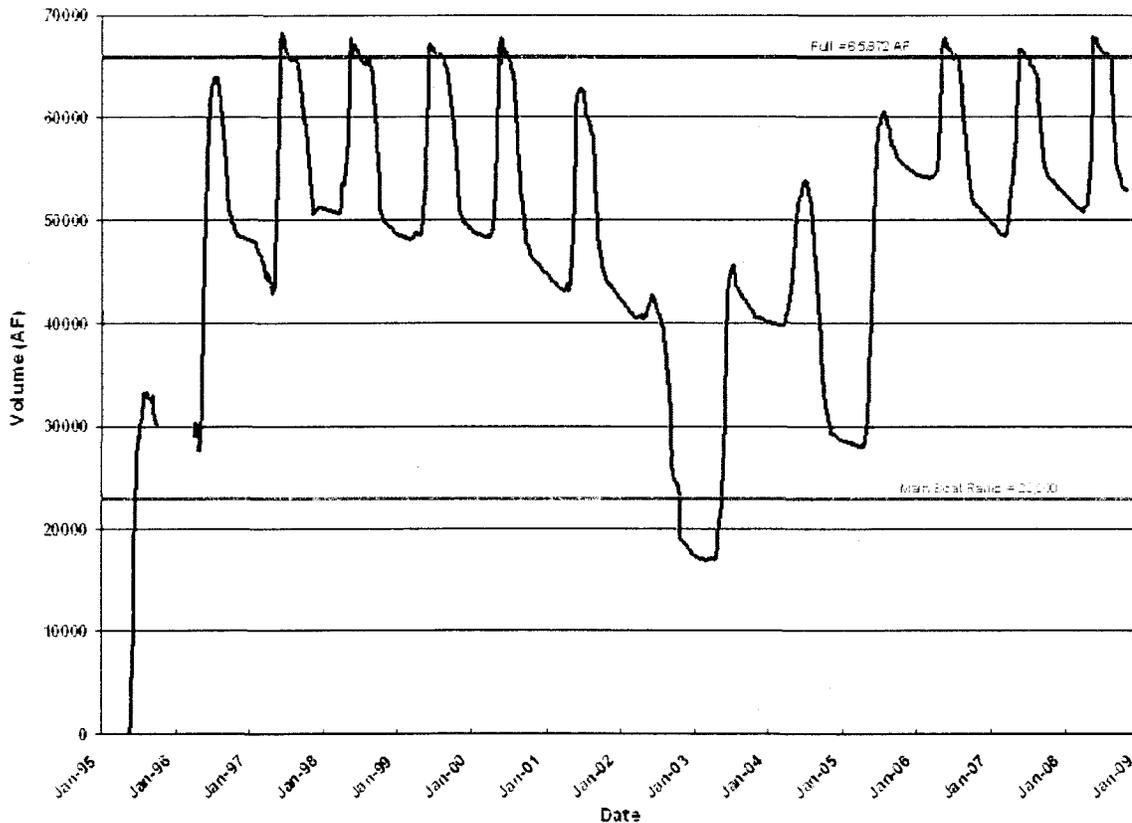
Colorado River High/Low Annual Streamflow Comparison 1950 - 2005

1950-2005		1954-2005		1962-2005		1950-2005	
Fraser at Winter Park		Colorado btw Baker Gulch		Colorado nr Kremmling		Colorado nr Dotsero	
Top 5 Wettest							
Year	Total AF	Year	Total AF	Year	Total AF	Year	Total AF
1984	34,081	1984	79,294	1984	1,772,380	1984	3,064,944
1957	33,045	1983	77,719	1983	1,321,769	1983	2,394,818
1995	32,595	1997	77,054	1997	1,260,346	1997	2,370,025
1983	31,712	1995	72,782	1962	1,239,785	1957	2,338,400
1996	23,256	1986	66,978	1996	1,141,010	1962	2,332,556
Top 5 Driest							
Year	Total AF	Year	Total AF	Year	Total AF	Year	Total AF
1966	5,017	1977	25,856	1964	418,582	1981	850,017
1964	4,706	1989	25,712	1981	406,927	2004	829,383
2002	4,617	1981	22,787	1963	401,375	1954	803,510
1963	4,557	1954	20,353	2004	373,800	1977	766,998
1954	4,011	2002	18,063	2002	362,861	2002	626,028

The years highlighted in yellow are NOT included in the WGFP modeling for these locations.

Another example of the effects of the 2002 drought sequence is shown by the storage levels of Wolford Mountain Reservoir (WMR). This reservoir came on-line in approximately 1995, but was "turned on" for the entire period of record in the DEIS model in the Future Conditions model. The chart below shows the total storage volume for WMR since construction, and clearly shows a dramatic drop in storage levels in 2003 - 2005. It is not clear if and how such operations were modeled in the DEIS. By extending the model period, it would capture all of the known operational data during this extreme event.

Wolford Mountain Reservoir Historic Volume



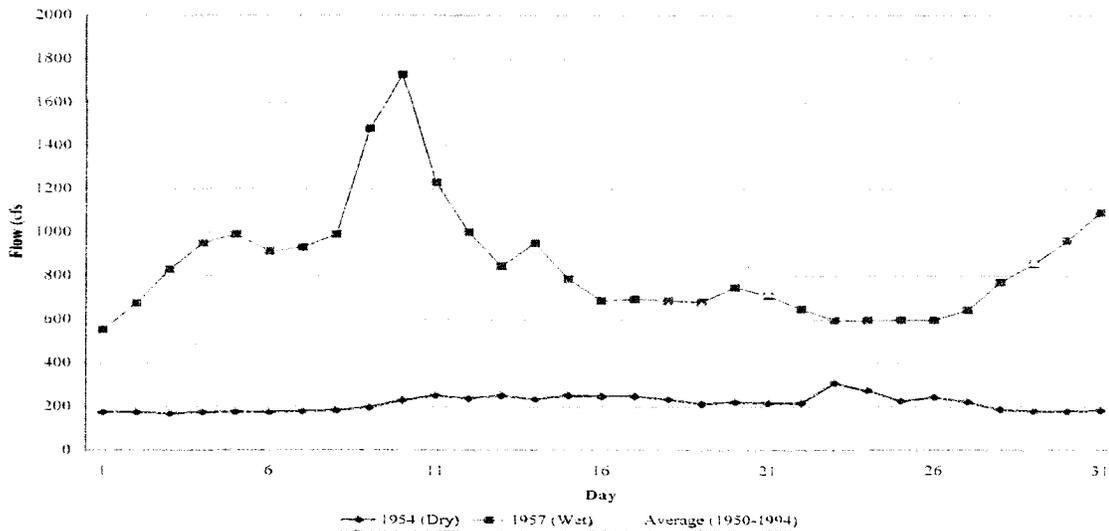
Source: Colorado River Water Conservation District

3.3. Disaggregation of Daily Flows The methodology used to estimate daily changes in streamflow is flawed and inaccurate. This is due to the fundamental assumption regarding the use of the daily disaggregation factors to evaluate effects. The WRTR states that “absent any flow changes due to the WGFP, the historical relationship between daily and total monthly flows should apply to total monthly flow estimated by the model.” However, the report later concludes that annual streamflows may be reduced by as much as 157,000 af/year (WRTR Table 32); presumably this reduction would occur during the months of May through July. The report also states that the monthly streamflow at certain locations may be increased by up to 25% and reduced by as much as 37% (Section 8.6). These changes projected by the model represent a dramatic alteration of the existing hydrologic record, and should not be relied upon as an accurate means of predicting daily changes in streamflow.

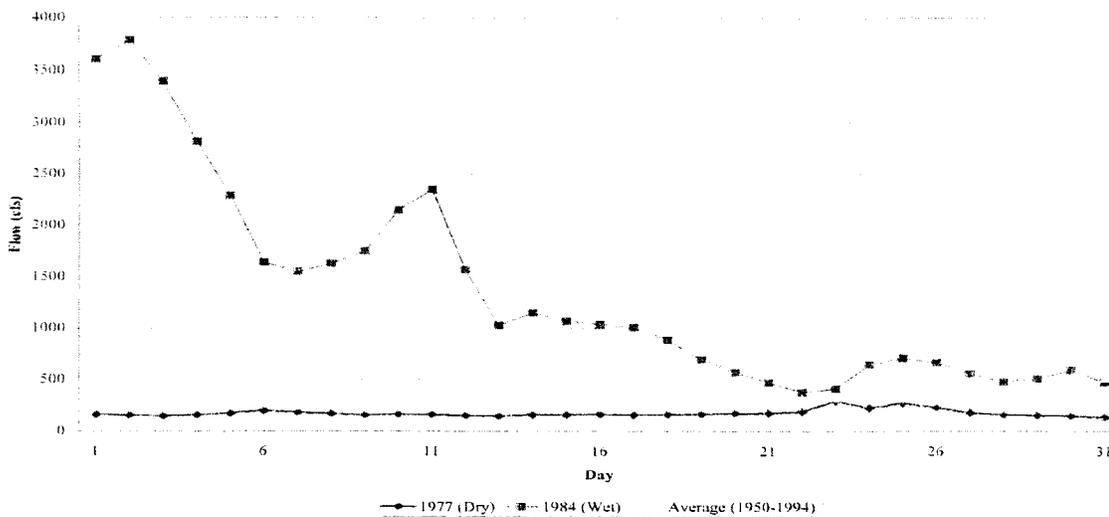
It is our understanding that the creation of daily flows was based on disaggregation of the long-term average daily streamflow as a function of the monthly total. The flow regimes in the upper Colorado River basin are highly variable; from month to month, year to year and, in particular, subject to extreme changes from wet years to dry years. As an example, we compared the long-term average daily streamflow for the months of May and July (replicating the disaggregation factors used in the analysis) to the actual streamflow for one of the “wet” and “dry” years indicated in the modeling. As is evident on the graphs below, there are dramatic differences between the average, wet and dry conditions that are not captured by the DEIS model. Even using the modeled average monthly flows presented in Table D-14, it shows that average year flows are reduced from 472 cfs to 365 cfs in July (reduction of 108 cfs, or 23%) and wet year flows are reduced from 1716 cfs to 1265 cfs in the same month (reduction of 450 cfs, or 26%).

The dry-year flows for the same month are 127 cfs. The use of the long-term average daily flows to generate the factors to represent daily flows in all years, wet (1716 cfs), average (472 cfs) or dry (127 cfs), is inappropriate and can be highly inaccurate. In other words, the daily pattern of streamflows within a given month is not the same from year to year, even within two "average" years. This difference is even more pronounced between wet and dry years, and will result in inaccurate predictions of daily flows. For these reasons, we believe that the application of the disaggregation factors can be highly inaccurate resulting in daily flow estimates that are flawed. As noted above, using a daily point-flow model such as PACSM would alleviate the errors from the disaggregation methodology used in the DEIS.

**Colorado River at Hot Sulphur Springs
 May Comparison of Average, Wet & Dry Daily Streamflow**



**Colorado River at Hot Sulphur Springs, CO
 July Comparison of Average, Wet, & Dry Daily Streamflow**



3.4. Granby Spills in the Model

The operation of the model is discussed in Section 7.4.1.1, page 84. The DEIS model overestimates probable actual WGFP pumping that would later spill due to a lack of a forecasting tool in the model. Windy Gap water rights, with or without the WGFP, should have little or no impact on the flows in the Colorado River immediately below the Lake Granby dam but before Windy Gap. Yet the DEIS reports that the Preferred Alternative will result in over 5,000

af/yr less flow below Lake Granby than under the No Action Alternative (the comparison should be to existing conditions). Windy Gap water is pumped in the model even when Granby is certain to spill. Since CBT spills more frequently in the No Action Alternative, there are more Windy Gap spills in the No Action Alternative. Under the Preferred Alternative, when the Windy Gap spills decrease, the flow below Lake Granby decreases. In reality, with adequate forecasting, these Windy Gap spills would be less likely to occur, and therefore the flows immediately below Lake Granby would see little change. We recommend that the model be modified to include some form of forecasting to reduce this effect. As is, the DEIS dramatically overstates the WGFP pumping and the reduction in streamflow in the Colorado River between Lake Granby and Windy Gap.

3.5 Foreseeable Actions

We believe that the DEIS fairly accurately considers future actions that can reasonably be considered foreseeable, and reports that most were incorporated into the Future Conditions model. However, the DEIS does not incorporate one of the key future conditions that we believe will have a dramatic effect on future water operations in this area and therefore needs to be included; the Shoshone Call Reduction (by virtue of DW's contract with Xcel). The DEIS does not indicate why this future condition was not included. The Shoshone Call Reduction is a long-term agreement that has been enacted since the modeling for this DEIS, and very likely will be implemented in the future. Although the implementation of this agreement may occur in principally drier years, when Windy Gap diversions may otherwise be reduced, it is still critical to include it in the model. The diversion records for the Windy Gap project for the year immediately following the 2002 drought provide a dramatic example. Prior to 2002, the highest volume pumped by the Windy Gap model was 21,896 af (1992, Table 3 WRTR). However, in the following dry year of 2003, during which the Shoshone agreement was being implemented, the Windy Gap project pumped a total of 64,200 af – nearly three times the prior maximum. Although the WRTR reports that only 7,850 af of this can be attributed to the Shoshone call reduction agreement, this amount should be included in the modeling to accurately assess the changes in both water operations and environment effects.

4. The WGFP does not provide Middle Park Water Conservancy District (MPWCD) a firm annual supply of 3,000 af. Based on the 1980 Azure Settlement Agreement(s), Northern (MSD) committed to provide 3,000 af of water **per year** to MPWCD as part of the approvals of the Windy Gap project. It is well-known that, despite the presentation of information at the time, the Windy Gap project has not been able to deliver this water to MPWCD every year. The DEIS explains that the WGFP will 'firm up' approximately 26,000 af per year to the WGFP participants based on new diversions and storage facilities, but DOES NOT proposed to firm up the original contractual commitment to the West Slope of this 3,000 af per year. Rather, the Purpose and Need statement for the WGFP states that it will "...provide up to 3,000 af of **storage** to firm water deliveries for the Middle Park Water Conservancy District" (emphasis added). The commitment of storage space is NOT the same as the firm annual delivery of water. In fact, the DEIS proposed actions result in a firm yield to MPWCD of approximately 429 af per year – only 14% of the original obligation. This is completely unacceptable. Any new project that results in the "firming-up" of water under the Windy Gap project needs to first provide 3,000 af per year to MPWCD before any Windy Gap users receive delivery of any water under the project.
5. A copy of the model needs to be made available to all interested parties. We believe that a copy of the DEIS hydrology model needs to be made available to interested parties so that a thorough review and understanding of the model and its results can be made. Such a review may eliminate some of the questions and uncertainties, or reveal areas where the model may be improved resulting in more accurate results and conclusions. We believe that any representations regarding impacts from a project of this magnitude needs to be made using a model that has been peer-reviewed and critiqued by all the major stakeholders. As discussed below, a thorough comparison of the model results from

Denver Water's PACSM related to the Moffat Expansion Project needs to be made prior to proceeding with either project.

6. The EIS analysis needs to be combined with the Moffat Expansion Project. As described in the Cumulative Effects section of the DEIS, Denver Water's Moffat Expansion Project will result in additional depletions to essentially the same source of water as the WGFP. Because the CBT project already captures nearly all of the available streamflow from the Colorado River system above Windy Gap (except for the minimum bypass flows), the vast majority of the yield to Windy Gap is derived from inflows from the Fraser River. Therefore, both projects divert from essentially the same source. Further, both projects will have cumulative effects to the nearly identical segments of the Colorado River system. Both projects will need to evaluate nearly identical hydrologic, environmental, recreational, socio-economic, etc., effects from the projects. In our opinion, it is highly illogical to evaluate both projects using completely independent methodologies. At a minimum, we believe that this EIS needs to be tabled until completion of the EIS for the Moffat Collection System such that an "apples-to-apples" comparison of the results can be made.

7. The DEIS does not address the need to modify the Lake Granby outlet structure with pre-positioning. As stated in the DEIS, the WGFP should not result in changes to the operation of the CBT project. Under the Preferred Alternative, if prepositioning is allowed, large volumes of CBT water will be stored by prepositioning in Chimney Hollow Reservoir. Any CBT water stored in Chimney Hollow will need to be accounted for as CBT water in Lake Granby to prevent an enlargement of the CBT water rights and additional new depletions to the Colorado River. As a result, if for example, there is 50,000 ac-ft of CBT water stored in Chimney Hollow, Lake Granby should reach a "paper fill" when the Lake Granby CBT contents reach approximately 490,000 ac-ft (Lake Granby's total capacity less 50,000 af). When this happens, all inflows to Lake Granby in excess of the CBT direct-flow rights should start to "spill" – as if the reservoir was physically full like it would be without pre-positioning. Therefore, prepositioning could create occurrences in the future when Lake Granby water levels will not be at the spillway, but the inflows will be in excess of the 440 cfs outlet capacity. According to the DEIS, inflows could be greater than 3,000 cfs and, in fact, have historically been over 4,000 cfs. The outlet from Granby Reservoir will need to be modified to allow for releases of this magnitude in order to prevent this excess inflow from being stored, which would constitute an enlargement of the CBT water rights, or at the very least, a retiming of inflows that would have otherwise spilled from the dam. This is the way NCWCD has modeled the Preferred Alternative; however, the modeled results cannot actually occur in the future without the modification to the outlet works a capacity of 3,000 cfs or greater.

Water Resources Technical Report – Detailed Comments

The following provides a summary of our concerns and comments regarding specific sections of the WRTR. The concerns are described sequentially with the report and reference specific pages or sections.

Page 2:

- The modeling needs to limit the operational storage capacity at both Granby and Chimney Hollow Reservoirs to the current active capacity of 465,568 af for Lake Granby.
- The DEIS needs to show how, with 90,000 af available for storage at Chimney Hollow, the operational storage targets will change for both CBT and Windy Gap water.
- Regarding the No Action alternative, the report states that "Most participants indicate that in the long term, they would seek other storage options... to firm Windy Gap water..." We

agree with this statement, that most participants will seek to find ways to firm up the Windy Gap water on their own. In fact, the original "Environment Statement" for the Windy Gap project (1981) stated "*It is anticipated that this storage requirement could be accommodated either by utilizing available storage in Granby Reservoir for longer periods and/or by utilizing East Slope storage currently owned or leased by Windy Gap participants. -- Since there is currently over 400,000 acre-feet of privately owned storage within the boundaries of the Conservancy District with only a present demand for approximately 30,000 acre-feet, it is logical to assume that the storage requirements for Windy Gap water are present without dependence upon new reservoir construction along the Front Range.*" (Page IV-68). This indicates that the overall Purpose and Need for the project, as well as the alternatives analysis are flawed, as there may be less-environmentally damaging alternatives than the ones discussed in the DEIS. The DEIS needs to thoroughly develop the No Action alternative to confirm that there is a need for this project and the alternatives presented for review.

Page 3 We recommend that the active modeling area be extended downstream to the Dotsero streamgauge. This would incorporate the anticipated depletions upstream of Shoshone from projected growth in the Eagle River basin, and would allow for an evaluation of the effects from the construction of Wolcott Reservoir as a potential source for the 10,825 water.

Page 4 The first full sentence starting with "Flow changes, as a percentage of total streamflow,..." should be deleted. This presents conclusions without context and may prejudice readers of this document.

Page 9

4.2.1 We believe that the model time step produces highly inaccurate results. See our overall concerns above regarding the model time step used to evaluate West Slope impacts.

4.2.2 We believe that the modeling period does not accurately reflect changes in hydrology and any associated water-based effects, and must be extended through at least 2005. See our overall concerns above regarding the modeling period used to evaluate WGFP effects.

4.2.4 The use of disaggregation factors to predict daily flow is highly inaccurate, and the associated evaluation of flow effects is flawed. See our overall concerns above regarding the daily disaggregation factors to evaluate the effects.

Page 15, last paragraph The letter from the former State Engineer indicating that he *could* administer the CBT and WGFP system in compliance with the current decrees is misleading and does not indicate approval of this practice. Only the water court or modifications to the Blue River decree in District Court can approve the storage of CBT or Windy Gap water in new facilities. Currently, the water rights for the CBT project and the Windy Gap project are not decreed to allow for storage at Chimney Hollow and some of the other action alternatives. These rights will need to be changed in water court before water can be diverted pursuant to any of the action alternatives.

Page 16, 6.1.1.2

- The report should specify that the USGS ceased operations at the Hot Sulphur Springs gage (09034500) in 1994, but that NCWCD has maintained a gage near this site since 1989 during the summer months only. However, we note that a comparison of the records for these two nearly-identical locations have several extremely large discrepancies. If the DEIS model used data from NCWCD, it may be inaccurate.
- This section should present a significant discussion and show much more detailed information regarding the full history of streamflows and stream depletions to this region, not just the flows averages before and after CBT. See our overall concerns above regarding the presentation of historical hydrology above.

Table 2, page 21 This table shows the historical spills from Lake Granby from 1957 - 2001, which shows that there have been 15 years of spill during this time; or 1 out of 3 years on average. However, we note that Granby spilled 6 years in a row from 1995-2000, with the previous duration of 4 consecutive years. The model used to evaluate WGFP yields, which are highly vulnerable to Granby spills, only captures 2 years of the longest period of historic spills. This is another example of why the hydrology used for the modeling should be extended to include the time period up through at least 2005.

Table 3, page 22 There are differences in monthly and total annual volumes of water pumped between this table and the official diversion records maintained by the SEO as shown on CDSS. Although the differences are minor in most years, we note that there is a large discrepancy in June of 2005 (19,520 af). The DEIS needs to explain these differences.

Table 4, page 23 The table should also show the average annual number of days pumped, which is significantly less than the sum of the monthly average days. Based on the records available on CDSS, the Windy Gap project pumped approximately the same average annual volume (just over 11,000 af/year) before and after 1996 (the end of the model study period). However, the duration of pumping is significantly different for these two time periods. The Windy Gap project pumped water for an average of approximately 30 days per year during the model study period, but averaged approximately 57 days per year since 1996. This means that the project diversion season has recently been nearly twice as long as the data used in the model analysis. The model may therefore inaccurately predict the effects of pumping to the source area. This is another reason to extend the model through at least 2005 to more accurately capture both the project operations and hydrologic effects.

Figure 6, page 24 The records and calculations used to support this figure need to be provided in the DEIS.

Table 6, page 25 This table of existing Colorado River water rights is missing several large capacity ditches that divert from the upper Colorado River. The report should also include a list of water rights shown on the tabulation, and not included in the model, including the reasons they were not considered. The text on page 23 states that these water rights were incorporated into the hydrologic model, but doesn't discuss the details of how they were modeled. Previous EIS information indicated that these water rights were included in the model based on their priorities as tabulated by the Division Engineers Office. We believe that the DEO tabulation of these priorities is incorrect, as they should be administered as senior to the CBT project. Previous EIS information has also indicated that these rights would not be entitled to divert during times of Shoshone call. However, the modeling is inaccurate as these rights are currently entitled to divert due to protection from the HUP account in Green Mountain Reservoir allowing them to divert during times of a Shoshone call.

6.4.1 West Slope GW Hydrology and Quality This section makes several conclusions that are not supported by technical evidence described in the DEIS.

Table 10 (page 41) We note that 5 of the 13 WGFP Participants are also participants in the proposed NISP project. While we understand from NCWCD staff that the future water demands of these entities is more than the combined potential yield from both projects, this DEIS should provide more detailed information about the joint participation in both projects and the consequences if one or both projects are not developed.

7.1, page 59 This section states that the WGFP Participants existing demand for Windy Gap water is approximately 21,045 af/year, whereas the No Action demand is approximately 40,765 af/yr. Given that several of the participants have an immediate need for additional water and significant levels of projected future demands, the DEIS needs to state in detail why the demands will rise for all the alternatives compared to existing conditions. The demands presented in DEIS appear to be designed to meet and exceed available supplies, and not represent demands that were determined by analysis.

- The last paragraph states that "There would be some days under all of the alternatives at all three locations when flows would increase, which is due to changes in the timing of spills from Lake Granby." Table 14 also shows percentages of flow increases below Windy Gap. This information is inaccurate and misleading, as the report also discusses in Section 7.4.1.1 (page 84) that the model overestimates probable actual WGFP pumping that would later spill due to a lack of a forecasting tool in the model. This section should be modified to specifically reflect the overestimation of flow increases due to the model.
- This section also presents information about how often the streamflow doesn't change. While this is useful information, it is much more significant and appropriate to also have a thorough discussion of the flow changes during the days of pumping.
- The DEIS must include a detailed presentation of information regarding any increases in duration of minimum flow conditions at various locations on the Colorado River. The Windy Gap project is subject to meeting minimum flow conditions at certain locations. The DEIS needs to report the frequency and duration of flow conditions at or below these minimums under the Existing Conditions and each of the alternatives.
- Table 14, on page 63 The title states "Colorado River at Hot Sulphur Springs and Kremmling," but does not explain if the percent of flow changes are identical at both locations.

Page 65, 3rd paragraph from bottom This paragraph states "Therefore, under Existing Conditions and the No Action alternative, Windy Gap diversions would be limited or curtailed in most wet years." This statement is not consistent with Tables 18 and 20. These tables show Windy Gap Adams Tunnel diversions under Existing Conditions being fairly similar in average (11,500 af) and wet (12,081 af) years. However, under the No Action alternative, Windy Gap deliveries jump from 10,910 af in average years to 29,879 af in wet years. This represents a 274% increase, which is not considered "limited."

Page 69 This page discusses the assessment of evaporation among Windy Gap and CBT water in the reservoirs. It states that pre-positioning CBT in Chimney Hollow would be subject to a different evaporation rate than if it was stored in Granby, which is true. Table 16 shows that evaporation at Lake Granby would be reduced (418 af/yr average) between the Existing Condition and the Proposed Action, which makes sense since Granby elevation and content are both projected to be lower. However, the table also shows evaporation in Chimney Hollow increasing by only 356 af/yr. This cannot be accurate, as the gross evaporation rate at Chimney Hollow is much greater than at Granby. This section should summarize the projected evaporation of CBT and Windy Gap water separately at each facility under each alternative. Also note that the word "Hollow" is missing in the middle paragraph (which states "Long term storage of C-BT water in Chimney [sic] Reservoir...")

Table 17, page 70 This table is incorrect, as it shows that CBT spills increase with the Proposed Action, compared to the Existing Conditions. With pre-positioning, CBT spills should decrease, so this table inaccurately represents the actual conditions if the preferred alternative is adopted. This is likely due to the lack of adequate forecasting in the model used to evaluate effects.

Table 18: This table is flawed, with the following examples:

- Based on the information provided, the total flow available above the Windy Gap diversion should be equal to the sum of the three flow nodes above it; at Colo R below Granby + Willow Creek at confluence + Fraser River at the confluence. However, under the Existing Conditions column, the sum of these flows (168,700 af) is approximately 19,200 af less than the modeled flow above Windy Gap. There may be minor inflows and some irrigation diversions between these gages, but not as much as 19,200 af/year. Similar inaccuracies are shown for the other alternatives. We also note that a similar table in the DEIS Report (Table 3-2) fails to show any data for the Fraser River, which further adds to confusion.

- Under the Existing Conditions column, the Windy Gap diversions are shown to be 36,532 af/yr, yet the Windy Gap Adams Tunnel deliveries are only 11,500 af/year. This leaves a difference of 25,032 af/yr, which is not explained in the DEIS.
- These tables (18, 19 and 20) should also show lines for Windy Gap water into and out of storage in Granby and Chimney Hollow, water exchanged between them, as well as actual deliveries through the Adams Tunnel.

Table 20

- This table is flawed for the same reasons as Table 18 and 19
- The report states that under most wet years, Windy Gap will not be able to divert under Existing Conditions due to capacity in the CBT system. This table shows average Windy Gap Adams Tunnel deliveries of 12,081 af/yr and average Windy Gap diversions of 38,512 af/yr (under Existing Conditions). However, we note that 4 of the 5 wet years modeled were actually years that Granby spilled (Table 2), and Windy Gap yield should be nearly zero. If the model used historic hydrology (and historic spills), the average diversions and tunnel deliveries under Wet years should be nearly zero. This is important because the data presented in the DEIS under-estimates the impacts of all action alternatives.

7.2

- This section of the DEIS presents conclusions regarding groundwater conditions that are not supported by any reported evidence or analysis. For the alluvial wells in the vicinity of Lake Granby, the DEIS does not present any water level mapping or inventory of wells logs for this area indicating depth and water levels compared to the reservoir. In localized areas, along the shoreline particularly near the dam, the groundwater gradient may be from the reservoir to the alluvium, in which case changes in reservoir storage may have a significant effect on the water levels in local residential wells. This may also induce a flow of lower quality water from the reservoir into relatively sterile residential wells.
- Changes in riparian alluvium of up to 6 inches may have an adverse effect on alluvial wells depending upon the duration of the changes in the groundwater elevations. The discussion in this section is also unsupported by any data or technical analysis.
- Changes in river stage can result in a change in alluvial bank-storage, which will cause lagged changes in streamflow. While the effects of this may be minimal over most stream reaches due to the limited alluvium, the DEIS needs to address this.

7.4.1.2:

- This section needs to show much more detailed information about the reductions in streamflow during projected days of pumping, not just percent of time when flows won't change. It should present the information as both numerical changes in modeled flows compared to existing flows and as a percentage change of flow during times of pumping; under wet, average and dry conditions. It should clearly show the range of maximum daily flow changes by month at various locations (from X cfs to Y cfs). It should also discuss the frequency and duration of flows at or near the Windy Gap minimum flows as a result of the project alternatives.
- Similarly with the changes in stream depth (top of page 87) due to the reductions in flow, the report should state that the depth is reduced from a depth of X inches to a depth of Y at various locations, and not just the percentage change.
- The report should address these changes in comparison to both existing flows and to historic (pre-project) flow regimes to the extent this information can be estimated.

- This section, and all other action alternatives, need to have a table similar to Table 21 showing the monthly average and maximum streamflow before and after at various locations on the East Slope. The evaluation for West Slope streams should equal or exceed the evaluation of the source area streams.

Figures 27 and 29 (page 88) The report needs to show both the Existing Conditions and the current option on the same graph to be able to compare the changes in storage.

Table 21 This is a very helpful table, however, it is only presented for East Slope streams. This is the exact type of information that would be helpful to evaluation potential impacts to West Slope streams.

7.4.2.1:

- This section is misleading regarding changes in Granby elevations. The DEIS minimizes the changes in elevations by stating that the 18' projected are much less than the existing 90' fluctuations. However, such a change represents a 20% increase over current conditions.
- Regarding the numerous domestic wells that supply water to the homes surrounding Lake Granby, this section states "is probable that much of the ground water adjacent to the lake is from topographically higher areas surrounding the lake rather than from Lake Granby." As described above, the DEIS does not present any data or analysis to support this assertion.

7.4.3.1

- This is one of the sections that appears to present conclusions regarding changes in daily streamflow, that are likely a result of the disaggregation methodology. The results in this section are erroneous, as the methodology to generate the daily flows is flawed. A daily model would produce the best results for estimating daily flow data. At a minimum, the DEIS should use varying disaggregation factors for wet, average and dry years at the various locations (instead of the long-term average factors). See our overall concerns above regarding the use of daily disaggregation factors to evaluate effects under the DEIS.
- As with other sections of this report, this section needs to present the hard-number changes in flow, averages and maximums, for both the existing and alternative conditions. For example, the text indicates that the 2-year peak flow is 923 cfs at HSS under Existing Conditions, but does not report what the projected flow will be under No Action. Rather it deflects the information by stating that the changes will only reduce the exceedance of this flow rate "less than 1 percent." Further, a change from 3.3% exceedance to 3% exceedance is a 10% change overall – not a less than 1% reduction.
- This section should also present information about the changes to the 2-year peak flow from historic conditions, as well as Existing conditions.
- Similarly with the range of channel maintenance flows (bottom page 96), the DEIS needs to present the total number of years that such events occurred during the 47-year period. This section should also compare this information to historic hydrology.

7.5.1.2 (page 104)

- As before, this section may be misleading due to the lack of "forecasting" in the model, and the resulting increase in WGF pumping and subsequent spills from Lake Granby, that would probably not occur in reality. This section should also present information regarding the change in frequency of Granby spills, as well as the average and maximum change in spill duration. For example, if you were to summarize the information on Table D-4, it appears that Lake Granby

spills would drop from 21 years (out of 47) and roughly 1,200 total days of spill down (57 days/year during spill years) to 14 years and 880 days of spill (a reduction of 2 weeks/year during spill years) under the preferred action. Further, under Table D-11, it concludes that there will a 100% reduction of spills in the months of July and August. However, the DEIS needs a comprehensive explanation of the changes to Granby spills, rather than the bits and pieces of tangential information.

- This section needs to present much more actual projected daily flow changes on an average and maximum basis, in addition to the monthly and annual averages. Similarly, what are the projected maximum daily changes in river stage (depth), in addition to the monthly averages.
- Figures 31 through 34 should also present historic hydrology.

7.5.1.3

- The current Windy Gap water rights do not allow for storage in Chimney Hollow. The participants will need to change their water rights in Water Court to allow for such storage. The fact that "There are no decreed storage limits in Chimney Hollow Reservoir" and the discussion on Granby/Chimney Hollow operations (page 110) indicate that such a change of operations is contemplated. Therefore, terms and conditions in the water rights decree may be necessary to prevent injury to other water rights.
- The discussion regarding changes in Lake Granby should also show, similar to Figures 35 and 36, the projected elevation changes during wet and dry years. Figure 37 should also show the same information for the Existing Condition to compare the proposed changes.

Sections 7.5, 7.6 and 7.7 Many of the comments from Section 7.4 (No Action) also apply to these sections. These sections needs to present much more detailed information regarding specific changes in flow and stage, duration of changes, etc., to accurately identify the impacts. Tables such as Table 24 for the East Slope streams should also be presented here.

Section 7.9 As described above, the original Windy Gap Project anticipated a firm delivery of 3,000 AF to Middle Park WCD. Any changes to the project as a result of the WGFP should fulfill the original obligation of the project, and 'firm up' Middle Park's 3,000 af/year prior to any additional deliveries to the East Slope.

Section 8.2.1, page 144 This section is highly misleading regarding Urban Growth in Grand and Summit Counties. The information presented here is total projected water demands, where only a small percentage of these demands will be consumptively used. The return flows from these uses will return to the river system immediately and over the next several months. This results in an inaccurate comparison to Windy Gap or Moffat diversions – which are 100% depletive to the Colorado River system.

Section 8.3 See discussion above regarding the Shoshone call reduction in the Future Conditions model. This is a long-term agreement that very likely will be implemented in the future, and needs to be included in the modeling and comparison of alternatives.

Section 8.4.2:

- The section indicates that "downstream demands would increase in the future" (page 148). The DEIS provides no information or basis to support this assertion. We believe that it would be accurate and appropriate to state that the projected additional depletions of water upstream of these demands (from WGFP, Moffat, etc.) will reduce the water supplies to these demands, resulting in an increase in administrative calls in the future.

- Based on the information in the DEIS, it is highly unlikely that the flows at HSS will increase 25% of the time in the future. The cumulative effects section discusses the projected additional depletions upstream of this gage from the WGFP, Moffat and some minor increases in Grand County consumptive uses. This conclusion may be significantly inaccurate, and inappropriately presents the results of the project. Alternatively, this is solely a result of the lack of forecasting in the model which shows an increase in flows due to Windy Gap water that is pumped and then later spilled at Lake Granby – which is not realistic.

Section 8.4.2.2 The last full paragraph (page 151) states that the cessation of irrigation under the Big Lake ditch by Denver Water “would result in approximately 8,800 AF/year less depletion and a corresponding increase in flows on average in the Williams Fork River...” It would be helpful to present an estimate of the NET increase to the Colorado River from the reduction in consumptive uses associated with the cessation of irrigation under this ditch. This section implies that there is an increase in flows of 8,800 af/year to the river system. While this may be accurate for flows in the Williams Fork, it is not an accurate representation of flow changes to the Colorado River system. The cessation of irrigation under this ditch will result in an increase in yield to the Denver Water system from both a reduction of bypasses at the upstream Jones Pass collection system, as well as increased water supplies for storage at Williams Fork Reservoir. The additional water stored in Williams Fork Reservoir will be used to offset additional depletions at either the Moffat Collection System or Dillon Reservoir. Thus, there is no net gain to the Colorado River downstream of the Blue River and an actual loss in streamflow to the Fraser and Blue Rivers. This section of the DEIS needs to present a detailed summary of the changes to the Denver Water system and the resultant additional depletions to the Colorado River. This is another example of why the EIS evaluation for both projects needs to be combined and evaluated using a daily model.

Section 8.4.2.6

- The gains represented in Table 29 by the Shoshone call relaxation agreement are an excellent example of why the model used to evaluate impacts to the West Slope needs to a) be extended through at least 2005, and b) include the implementation of this agreement. Further, as the Shoshone relaxation benefits both the WGFP and the Moffat Expansion Project, both should be evaluated using the same model.
- This section does not explain why the model did not include this agreement in the Future Conditions. Both of the above factors may understate the projected impacts to the West Slope.
- Table 29 indicates that Windy Gap realized additional yields of 7,850 af from the Shoshone agreement in 2003. This would mean that Windy Gap diverted approximately 56,350 af under its own water rights. This total volume is approximately 2.5 times the previous maximum diversions of 21,900 af/year (1992), which would appear to be highly unlikely given the drought conditions that were occurring in 2003. This section should provide additional information regarding how the values shown in Table 29 were determined. Further, the DEIS should state what the increases were to CBT diversions, which either occurred as a result of diversions under the CBT direct-flow right or from additional storage at Granby that was not replaced by the CBT pool in Green Mountain Reservoir.
- The Summary on page 158 indicates that, based on historic information and the forecasting criteria, the Shoshone call reduction agreement may have been enacted in “1 out of every 6 to 7 years” during the modeling period. Given this frequency of occurrences, this foreseeable action should be included in the modeling for the WGFP.

Tables 30 – 32:

- Many of the same comments for Table 18-20 also apply to these tables

- These tables no longer show "Adams Tunnel Windy Gap Deliveries." The only information presented about Windy Gap operations is "Windy Gap Diversions," which also includes significant quantities of water that will subsequently spilled at Granby. This may significantly overstate the actual future Windy Gap operations.
- It would be very helpful to have two comparison columns, Existing Conditions and the modeled Future Conditions, to better understand what the action consequences are.
- These tables show an Existing Condition Windy Gap diversion of 36,532 af, and then compare all alternatives to this volume. In fact, the Existing Conditions should show a Windy Gap diversion of approximately 11,500 af/year. Because the EIS and Executive Summary also represent the "Difference" as a result of the WGFP, this is a highly inaccurate portrayal of the total project pumping and the effects of the alternatives.
- These tables should also show lines for Windy Gap water into, and out of, storage in Granby to really understand the operations.
- Table 32 shows that, during wet years, **the Cumulative Effects will deplete the flow of the Colorado River at Kremmling by an average of 157,000 AF.** This is critical piece of information regarding impacts to the West Slope, and needs to be highlighted in the DEIS and Executive Summary documents.

Section 8.7.1.3 This section should present much more detailed information regarding the effects to Rockwell/Mueller Reservoir in addition to Lake Granby. If the changes are similar to Section 7, then this should be stated in the section.

Recommended Terms for Mitigation and Approval

As you know, we assisted in the preparation of a set of criteria or conditions that should be incorporated into any approval of permits associated with the Windy Gap Firming Project. These conditions are summarized in Grand County's comment letter to the U.S. Army Corps of Engineers regarding the 404 Permit Application for the WGFP.

Please let me know of any questions regarding this information.

Very truly yours,

BISHOP-BROGDEN ASSOCIATES, INC.



Jeffrey A. Clark
Principal - Hydrologist

cc: Lurline Curran
Eric Kuhn
Stan Cazier

BBA Job Nos: 0502.00 & 0808.00



United States Department of the Interior

BUREAU OF RECLAMATION
Great Plains Region
P.O. Box 36900
Billings, Montana 59107-6900

RECEIVED

OCT 15 2001
COLORADO RIVER WATER
CONSERVATION DISTRICT

EC-1000
WTR-4.00

OCT 12 2001

Exhibit F to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

R. Eric Kuhn, General Manager
Colorado River Water Conservation District
201 Central Street, Suite 204
PO Box 1120
Glenwood Springs, CO 81602

Subject: Colorado-Big Thompson Project Operations

Dear Mr. Kuhn:

This letter concludes our responses to the issues raised in your letter of October 6, 2000, as well as in additional correspondence from the Colorado River Water Conservation District (River District) and your legal representative, Holland & Hart.

As evidenced by this Region's coordination with the Upper Colorado Region, and as we have reiterated in our ongoing meetings with you, the Bureau of Reclamation (Reclamation) takes your concerns regarding the operations of the Colorado-Big Thompson Project (C-BT Project) very seriously. In light of your allegations, we have extensively reviewed our operations and legal authorities. To more fully understand the issues involved, and as we have kept you informed, we also have had discussions with the State of Colorado's Office of the State Engineer (State Engineer's Office), the Northern Colorado Water Conservancy District (Northern District), and the U.S. Fish and Wildlife Service (Service). Given the profound ramifications of the River District's allegations, it has been necessary for our review to be extensive and thus lengthy.

We presented our technical review of C-BT Project operations on August 23, 2001, to the River District. We believe that meeting with Reclamation's Eastern Colorado and Western Colorado Area Offices, the Service, and the River District was helpful in increasing everyone's understanding of C-BT Project operations.

The C-BT Project operations are prudent and consistent with governing legal authorities. The C-BT Project is operated based on the objectives of maximizing yield, minimizing risk, and maximizing operational flexibility, consistent with Senate Document 80, as well as the repayment contract between the United States and the Northern District, general Reclamation law, the Colorado River compacts, and the Endangered Species Act. However, as discussed in more detail below, there are some areas where Reclamation will work to improve C-BT Project operations.

Reclamation also proposes the retiming of pre-emptive spills from Granby Reservoir be examined within the context of the Coordinated Facilities Water Availability Study Phase II (CFOPS) described in the Colorado River Programmatic Biological Opinion. This, in coordination with other facility operations, may help augment the snowmelt peak in the 15-mile reach of the Colorado River.

Roles in C-BT Project Operations

As we explained at the August 28th meeting, Reclamation has the primary responsibility for scheduling the movement of water from the West Slope collection system to East Slope terminal reservoirs and the Big Thompson River. Reclamation also operates and maintains certain multi-purpose facilities and the power facilities. In addition, Reclamation forecasts inflows and develops operating plans using forecasted inflows and projected demands.

The Northern District projects monthly demands based on the forecasted East Slope water needs. They also operate and maintain under an agreement with Reclamation, non-power single purpose and certain multi-purpose facilities. The Northern District determines the method of distribution of water to end users and makes water available for delivery from the C-BT Project.

Lastly, the Colorado Division of Water Resources (through the State Engineer's Office) administers water rights, including ensuring water is diverted for beneficial use.

The Non-Charge Program

Alleged Compact Violations and Beneficial Use

The River District and Holland & Hart have made numerous allegations regarding the non-charge program. It is our understanding from previous discussions with you and from your letter of September 21, 2001, that the Colorado State Engineer and his staff have been helpful in addressing a number of the concerns raised in both your October 6, 2000, letter to Reclamation and your October 6, 2000, letter to the State Engineer. The State Engineer provided a written response to you on March 8, 2001, in addition to meeting with both the River District and Reclamation. We believe the State Engineer's letter resolves the issues raised by the River District and its legal counsel regarding alleged compact violations and related concerns regarding beneficial use of non-charge water in Colorado.

The River District's concerns regarding alleged violations of the 1922 and 1948 Colorado River Compacts turn on whether the non-charge water has been put to beneficial use in Colorado. Except in rare instances, Reclamation defers to states for enforcement of beneficial use requirements. According to the State Engineer's March 8, 2001, letter, since the 1990's the State has carefully coordinated the non-charge water releases to ensure the water would be diverted in Colorado and not flow out of the State unused. Non-charge water is released from the C-BT Project system only if a ditch or canal is drying up the stream. Further, the State Engineer's Office has advised us that the use of non-charge water meets the same standard of beneficial use as other water under the laws of the State of Colorado.

The State Engineer's Office has acknowledged that their previous diversion records on the Big Thompson, St. Vrain, and the Poudre Rivers are not complete. The State Engineer's Office has indicated it will take steps to more closely account for water diverted under the non-charge program, including recording the ditch/canal drying up the stream. While the specific changes are within the discretion of the State Engineer and his staff, Reclamation has indicated to them we support such steps.

Senate Document 80

The River District and its legal representatives allege that C-BT Project diversions from West Slope to East Slope, and East Slope operations, are not consistent with Senate Document 80. Such allegations are based on interpretations of certain provisions of Senate Document No. 80, 75th Congress 1st Session titled "Synopsis of Report on Colorado-Big Thompson Project, Plan of Development and Construction Estimate Prepared by the Bureau of Reclamation, Department of the Interior" (Senate Document 80).

The C-BT Project was authorized by a finding of feasibility by the Secretary of the Interior and approved by the President on December 21, 1937. In 1937, Congress appropriated monies for the construction of the C-BT Project described in Senate Document 80. Thus, Senate Document 80 generally is recognized as the authorizing document for the C-BT Project.

Reclamation has administered the provisions of Senate Document 80 since at least 1938. We view Senate Document 80 as existing in two parts. The part titled "Manner of Operation of Project Facilities and Auxiliary Features" ("Manner of Operation") was included in the Blue River Decrees and Reclamation considers this portion of Senate Document 80 to be mandatory. The Manner of Operation provides protection for the rights and interests of the West Slope of Colorado. Such protections come primarily from Green Mountain Reservoir and are largely independent of the operation of the West Slope collection system. Reclamation believes C-BT Project diversions from West Slope to East Slope, and East Slope operations, are consistent with the "Manner of Operation" portion of Senate Document 80.

The remaining part of Senate Document 80 is the synopsis of the supporting engineering report, "Final Report on Plans & Estimates of Colorado-Big Thompson Project" (Final Report). This part includes descriptions of the need for water in the South Platte Basin, the availability of surplus water in the Colorado River, and the facilities and operations contemplated to achieve the C-BT Project purposes. We interpret this part of Senate Document 80 to provide guidance, not exactness, on how to achieve the primary purposes of the C-BT Project. While the existing C-BT Project infrastructure differs somewhat from that contemplated, C-BT Project operations have generally followed the operational guidance in the synopsis of the Final Report.

Lastly, Senate Document 80 does not stipulate any particular method of allocation of the water diverted to the East Slope.

Supplemental Water

The C-BT Project water delivered under the Northern District's non-charge water program, allotment contracts, or other methods, is supplemental water as provided in Senate Document 80. The widely used definition of supplemental water is water delivered to users that already have another source of water, but for whom the other source is not adequate to provide a full supply of water to the lands. This interpretation is consistent with Senate Document 80 and the repayment contract between the United States and the Northern District.

Reclamation Law

Your legal representatives have stated the non-charge program does not comply with certain provisions of Reclamation law. We do not agree with this assertion. Section 220 of the Reclamation Reform Act of 1982 is not applicable to the non-charge water program, as Section 220 only applies to water in excess of ordinary quantities available from the C-BT Project that is not already under contract. The non-charge program water is not in excess of ordinary quantities and is covered by the repayment contract between the Northern District and the United States.

Likewise, the Warren Act does not apply to the non-charge water program. Non-charge water is C-BT Project water that is not in excess of the requirements of C-BT Project lands; therefore the Warren Act does not apply.

When applying the early statutes of Reclamation law, such as those enacted in 1902 and 1914, it is necessary to take into consideration the history and nature of Reclamation law. The initial emphasis of the program was for Reclamation to develop water supplies for public lands that in turn were to be opened for homesteading. The entrymen were to enter into agreements directly with the United States for repayment of the construction as well as the operation and maintenance costs of the water supply development. Over the years, Reclamation law evolved to the point where contracts for repayment were entered into with entities, such as irrigation districts, organized under state law. Where the United States has entered into a repayment contract with an entity such as an irrigation district, there is no provision of Reclamation law that directly requires an entity to enter into contracts with its users. Those provisions of early statutes were intended to apply to agreements directly between the United States and the end water user cannot reasonably be interpreted to require contracts between an entity and its users.

We would also like to point out the primary purpose of the repayment sections of the early statutes was to ensure the United States recovered the costs of constructing, operating, and maintaining the irrigation facilities. In the case of the C-BT Project, an escrow account has been established with sufficient funds to guarantee repayment of the Northern District's construction repayment obligations. The Northern District's final construction repayment installment is scheduled for fiscal year 2002.

Technical Review of C-BT Project Operations

The October 6, 2000, letter alleges the C-BT Project has been operated in a manner that is inconsistent with Senate Document 80 by failing to use the C-BT Project's East Slope water rights. The letter states Senate Document 80 contemplated the use of snowmelt runoff forecasts to determine the amount of space that should be reserved.

As stated above, the C-BT Project is operated to maximize yield, minimize risk, and maximize operational flexibility. These objectives are manifested in a number of operational considerations. In order to maximize yield, minimize the risk of shortages during extended dry periods, and minimize the risk of potentially damaging downstream flooding, Lake Granby must be properly positioned every year to maximize the capture of spring runoff from the West Slope. This requires the diversion of water to the East Slope early in the year, particularly when Lake Granby carryover storage is high.

Further operational considerations include maintaining flexibility to meet C-BT Project demands. Capacity constraints of the Adams Tunnel limit diversion of water from the West Slope to 550 cfs, while C-BT Project demands have exceeded 2,500 cfs. In addition, many of the C-BT Project's facilities are 45 to 60 years old, and maintenance outages are required. For these reasons it is imperative that the East Slope reservoir contents be high in the spring to allow for demands to be met in a variety of ways. This is particularly true in the case of Carter Lake. By virtue of its unique ability to provide water to both the northern and southern lands under the C-BT Project, it is essential that Carter Lake be nearly full early in the spring.

While these operational considerations argue for filling East Slope reservoirs early in the spring, leaving little or no storage space available, Reclamation has operated so as to capture East Slope water to the extent practicable. In many instances, diversion of West Slope water through the Adams Tunnel has been curtailed to allow for capture of East Slope water. Reclamation generally reserves storage space in East Slope reservoirs to allow for capture of East Slope water, if and when the C-BT Project comes into priority. This reservation of storage space, however, is compromised when necessary to satisfy one or more of the objectives of minimizing risk, maximizing yield, and/or maximizing operational flexibility.

While Reclamation does reserve space in its East Slope reservoirs for capture of East Slope priority water, it does not typically reserve sufficient space to capture all available water in very wet years. This primarily is due to the various system capacity constraints, in particular the 550 cfs capacity of the Adams Tunnel mentioned above. Reclamation can only prudently reserve East Slope reservoir storage space to the extent it can be made up by diversions through the Adams Tunnel should East Slope priority water not materialize, or to the extent East Slope priority water can be accurately forecasted.

March and April snowpack data and assumed average precipitation for the runoff period are used to forecast reservoir inflow. Because of the very junior nature of the C-BT Project East Slope water rights, the April to July inflow to Lake Estes must reach approximately 120 percent of average for more than 5,000 acre-feet of East Slope water rights to be in priority. This type of

very wet year is generally the result of well above-normal late season precipitation. However, Reclamation's March and April forecasted inflows do not reliably account for heavy late season precipitation. Currently, existing technology does not allow for more precise forecasting of late season precipitation. Unless new technology is developed, substantially improving late season forecast capability, it is not prudent to rely upon these forecasts to make additional East Slope storage space available. Also, when the C-BT Project East Slope water rights are in priority to store, demands are substantially lower than projected. Thus, less water is released and therefore less space made available for East Slope storage than was projected would be available.

It is our understanding from the August 28th meeting and previous discussions that your technical concerns regarding East Slope operations and many of your concerns regarding the non-charge program have been addressed by Reclamation and the State Engineer's Office. We hope this letter answers the River District's remaining concerns with our operations and the non-charge program.

Actions Taken and Planned to Improve Operations

As mentioned above and during our meeting, Reclamation will implement adjustments to C-BT Project operations such as improved communication and coordination as follows and other steps as follows. We have met with the State Engineer's Office and have agreed to communicate and coordinate more closely with them. We believe increased coordination may improve water measurement and accounting for the C-BT Project. We also believe it may allow for quicker response to rainfall events within the Big Thompson River watershed, which may result in some additional capture of East Slope priority water. In addition, as suggested in your September 21, 2001, letter, we will document the prior year's storage of East Slope water and steps to improve forecasting in the Annual Operating Plan.

In the runoff forecasting area, we will strive to improve the accuracy of our forecasts and to more effectively use them in planning operations. We intend to pursue new methods for better predicting late season precipitation and to increase the existing data collection network. In out-year budgets we will make every effort to ensure there are funds for additional SnoTel sites on both the East and West Slopes and for the installation of weighing buckets for measuring cumulative precipitation at several sites within the Big Thompson River watershed. The data obtained from these additional sites will allow us to continually monitor snowpack and precipitation conditions, thereby permitting quicker operational response to changing conditions.

Coordinated Facilities Water Availability Study Phase II

During the August 28th meeting, we presented technical information regarding West Slope operations. Reclamation also proposed the retiming of pre-emptive spills from Granby Reservoir to add to the spring peak flows for the 15-Mile Reach of the Colorado River be examined within the context of CFOPS. You expressed interest in releases from Granby Reservoir and requested analysis in addition to that which we proposed.

As you know, the Final Programmatic Biological Opinion for Bureau of Reclamation's Operations and Depletions, Other Depletions, and Funding and Implementation of Recovery Program Actions in the Upper Colorado River Above the Confluence with the Gunnison River (PBO) describes the intent of CFOPS initiated under the Colorado River Recovery Program. As stated in the PBO, the intent of the study is to "... assess water management facilities and operations that can be coordinated to benefit fish habitat primarily during the spring peak." Another stated intent is to provide additional water up to about 20,000 acre-feet per year for spring peak flow enhancement, "... without diminishing project yield or causing project sponsors to incur significant costs." Any additional analysis of potential scenarios to change West Slope operations would be evaluated against the parameters set for the CFOPS Study in the PBO.

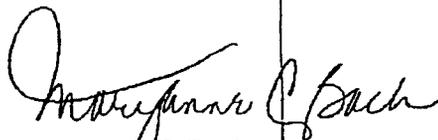
As mentioned in the August 28th meeting, we anticipate that retiming of pre-emptive releases and/or additional releases from storage will increase the likelihood of inundation downstream of Granby Reservoir under certain circumstances. Ramifications of any such inundation must also be part of any analysis. We appreciate your agreement to work with us to pursue an in-depth examination of the inundation issue. Both the proximity of structures and channel capacity will need to be analyzed. We would appreciate being included in discussions you have with the Colorado Water Conservation Board, or others, on this issue.

In your September 21st letter and in our meeting, you focused on the concept of risk as it relates to implementing the PBO. As Reclamation pointed out in the meeting, any analysis of risk is subjective. We have also emphasized risk is only one of three factors we consider in operating the C-BT Project.

You and Duane Helton have also requested a copy of the slides from our presentation at the August 28th meeting as well as related data. We would like to proceed by setting up a meeting with the CFOPS group to present our technical information. Thereafter we will provide the slides and related data to them, with a copy to you.

In summary, C-BT Project operations are prudent and consistent with governing legal authorities. We hope through this letter, our presentation, and the ongoing discussions our two organizations have had, the River District better understands that the C-BT Project is being operated appropriately and that CFOPS can now proceed with evaluating the remaining C-BT Project alternatives.

Sincerely,



Maryanne C. Bach
Regional Director

cc:

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COLORADO RIVER WATER CONSERVATION DISTRICT

Protecting Western Colorado Water Since 1937

October 27, 2006

Exhibit G to
CRWCD's 12/29/2008
Comment Letter
regarding
WGFP DEIS

Via E-Mail

Hal D. Simpson, State Engineer
Colorado Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

Re: Windy Gap Firming Project

Dear Mr. Simpson:

Thank you for meeting with representatives of the Colorado River Water Conservation District (the "River District"), the Middle Park Water Conservancy District, Grand County, and Trout Unlimited to discuss our questions and concerns about the proposed Windy Gap Firming Project ("WGFP"). We discussed that, in conjunction with its preparation of an Environmental Impact Statement on the WGFP, the Bureau of Reclamation has asked that you answer the following questions (paraphrased):

1. Can the WGFP alternatives can be administered under the current water rights decreed to the Windy Gap Project; and
2. If not, what changes would be necessary in order to select any of the five alternatives for implementation?

In response to both questions, the River District maintains (a) that none of the WGFP action-alternatives can be administered unless a formal change decree is adjudicated for the Windy Gap Project water rights and; (b) that the pre-positioning concept cannot be implemented without a change to the C-BT Project water rights. The primary reasons are:

1. All action-alternatives involve the un-decreed storage of direct flow water rights, which requires a change of water rights adjudication to determine if there will be an expansion of the existing water rights decreed to the Windy Gap Project; and

2. The project alternative that relies on the “pre-positioning” concept would violate the Blue River Decree because (a) C-BT Project water is not decreed for storage in the pre-positioning-reservoir (i.e., the proposed Chimney Hollow Reservoir), and (b) the Blue River Decree specifies that C-BT Project water is to be delivered to the Northern Colorado Water Conservancy District at Horsetooth Reservoir and Carter Lake, not a new, non-federal reservoir such as Chimney Hollow.

I. The WGFP Alternatives Would Unlawfully Store Direct Flow Water Rights.

A. The Purpose of the WGFP is to Increase Transmountain Diversions from the Colorado River.

The current Windy Gap Project is a non-federal project owned and operated by the Municipal Subdistrict of the Northern Colorado Water Conservancy District that relies on the federal C-BT Project for conveyance and delivery of West Slope water to Colorado’s northern Front Range. The project is comprised of a small reservoir with a large pumping plant and pipeline, located on the Colorado River (downstream of the C-BT Project collection facilities) in Grand County. Project diversions at Windy Gap Reservoir (essentially, a forebay for the pumping plant) are conveyed to the Front Range via C-BT Project facilities (Granby Reservoir, Shadow Mt. Reservoir, Grand Lake, and the Adams Tunnel). Windy Gap pumps water only when: (1) its relatively junior water right is in priority; and (2) excess space is available in the C-BT Project’s Granby Reservoir and Adams Tunnel to convey the water to its users.

The Municipal Subdistrict’s desire to firm the yield of Windy Gap is based in large part on the fact that Windy Gap normally is able to divert only in average water years. In dry years, the Project’s junior water rights are not in priority to divert. In wet years, there is little or no excess capacity available in the C-BT Project facilities to convey Windy Gap water. The Bureau of Reclamation’s September 2005 “Purpose and Need Report” for the WGFP states that the project diverted zero water in seven of the last 20 years of operation.¹

The Municipal Subdistrict has proposed a variety of means to improve the yield of the Windy Gap Project. All action-alternatives being analyzed by Reclamation involve the use of approximately 90,000 acre feet of storage space in one or more proposed reservoirs. The Municipal Subdistrict’s preferred alternative is to build the additional storage on the Front Range at Chimney Hollow, in combination with the concept referred to as “pre-positioning”. Pre-positioning would involve storing federal C-BT Project water in the non-federal Chimney Hollow Reservoir in order to create additional space in the C-BT Project’s Granby Reservoir and Adams Tunnel for purposes of conveying non-federal Windy Gap Project to the Front Range. The pre-positioned C-BT Project water in Chimney Hollow would “convert” to Windy Gap Project water when Windy Gap pumps

¹The Bureau of Reclamation’s September 2005 “Purpose and Need Report” for the WGFP can be found at http://www.usbr.gov/gp/eca/wgfp_final_purpose_need_0905.pdf.

under its junior priority into Granby Reservoir. Simultaneously, the Windy Gap Project water pumped into Granby Reservoir would “convert” into C-BT Project water. In this manner, the pre-positioning reservoir would act as a new storage facility for both the C-BT Project and the Windy Gap Project.

Each of the action-alternatives would significantly increase the volume and frequency of the project’s transmountain diversions from the headwaters of the Colorado River and would change the operation of the Windy Gap Project in ways not contemplated by the original agreements, authorizing documents, and water right decrees that govern the project. In addition, the pre-positioning alternative would change the operation of the C-BT Project in ways not contemplated by the Blue River Decree or the C-BT’s “operational bible,” Senate Document 80.²

B. The Windy Gap Water Rights may not be Stored Without Adjudicating a Change of Water Right.

1. *The Windy Gap Project is Decreed for Only 11,000 Acre Feet of Storage in the Conditional Jasper Reservoir.*

The Subdistrict suggests that it is not necessary to obtain a storage decree to store the direct flow Windy Gap water rights in any of the proposed new storage alternatives. To the contrary, a review of the existing Windy Gap water rights and of long-standing legal principles demonstrates that a new storage appropriation or a change of water rights decree is necessary to implement any of the WGFP action-alternatives.

The Windy Gap project operates under the following decrees³:

- Civil Action No. 1768, Grand County District Court.
 - a. Windy Gap Pump, Pipeline and Canal: 300 c.f.s. (made absolute in Case Nos. 88CW169 and 89CW298).
 - b. Windy Gap Reservoir: 1546.14 acre-feet, conditional (445 acre-feet made absolute in Case No. 88CW169).
 - c. Jasper Reservoir: 11,292.58 acre-feet, conditional.
 - d. Jasper Pump and Pipeline, 300 c.f.s., conditional.
- W-4001, District Court, Water Division 5.
 - a. Windy Gap Pump, Pipeline and Canal, First Enlargement: 100 c.f.s. (made absolute in Case No. 89CW298).

²SD 80 has the force and effect of a federal statute. *See Colorado River Storage Projects Act*, 43 U.S.C. § 620j; *Public Service Company v. Federal Energy Regulatory Commission*, 754 F.2d 1555 (10th Cir. 1985). A copy of Senate Document 80 is attached.

³Copies of the Windy Gap Project water right decrees are attached.

- 80CW108, District Court, Water Division 5.
 - a. Windy Gap Pump, Pipeline and Canal, Second Enlargement: 200 c.f.s. (made absolute in Case No. 89CW298).

Thus, the Windy Gap Project water rights consist of a total of 600 c.f.s. absolute direct flow rights and 445 acre-feet absolute storage rights. Clearly, the original project was planned and decreed with an 11,292 acre foot West Slope storage component (the conditional Jasper Reservoir). All features of the project, including the conditional Jasper Reservoir, were planned, decreed, and permitted as “an integrated project.”

The subject water rights are components of the Windy Gap Water System, which is an integrated project also known as the Windy Gap Project. The Project water components consist of the Jasper Pump and Pipeline, Jasper Reservoir, Windy Gap Pump, Pipeline and Canal, and Windy Gap Reservoir.

Decree, Case No. 89CW298, District Court, Water Division 5, para. 11.a.

It is important to point out that Jasper Reservoir was decreed to be located on Willow Creek, a tributary of the Colorado River, but that the decreed source of water for Jasper Reservoir was both Willow Creek *and the Colorado River*. In other words, the Municipal Subdistrict recognized that the available yield of Willow Creek was not sufficient to fill Jasper Reservoir, so the project contemplated that the reservoir would be filled primarily by diversions from the Colorado River via the Jasper Pump and Pipeline. Storage has therefore always been contemplated as an “integrated” component of the Windy Gap Project – however, the contemplated storage was limited to the 11,292 acre feet conditional Jasper Reservoir.

The Municipal Subdistrict now wants to obtain the benefit of storage by “integrating” 90,000 acre feet of new storage into the project to increase the yield, even though a 90,000 acre foot storage component (particularly one on the Front Range) is neither specified nor contemplated in the “integrated” Windy Gap decrees.

2. *There are Two Distinct Types of Surface Water Rights in Colorado: Storage and Direct Flow.*

It has long been established under Colorado law that a decree granting a priority right for direct flow diversions does not authorize the use of that right for storage purposes. See e.g., *New Loveland & Greeley Irr. & Land Co. v. Consolidated Home-Supply Ditch & Res. Co.*, 62 P. 366 (Colo. 1900); *Greeley & Loveland Irr. Co. v. Huppe*, 155 P. 386, 388 (Colo. 1916); *Hollbrook Irr. Dist. v. Ft. Lyon Canal Co.*, 269 P. 574, 581 (Colo. 1928); *Handy Ditch Co. v. Greeley & Loveland Irr. Co.*, 280 P. 481, 482 (Colo. 1929); *City and County of Denver v. Northern Colorado Water*

Hal D. Simpson, State Engineer
October 27, 2006
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Conservancy Dist., 276 P.2d 992, 999 (Colo. 1955); and *Board of Arapahoe County Comm'rs v. Upper Gunnison River Water Conservancy Dist.*, 838 P. 2d 840, 852 (Colo. 1992). This is the case even if the same ditch diverting the decreed direct flow right is used to fill the reservoir. *New Loveland & Greeley, supra*, 62 P. at 368.

In *City and County of Denver v. NCWCD, supra*, the Colorado Supreme Court rejected Denver's contention that direct flow and storage rights were interchangeable. In that case, Denver sought a conditional direct flow right to divert 1,600 c.f.s. out of the Blue River for delivery to the Front Range through the Roberts Tunnel. The amount sought was twice the capacity of the Roberts Tunnel, so the water court denied Denver's claim to the extent it exceeded the tunnel's capacity. *City and County of Denver v. NCWCD*, 130 Colo. at ___, 276 P.2d at 998. On appeal, Denver argued that the excess amount was appropriate because it would be "temporarily stored" in a "forebay" reservoir (i.e., Dillon Reservoir). *Id.* The Court soundly rejected Denver's attempt to adjudicate a direct flow claim for water that actually was in storage, stating that direct flow rights and storage rights are distinct types of water rights in Colorado. *Id.* at 388, 999. To reiterate its point, the court added the important principal that:

To the amount that water when available is to be diverted to its use, a direct use decree must be sought. To the amount that it is to be held in a reservoir for later use, a storage decree must be sought.

Id. at 388, 999. (Emphasis added).

The reason two distinct types of water rights are recognized is to prevent injury to other appropriators that would result from the potential expansion of use if direct flow water rights are stored for later use. *City of Thornton v. Bijou Irrigation Co.*, 926 P.2d 1, 26 n.12 (Colo. 1996). In the *Thornton* case, the Colorado Supreme Court stated that:

Whether water diverted pursuant to a decree is used immediately or stored for future use affects the potential impact of the diversion on other water users, and adequate notice of each particular right sought is required. The right to store water is not an automatic incident of the right to a direct use diversion.

Id. (citation omitted).

Similarly, in *Danielson v. Jones*, 698 P.2d 240, 246 (Colo. 1985), the supreme court held that Jones' resume notice that requested a water right for "domestic, stock, and irrigation purposes" but did not reference storage was not sufficient to provide notice that the applicant also sought judicial recognition for fish culture and storage uses. *Id.*

3. *Water Rights Must be Adjudicated to be Administered.*

As discussed above, the decrees for the Windy Gap Project contemplate storage only at Windy Gap Reservoir (absolute, in the amount of 445 acre-feet) and Jasper Reservoir (conditional, in the amount of 11,292 acre feet). Unless adjudicated, the storage of Windy Gap Project water in a new un-decreed reservoir cannot be administered. The project also stores water temporarily in Granby Reservoir as a conveyance mechanism.⁴ In order to obtain the benefits of administration and to secure a priority enforceable against junior appropriators, a water user must obtain an adjudicated water right decree. *Trail's End Ranch v. Colorado Division of Water Resources*, 91 P.3d 1058, 1061 (Colo. 2004). The statutory duties of state water officials require them to administer the waters of the state in accordance with decreed priorities. *Shirola v. Turkey Cañon Ranch L.L.C.*, 937 P.2d 739, 744 (Colo.1997). Without a water right decree, a diverter has no right to request state officials to call out junior uses to satisfy its own use. *Id.*

Accordingly, if Windy Gap diversions from the Colorado River are intended to be stored in a new reservoir, they must be conducted in accordance with a water rights decree in order to be administered as against junior appropriations. The additional 90,000 acre feet of storage proposed to be incorporated into the Windy Gap Project is not included in the Windy Gap decrees, so a new storage appropriation or a change of the existing Windy Gap water rights would be necessary to administer any of the WGFP action-alternatives.

4. *A Change of the Windy Gap Water Right is Necessary Regardless of the Location of the New Storage Reservoir.*

The storage of a direct flow water right is statutorily defined as a "change of water right" and can be accomplished only through a formal change of water rights adjudication:

"Change of water right" means a change in the type, place, or time of use, a change in the point of diversion, a change from a fixed point of diversion to alternate or supplemental points of diversion, a change from alternate or supplemental points of diversion to a fixed point of diversion, a change in the means of diversion, a change in the place of storage, *a change from direct application to storage and subsequent application*, a change from storage and subsequent application to direct application, a change from a fixed place of storage to alternate places of storage, a change from alternate places

⁴Use of Granby Reservoir is to convey water pumped by the Windy Gap rights through C-BT Project facilities to the Front Range. All Windy Gap water in Granby Reservoir is subject to spill to protect C-BT operations, at the discretion of the United States. See Reclamation's September 2005 "Purpose and Need Report" for the WGFP, pg. 6-9; see also the March 1, 1990, Amendatory Windy Gap Carriage Contract, Contract No. 4-07-70-W0107, paras. 4(b), 4(c), and 11(c). A copy of the Amendatory Windy Gap Carriage Contract is attached.

of storage to a fixed place of storage, or any combination of such changes. The term "change of water right" includes changes of conditional water rights as well as changes of water rights.

C.R.S. § 37-92-103(5). (Emphasis added).

Water users are entitled to change their water rights; however, like the original decree, the change must be adjudicated. *Trail's End Ranch*, 91 P.3d at 1061. In Colorado, adjudication of a change of water rights is not discretionary. It is mandatory. *Id.* at 1063 (citing *Empire Lodge Homeowners' Ass'n v. Moyer*, 39 P.3d 1139, 1147 (Colo. 2001)). Even if it seems clear that no other water rights can be affected by the particular change proposed, the change must be adjudicated, and the court must determine that the existing appropriation will not be enlarged. "Far from a mere formality, the adjudication of changes to [a water right] provides an important protection for potentially affected decreed water rights holders." *Trails End Ranch*, 91 P.3d at 1063.

The prohibition against the expansion of historical diversions applies even if the increased diversions stay within the originally decreed amounts. *Empire Lodge*, 39 P.3d at 1156 ("[t]he enlargement doctrine prohibits an appropriator from expanding its historical appropriation, for example, by developing new lands for irrigation while continuing to irrigate the lands historically irrigated under the water right."), citing *In re Application of Midway Ranches Property Owners Ass'n*, 938 P.2d 515, 523 (Colo. 1997). Here, the express purpose of the WGFP is to use new storage space to increase the Windy Gap Project's transmountain diversions.

Nothing in Colorado law exempts transmountain water rights from the requirement to adjudicate a change of water right. This is true regardless of whether the change is a change in point of diversion of the transmountain right or a change from direct flow to storage. Moreover, the location of the proposed change (i.e., in the basin of origin or the basin of use) is not relevant. In either case, a change of water right adjudication is required to determine whether terms and conditions are necessary to protect other water users that rely on the same source of supply from a potential enlargement of use – this is true even when it is apparent that there will not be any injury from the proposed change.

It is well established that a transmountain diverter is entitled to use, reuse and consume the imported water. C.R.S. § 37-82-106(1). It is also well established that appropriators in the receiving basin have no right to claim injury due to a change in the pattern of return flows of transmountain water. *City of Florence v. Board of Water Works of Pueblo*, 793 P.2d 148 (Colo. 1990). In the *Florence* case, the issue was whether the water court was required to include a retained jurisdiction clause in the decree adjudicating exchanges in Water Division 2 of Pueblo's transmountain (Division 5) water rights. The supreme court stated that the retained jurisdiction provision did not apply because the claimed exchanges were appropriative rights in the Arkansas River basin, not changes of transmountain water rights. In *dicta*, the court noted that appropriators of transmountain water may change the time, place, or manner in which transmountain waters are used, even if junior users

in the *basin of use* are adversely affected. *Id.* at 154. The question of injury to water users in the *basin of origin* was not at issue in the case. However, the court still found it important to point out that the claimed exchanges would not increase the amount of transmountain water diverted from the Colorado River basin into the Arkansas River basin. *Id.* at 152.

In contrast to cases where the issue is the alleged impact to water users in the basin of use, a change of a transmountain water right always has the potential to injure water users in the basin of origin. The reason is simple – any change that increases the amount diverted under a water right has the potential to injure existing water users that rely on the same source of supply. The Municipal Subdistrict relies on *Twin Lakes Reservoir and Canal Co. v. Aspen*, 569 P.2d 45 (Colo. 1977) to suggest that a change of water rights adjudication is not necessary to store the direct flow Windy Gap Project water rights in a new reservoir on the Front Range because, *once diverted*, the transmountain Windy Gap diversions are one-hundred percent consumptive to the West Slope. That argument begs the questions of (1) whether the new storage on the Front Range creates a change in the conditions that existed when the water rights were first appropriated; and (2) whether the new conditions would allow the Windy Gap water rights to be diverted at different times and in greater amounts than would exist under the conditions that existed when the water rights were first appropriated and decreed.

In fact, the *Twin Lakes* case is a good example of a change of water right adjudication in which the central question was whether the proposed change would injure water users in the basin of origin. In that case, the Twin Lakes company sought a change in the type of use (from agricultural to municipal) of transmountain diversions. The water court granted the change of water rights subject to volumetric limits that reduced the total amount divertable by the subject water rights. The Colorado Supreme Court outlined the distinction between an in-basin change case and a transbasin change case as follows:

In the consideration of change of points of diversion and of use, we are accustomed generally to situations in which the water remains in the same watershed. In such cases, two of the primary factors to be considered are any change in the consumptive use of the water and any change in the return flow to the stream from irrigation. In contrast, *once* the [Independence Pass Transmountain Diversion System] water flows into the transmountain diversion tunnel, so far as Western Slope users are concerned, there is a 100% consumptive use. . . [T]here is a single issue here: *Will the appellants and others holding junior priorities be injured because more IPTDS water will go through the tunnel and be lost to Western Colorado under the municipal use than would be the case in the future without the change of use?*

Twin Lakes v. Aspen, 568 P.2d at 50. (Emphasis added).

The court found that the potential injury did not result because the water court's decree included terms and conditions that protected West Slope water rights from an expansion of the IPTDS. In so finding, the court stated:

It should be borne in mind that the municipalities who are going to use this water do not have a right to a steady flow of [transmountain] water. Rather, they are subject to the same limitation as the Company has been in the past . . . To us, a very important factor in this proceeding is the stipulated and decreed volumetric limitation, operating annually and on a ten-year running average. The water court found that the volumetric limitations constitute a reduction from the contemplated draft of the original appropriation. The evidence sufficiently supports this conclusion with the result that the change of use is not improper.

Id.

Thus, in addition to being an example of proper adjudication of a change decree in the context of a transmountain diversion, the *Twin Lakes* case establishes both that (1) changes in transmountain water rights may be allowed only upon a showing that terms and conditions are sufficient to prevent injury; and (2) volumetric and other limits that reflect the historical diversions associated with the decreed water right are appropriate even if they reflect a reduction of the contemplated draft in the original decree.

The potential impact to water users in the basin of origin was also the primary issue in *Cities of Aurora and Colorado Springs v. Division 5 Engineer*, 799 P.33 (Colo. 1990). In that case, the supreme court held that changes of transmountain water rights should be encouraged if they will result in more efficient use of water, but that water rights in the basin of origin must be protected from the proposed change:

If a holder of a decreed water right can put the water to better use by obtaining an amendment to the decree, such conduct should be encouraged if the proposed change will cause no injury to other users or owners of water rights. However, it is also clear that water courts exercise broad authority to provide all holders of water rights with protection of their interests in proceedings initiated to change decreed water rights.

Id. at 37.

Thus, even if no harm from the proposed change is readily apparent, the question of potential injury to water users in the basin of origin is a determination that must be made in the context of a proper water court adjudication. *Trails End Ranch*, 91 P.3d at 1063.

C. The Proposed New WGFP Reservoir is not “Terminal Storage.”

None of the proposed WGFP reservoirs are analogous to an end-user putting “delivered” water into a terminal storage facility. “Terminal storage” is not a defined term but generally refers to a relatively small amount of storage space located close to the ultimate place of use. See *Thornton v. Bijou*, 926 P.2d at 26, n. 10. The purpose of terminal storage is not to increase the yield of the water right that delivers water to the end-user but instead is used to provide “internal” management of the end-user’s individual water system. For example, a municipality might take delivery of water from the Windy Gap Project and put that water into a small terminal storage facility located adjacent, or at least relatively close, to its raw water treatment plant. The municipality can use the terminal facility to regulate the flow into its treatment facility to meet the fluctuating demands of its customers. In contrast, the specific purpose of the proposed WGFP reservoirs is to increase the yield of the Windy Gap Project.

The fact that some of the proposed WGFP action-alternatives would include new storage reservoirs located on the West Slope demonstrates that the purpose of the new storage is not simply to manage the end-users’ water supply. The proposed Chimney Hollow Reservoir alternative would serve the same purpose as the alternatives that propose new West Slope reservoirs – increasing the project’s yield. Thus, Chimney Hollow Reservoir would not be a “terminal storage” facility simply because it would be located on the Front Range.

D. The Windy Gap Decrees are Limited by the Issues they Resolved.

The Windy Gap Project water rights are defined and limited by the specific issues and facts presented to the Division 5 Water Court when the rights were decreed:

[A] decree is not woven of thin air; it is a determination of a specific issue presented to the court. It is grounded on the facts creating that issue; and, where construction is necessary, it must be construed in the light of the facts which gave it birth and limited by the issue it resolved.

Orchard City Irr. Dist. v. Whitten, 146 Colo 127, ___, 361 P.2d 130, 135 (1961).

Like all water rights, the Windy Gap decrees are limited by the issues resolved in those decrees. The facts that gave rise to the Windy Gap decrees and the facts that existed during the formation of the integrated Windy Gap Project did not include storage facilities other than Jasper Reservoir. That is why the decrees for the Windy Gap Project do not mention or contemplate 90,000 acre feet of storage as a way to increase the project’s yield. The only pertinent storage contemplated and resolved at the time the Windy Gap decrees were entered was for 11,000 acre feet at the conditional Jasper Reservoir. Thus, none of the WGFP action-alternatives can be interpreted as administrable under the project’s existing water right decrees. The proposal to add 90,000 acre feet

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of storage to the project as a way to increase the yield of the existing water rights therefore requires a formal change of water rights adjudication.

Questions likely would arise during a change of water rights proceeding, including the effect of the existing volumetric limits on Windy Gap project diversions. Another pertinent issue in any change adjudication would be whether the Municipal Subdistrict must demonstrate whether the new project facility (regardless of which WGFP action-alternative is selected) will meet the mitigation requirement of the Water Conservancy Act. That statute requires that water conservancy districts provide specific mitigation for water diversions from the Colorado River basin to ensure that "the present appropriations of water, and in addition thereto prospective uses of water...will not be impaired nor increased in cost at the expense of the water users within the [Colorado River] basin." C.R.S. § 37-45-118(1)(b)(II).

The Municipal Subdistrict may argue that it does not plan to divert more than the existing volumetric limits for the Windy Gap Project. The existing volumetric limits are incorporated into the project's decrees by reference to the "Agreement Concerning the Windy Gap Project and Azure Reservoir and Power Project" dated April 30, 1980, as amended March 29, 1985 (collectively referred to as the Azure/Windy Gap Agreement).⁵ Whether those limits and conditions are sufficient to prevent injury or to satisfy the requirements of the Water Conservancy Act for any new component of the project, however, must be evaluated in a change of water rights proceeding.

First, the Azure Agreement was intended to cover the identified project as a whole - not just the desired yield of the Project. In other words, all "project" facilities must comply with the mitigation requirement. The Azure Agreement was negotiated on the basis of specific project features and a defined operational regime that are different than how the WGFP is proposed to operate.

The Azure Agreement provides that the Municipal Subdistrict may build and operate facilities necessary to accomplish the purposes of the agreement, within the conditions and limitations of the agreement.⁶ This provision of the Azure Agreement was intended to clear the path toward construction of the identified project; it was not intended to give the Municipal Subdistrict free reign to develop significant new components of the Windy Gap Project or to implement changes to the operation of the C-BT Project.

The construction of a new project reservoir triggers the mitigation requirement in the Water Conservancy Act which applies not only to the Windy Gap water rights but to "any project works or facilities." *Colorado River Water Conservation Dist. v. Municipal Subdistrict, Northern Colorado Water Conservancy Dist.*, 198 Colo. 352, 358, 610 P.2d 81, 85 (1979). A new reservoir that is intended to all the Municipal Subdistrict increase the amount of water diverted by the Windy

⁵A copy of the Azure Agreement, as amended, is attached.

⁶Azure Agreement at para. 37.

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Gap Project has not been evaluated under the Water Conservancy Act. Thus, in addition to a determination of potential injury to water users in the Colorado River basin, the question of whether construction and operation of any new significant component of the Windy Gap Project complies with the Water Conservancy Act also needs to be determined in the context of a proper change adjudication. See *Trails End Ranch*, 91 P.3d at 1063.

II. The C-BT Project Water Rights Cannot be Administered Consistent with the Pre-Positioning Concept.

When it was first proposed, West Slope entities feared that the Windy Gap Project would result in, among other things, a change in the operation of the C-BT Project. The dispute over the original Windy Gap Project was resolved by the Azure Agreement. A key component of the Azure Agreement is the requirement that the Municipal Subdistrict “comply with all terms and provisions of Senate Document 80 in design, construction, and operation of the Windy Gap project.” Azure Agreement, para. 14. The purpose of this condition was to ensure that operation of the Windy Gap Project did not alter operation of the CBT Project and that the project would be “invisible” to C-BT operations.

Now, the Municipal Subdistrict proposes the pre-positioning concept, which would significantly change C-BT Project operations by moving C-BT water from the federally-owned Granby Reservoir (located on the West Slope) to the non-federal Chimney Hollow Reservoir (located on the Front Range).

A. Storage of C-BT Project Water in the Proposed Chimney Hollow Reservoir Cannot be Administered Without a Change of Water Rights Adjudication.

The water rights for the C-BT Project were adjudicated in the Blue River Decree. See paragraph 1 of the Final Decree for Consolidated Civil Case Nos. 2782, 5016, and 5017, in the U.S. District Court for the District of Colorado (the “Blue River Decree”).⁷

The Blue River Decree identifies the C-BT Project water rights as:

1. Adams Tunnel – 550 cfs
2. Granby Reservoir - 543,758 acre-feet
3. Granby Pump Canal, Direct Diversion – 1,100 cfs
4. Willow Creek Reservoir - 10,553 acre-feet
5. Willow Creek Feeder Canal - 400 cfs
6. Shadow Mountain Reservoir – 19,669 acre-feet

⁷ A copy of the Blue River Decree is attached. The Blue River decree has been supplemented twice, once by Consent Decree entered in 1964, and once by order of Judge Arraj, dated February 9, 1978. Neither supplement pertains to the water rights associated with the operation of the C-BT Project in question here.

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7. Lake Estes (east slope) – 3,368 acre-feet
 8. Horsetooth Reservoir (east slope) – 153,252 acre-feet
 9. Carter Lake (east slope) – 112,830 acre-feet
- The Estes Park Aqueduct and Power System – consisting of a series of direct flows and reservoirs for the purpose of hydroelectric power generation.
 - The Estes-Foothills Aqueduct and Power System – consisting of a series of direct flows and reservoirs for the purpose of hydroelectric power generation.
 - The Foothills Reservoirs and Feeder Canals – consisting of a system of pumps and feeder canals for delivery of water transported by the Adams Tunnel to the two primary east slope reservoirs - Horsetooth Reservoir and Carter Lake – for delivery to irrigators.
 - The Irrigation Supply Canals – consisting of a system of canals for delivery of water from the primary reservoirs to irrigators.

The Final Decree (paragraph 2) requires operation of the CBT Project and “all of its units to which this Final Decree pertains” in conformity with specific sections of Senate Document 80 regarding “Manner of operation of Project Facilities and Auxiliary Features,” which are incorporated verbatim in the decree. Senate Document 80 and the Blue River Decree specify Horsetooth and Carter Lake Reservoirs as the C-BT Project’s Front Range water supply storage facilities.⁸ Storage of Project water in an entirely new, non-federal Front Range reservoir simply was not considered in Senate Document 80 or the Blue River Decree. Pre-positioning C-BT Project water in a new reservoir, even under the cloak of the temporary “pre-positioning” of that water, would be inconsistent with the C-BT Project’s water rights because it would require fundamental changes in the manner in which C-BT Project water is stored in Granby Reservoir, carried under the Continental Divide, and then stored on the Front Range.

Without a change to the C-BT Project water rights, it would be impossible for the State and Division Engineers’ Offices to prevent an expansion of the C-BT Project water rights if the volume of water stored under the project’s 1936 priority increased by storing C-BT water in the proposed new 90,000 acre foot Chimney Hollow Reservoir. There would be no decreed mechanism to administer the C-BT Project rights as against junior appropriations in the Colorado River basin. The Municipal Subdistrict recognizes that pre-positioning could expand the total diversions of C-BT Project water rights, so its parent entity, the Northern District, offered to cap CBT Project storage, including storage in the proposed Chimney Hollow Reservoir, to the total amount of storage decreed to the C-BT

⁸Senate Document 80 at pgs. 18-21; Blue River Decree at para. 14, pgs 27-28. Senate Document 80 also refers to Arkins Reservoir, which was not constructed. The storage capacity of Arkins Reservoir was essentially transferred to the enlarged Horsetooth Reservoir. Smaller Front Range reservoirs also were integrated into the Project as power generation facilities.

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Project's storage facilities.⁹ It is possible that such a storage limitation may be an appropriate term to prevent injury from an expansion of the C-BT Project water rights. However, only the water court can determine and adjudicate whether that type of storage limitation would be effective in preventing injury to other water users. *Trails End Ranch*, 91 P.3d at 1063 ("Far from a mere formality [change of water rights adjudications provide] an important protection for potentially affected decreed water rights holders.").

B. The Blue River Decree Provides that C-BT Project Water is Delivered to the Northern District at Horsetooth and Carter Lake Reservoirs.

As discussed above, the C-BT Project water rights were adjudicated in the Blue River Decree, which provides that C-BT water is to be delivered to Northern only at Horsetooth or Carter Lake Reservoirs:

The Colorado River water is delivered by the United States of America at Horsetooth Reservoir and Carter Lake above described to the Northern Colorado Water Conservancy District for distribution to and utilization by the consumers within the service area of that District.

Blue River Decree, "Findings of Fact and Conclusions of Law and Final Decree," pg. 27, para. 14.

Absent a change of water right, the C-BT Project water cannot be administered as stored or deliverable to Northern at a new non-federal reservoir such as the proposed Chimney Hollow Reservoir. The statutory duties of state water officials require them to administer the waters of the state in accordance with water court decrees. *Turkey Cañon Ranch L.L.C.*, 937 P.2d at 744.

III. Conclusion.

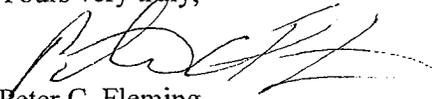
New storage capacity is proposed as the primary component for each of the WGFP alternatives. The proposed new storage is not intended for use solely as terminal storage or to facilitate the management of the end-users' water supply after it has been delivered. Instead, the storage would be a new component of the "integrated" Windy Gap Project, used for the primary purpose of increasing the project's diversions from the Colorado River. None of the proposed new storage facilities were contemplated at the time the existing Windy Gap Project was developed and decreed. Unless the Municipal Subdistrict adjudicates a change of water rights, the decrees for the Windy Gap Project limit the project's storage to the conditional Jasper Reservoir in the amount of 11,292 acre feet.

Thank you for your time and attention regarding our concerns. Please contact me or Eric Kuhn at your convenience if you have any questions or wish to discuss these issues further.

⁹See Letter dated October 9, 2003 from the Municipal Subdistrict's counsel Trout, Witwer, and Freeman, P.C. to Richard Aldrich, Esq., Ass't Interior Solicitor, pg. 11. (Copy attached).

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Yours very truly,


Peter C. Fleming

cc: Ken Knox
Paul Benington
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CRWCD Board of Directors