

History of Boise River Reservoir Operations, 1912-1995

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Author Background and Methodology

My name is Jennifer Stevens. I am a professionally trained historian and earned a Ph.D. in American History from the University of California, Davis in 2008. My research emphasis is American Environmental History. I have been conducting primary historical research since earning my M.A. in History in 1995. I founded Stevens Historical Research Associates (SHRA) in 2004, where I remain the principal historian and president. SHRA conducts historical research for private and public parties across the United States. I also am an affiliate graduate faculty member in the History Department and adjunct faculty in the Environmental Studies Department at Boise State University. At Boise State, I teach courses in North American Environmental History and United States Urban Environmental History, and help to guide graduate student masters' theses. I belong to several professional organizations, including the American Society for Environmental History, the Western History Association, the American History Association, and the Mining History Association.

My complete CV is included as [Exhibit A](#) to this report. I have been paid an hourly rate of \$150 for work done on behalf of this case. Compensation for this work is not contingent on the findings and conclusions contained in this report.

For both litigation and academic purposes, the process of historical research involves investigation and analysis of facts and records to create cohesive narratives that explain a discrete set of facts within a larger historical context. To produce this report, I was asked to find documents that pertain to the development of the Boise River reservoir system. In particular, I looked for documents that would assist in answering the following research questions:

1. How did irrigation storage and flood control develop and change on the Boise River from the construction of Arrowrock Dam until the present day?
2. What role did the State of Idaho play in the development of Boise River reservoir management?
3. What role did the State of Idaho play in the development of the 1985 Water Control Manual?
4. How was the Idaho Department of Water Resources' computerized water storage accounting system for the Boise River developed? What role did the water users play in the development of this system?

With a pre-existing understanding of Boise River's chronological history, I approached the research knowing the importance of federal as well as state records related to the river. In particular, I knew that the records of the Bureau of Reclamation and Corps of Engineers would be critical to unfolding the answers to the questions above. I also knew that the history would not be complete without the records of the various governors and other government representatives who were involved in the authorization of Anderson Ranch or Lucky Peak dams or who may have been involved in the negotiations during the creation and revision of the manuals.

In response to the questions outlined above, this report reviews historical documents to explain the development of the Boise River reservoirs, the history of reservoir operations on the river, and the adoption of the computerized water rights accounting system on the Boise River. My main conclusions are summarized below. The narrative report will reference supporting documentation for my conclusions.

The documents I obtained and considered provide a comprehensive and detailed account of the planning, development, authorization, modification and conduct of the operation of the Boise River Reservoirs for irrigation storage and flood control.

Unfortunately, the historical records of Idaho's Department of Water Resources were not available for review, other than the small set of documents that said department has posted on its website for review in this matter. I attempted to find records related to this issue in the Idaho State Archives to no avail, and my clients' efforts to locate additional relevant documents through the discovery process has proven fruitless. The lack of documentation is unusual for a government agency, and is disconcerting to me as a researcher.

Other than the gap in the records of the Idaho Department of Water Resources described above, I feel comfortable that the research I've completed was adequate to form the conclusions described below within the time limits provided. My research included in-person visits to the following archival repositories and research in the records noted therein:

[National Archives, Seattle](#)

Record Group 77, Records of the Chief of Engineers

[National Archives, Denver](#)

Record Group 115, Records of the Bureau of Reclamation

[Federal Record Center, Denver](#)

Record Group 115, Records of the Bureau of Reclamation (Research in these records – which are held in a storage facility but are still in the legal possession of the agency – required working with the public records office at the Snake River Regional Office of the Bureau of Reclamation in Boise, Idaho. The boxes of records that were requested were shipped for viewing to the Bureau’s Snake River office in Boise.)

[Idaho State Archives, Boise](#)

MS84, Papers of Henry Dworshak, 1939-1962
AR2/19, Papers of Governor C.A. Bottolfson (1943-1945)
AR2/17, Papers of Governor C.A. Bottolfson (1938-1941)
AR2/21, Papers of Governor Arnold Williams (1945-1947)
AR 53, Idaho Water Resource Board Administration

[Boise State University Special Collections, Boise](#)

MSS141, Papers of Cecil D. Andrus, 1970-1995

[Summary](#)

The Boise River has long been a source of both sustenance and apprehension for residents of the Treasure Valley. From the time that American settlers first arrived along the banks of the Boise River in the 1850s, its waters have been used to irrigate the Treasure Valley. Yet the periodic ferocity of the river’s annual spring floods was also historically a curse for the valley’s citizens, who suffered loss of human life and valuable property from flooding.

Even before the turn of the 20th century, farmers, politicians, and entrepreneurs attempted to harness the river for irrigation and power. They constructed canal systems and established water rights to divert and deliver water from the Boise River to meet the increasing irrigation needs of the Treasure Valley’s burgeoning agricultural economy and urban areas. The timing of uncontrolled river flows did not coincide with the Treasure Valley’s needs, however, declining as the growing season progressed and temperatures rose. To meet the valley’s water needs, local interests and Idaho government officials sought the federal government’s assistance. Shortly after it was created in 1902, the United States Reclamation Service began to investigate opportunities to enhance irrigation delivery systems, and to

augment the Boise River's water supply through the construction of reservoirs. This effort became known as the "Boise Project."

The Bureau of Reclamation's investigations and recommendations resulted in authorization and funding for the construction of Arrowrock Reservoir, which was completed in 1915. The Bureau of Reclamation entered "repayment contracts" with Boise Valley irrigation districts to make use of the new supply of stored water in exchange for repaying the federal government's construction costs. The reservoir's function of storing natural flows during spring snowmelt and delivering the stored water to water users in the dry months of late summer was essential to the growth of the Treasure Valley and assured area farmers a desperately needed supply of water.

The federal government's work in helping Boise Valley water users meet their continuing needs for additional storage was far from over. Late season irrigation supplies continued to be inadequate to meet irrigation needs, even with the stored water supplied by Arrowrock Reservoir. At the same time, flooding continued to cause damage to the urban areas and irrigated lands of the Boise Valley. Arrowrock was incidentally used to partially manage river flows during high spring runoff by releasing and subsequently storing water in an attempt to reduce downstream flooding while storing water for irrigation use. But Arrowrock was capable of storing only a fraction of the water that flowed through the watershed, especially in high runoff years. It was not authorized or designed for flood control use, which many believed could be detrimental to irrigation storage.

By the 1940s, at the request of Treasure Valley water users and Idaho state officials, the Bureau of Reclamation and the United States Army Corps of Engineers were developing a plan for construction of additional reservoirs to be used in conjunction with Arrowrock as a system for irrigation storage and flood control. In 1941, Congress authorized the Bureau of Reclamation to construct Anderson Ranch Reservoir primarily for irrigation storage, and for limited flood control use. The Bureau of Reclamation entered repayment contracts with irrigation districts for Anderson Ranch storage similar to the Arrowrock repayment contracts.

Exceptionally high spring runoff in 1943 caused massive flood damage, making additional reservoir capacity for flood control a high priority for Boise Valley water users and representatives of local, state and federal government agencies and elected officials. Based on the multiple purpose reservoir use and operating plan being developed by Bureau and the Corps, Congress authorized the Corps in 1946 to

construct Lucky Peak Reservoir primarily for flood control, and also for irrigation storage. Despite Lucky Peak's primary authorization for flood control, the reservoir was always intended to be used for storage to provide an additional supply of irrigation water as well. Further, its use for flood control was never intended to trump the use of the existing storage water rights in Arrowrock and Anderson Ranch reservoirs.

Following a lengthy public process that included existing water users and members of the Idaho State government, the Corps of Engineers and the Bureau of Reclamation signed a Memorandum of Agreement in 1953 containing the plan they had developed for the joint operation of the three reservoirs for both irrigation storage and flood control. The plan uses runoff forecasts and "rule curves" that define reservoir space that must be empty in anticipation of high spring runoff during the flood control season. This process is intended to control reservoir releases so that mainstem Boise River flows will not exceed the established flood control objective, as well as to fill the reservoirs for irrigation use pursuant to established storage rights. The reservoir operating plan further assured Anderson Ranch and Arrowrock storage right holders that shortfalls in filling their storage rights due to flood control releases would be made up from Lucky Peak storage, and that no future change would affect their storage rights in the reservoir system without the storage right holders' agreement.

Based on these assurances, in 1954, the water users with contracts for storage in Arrowrock and Anderson Ranch reservoirs signed supplemental agreements with the Bureau of Reclamation assenting to the plan to allow flood control use of the reservoirs while protecting their storage rights in light of the newly developed, system-wide operations. The Corps developed and adopted an operating manual in 1956 to facilitate implementation of the Congressionally authorized operating plan of the 1953 Agreement.

In the 1970s, following almost 20 years of operation under the 1953 Agreement and the 1956 Manual, many events converged to force modifications to the adopted system. In the spring of 1974, flooding along the banks of the Boise River caused a good deal of damage to riverside properties. The flood coincided with several other recent concerns and demands that had emerged along the Boise River, including new federal water quality regulations, environmentalists' demands for minimum flows for fisheries, and an international energy crisis. The 1974 flooding was the final straw that caused Governor Cecil Andrus to direct the Idaho Department of Water Resources to review operations and then to

recommend that the federal agencies revise the 1956 Manual. In November of 1974, the Idaho Department of Water Resources issued a report recommending that the Corps of Engineers, the Bureau of Reclamation, and the Idaho Department of Water Resources collaborate to review flood control operations and revise the operating plan of the 1953 Agreement and the 1956 Manual with new rule curves and other measures to provide increased flood control assurance without jeopardizing existing storage rights.

Revising the manual was an inclusive process that embraced water users, recreationists, and federal and state government representatives, among others. The Army Corps of Engineers, the Bureau of Reclamation, and the Idaho Department of Water Resources spent nearly 10 years studying the river's behavior and determining the best method of improving flood control without jeopardizing existing storage water rights. All three entities contributed substantively to the process and the end result was the 1985 Manual that has guided river operations since its adoption.

Throughout the decades-long process of planning, developing, authorizing, modifying and conducting the operation of the Boise River Reservoirs as a system for irrigation storage and flood control, protecting existing storage rights and filling the Boise River Reservoirs for irrigation use were preeminent concerns of the storage right holders and of the federal and state agencies involved. The reservoir operating plan that has been in place since 1953 assured storage right holders that their storage rights would not be diminished by flood control operations.

In 1981, the Idaho Department of Water Resources began internal discussions to adapt an existing computerized water delivery accounting system for use on the Boise River. The computerized system was first used for the Boise River for the 1986 water year. Accounting for the accrual of water to the reservoirs by source and priority, rather than by priority only, was the only significant change in the accrual of water to storage water rights that was identified by the Idaho Department of Water Resources in correspondence with the Boise River Watermaster. This meant that water from Mores Creek would be attributed to the Lucky Peak storage water right, rather than the earlier priority Arrowrock and Anderson Ranch water rights.

The historical record does not reveal that either the State of Idaho's Department of Water Resources or the Boise River Watermaster had any additional discussions with Boise River water users, or collaborated with the Corps of Engineers or the Bureau of Reclamation, in the development and

adoption of the new accounting system for the Boise River, other than informing them after the fact of its implementation in 1986. There is no indication that adoption of the accounting system was intended to alter the manner in which water is stored for irrigation use under the reservoir operating plan that was adopted in 1953 and modified by the 1985 Water Control Manual. The fact that the reservoir operating plan had just been modified through a decades-long process a year earlier, combined with the lack of broader public notice and agency consultation, lead to the conclusion that adoption of the computerized water accounting system was not intended to diminish the storage right protection and storage filling assurances provided by the reservoir operating plan that had been in effect since 1953.

The Boise River: 1902-1953

As a bird flies, the Boise River appears much like a curling blue ribbon in a vast landscape of arid desert. Despite these meanders, the river is actually confined to man-made parameters today and bears little resemblance to the waterway that early American settlers encountered in the 1850s. All settlers, whether they were entrepreneurs seeking gold or homesteaders chasing the yeoman farming ideal, maintained a healthy respect for the river. While the waters of the Boise River provided the opportunity to reclaim the parched soil of the Treasure Valley for sustenance, they also periodically plagued citizens with spring flooding. Early settlers struggled to find a balance between the river's agricultural benefits and its yearly threats.

Authorization and Construction of Arrowrock Dam

Passage of the Reclamation Act in 1902 led to the federal government's formal involvement in river management. Charged with studying (and eventually developing) water storage projects in western states, the Reclamation Service set its sights on the Boise River shortly after it was created in 1902. After conducting numerous surveys over a period of several years, the Reclamation Service narrowed in on two potential plans to capture the headwaters of the Boise River for irrigation use during periods of low flows. One plan involved constructing several small reservoirs on the various branches of the Boise River to store floodwaters; the other plan involved building one large reservoir downstream to capture flows from all of the Boise River's primary tributaries at once. Ultimately, the Reclamation Service decided on the latter of the two options on account of it being more economical, both in terms of construction and

in terms of future operation and maintenance.¹ After authorization in 1911, the agency commenced work on Arrowrock Dam.² On October 5, 1915 Reclamation dedicated Arrowrock Dam, then the tallest dam in the world at just over 348 feet, in front of a robust crowd of 4,000.³

Arrowrock was not a gift from the federal government. Instead, the farmers who would benefit from the more reliable water supply it provided were required to repay the federal government's construction costs over time. The Reclamation Service entered into contracts with various Boise Valley irrigation districts. The contracts stipulated that the Reclamation Service would construct Arrowrock Dam to provide storage water during the latter part of the irrigation season as natural Boise River flows declined. In exchange, the irrigation districts repaid the Reclamation Service in a series of annual installments.⁴ The contracts clearly defined the expectations of both the federal government and the irrigation districts. As outlined in its June 1915 contract, the Nampa & Meridian Irrigation District agreed to pay 10 installments of \$24,840 to the Reclamation Service for storage capacity in Arrowrock Reservoir; in return, the federal government provided the district with storage capacity in Arrowrock proportionate to that sum of money.⁵ Additionally, the contracts provided guidelines on how irrigation districts would assess the land owners within their boundaries.

Treasure Valley citizens celebrated the irrigation benefits of Arrowrock, but floods like those of past springs continued. Although Arrowrock provided desperate farmers a much needed supply of storage water, the new dam's capacity of 286,000 acre-feet stored but a fraction of the water that flowed through the Boise River watershed.⁶ Thus, the floods for which the river was renowned were not

¹ "Arrowrock Dam Will Be 351 Feet High," *The Idaho Statesman*, Sept. 24, 1911. (228B63)

² Wm. Joe Simonds, "The Boise Project," Bureau of Reclamation History Program, Denver Colorado, Originally Printed in 1997, Reformatted, Reedited, and Reprinted by Brit Storey, December 2009, 4, http://www.usbr.gov/projects//ImageServer?imgName=Doc_1261497242949.pdf, (accessed May 6, 2015.) (242B63)

³ "Four Thousand Participate in Dedication of Arrowrock," *The Idaho Statesman*, Oct. 5, 1915 (229B63); Wm. Joe Simonds, "The Boise Project," Bureau of Reclamation History Program, Denver Colorado, Originally Printed in 1997, Reformatted, Reedited, and Reprinted by Brit Storey, December 2009, 20, http://www.usbr.gov/projects//ImageServer?imgName=Doc_1261497242949.pdf (accessed May 6, 2015.) (242B63)

⁴ "Agreement between U.S. Bureau of Reclamation and the Nampa & Meridian Irrigation District," entered into on June 1, 1915, draft of July 24, 1914. (2B63)

⁵ "Agreement between U.S. Bureau of Reclamation and the Nampa & Meridian Irrigation District," entered into on June 1, 1915, draft of July 24, 1914. (2B63)

⁶ "Feasibility Water Quality Appendix," September 1984, Copy No. 5, Boise Project, Idaho - Oregon, Power and Modification Study, Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, Colorado (CO). (61B63)

expected to cease with the construction of this dam, a structure that was to be managed strictly for irrigation, and cease they did not. Even during the construction of Arrowrock, the Boise Project's Chief Engineer Charles H. Paul warned that the new dam was designed for irrigation purposes and would not eradicate flooding. Hoping to drive home his point, Paul asserted that Arrowrock's "diversion works are designed to carry the flood waters during ordinary years. It is not practicable at any reasonable cost to provide diversion capacity sufficient to take care of extraordinary floods."⁷ Still, Arrowrock provided incidental flood control benefits. For example, faced with the rapid increase of flow in March 1916, Boise Project officials decided to delay Arrowrock storage in order to prevent later flooding that could potentially damage cities and property.⁸ But while reservoir operations vanquished the threat of flooding in 1916, Arrowrock could not prevent the flooding in the 1930s and 1940s, nor did it have enough capacity to assure a full supply of irrigation water during the intervening years of drought.

Drought, Floods, and the Authorization of Anderson Ranch Dam

The twin troubles of drought and flood were especially troubling in the 1930s. Following years of drought, flooding began in February 1936 when Boise River's tributary, Indian Creek, overflowed its banks and caused damage to the city of Nampa.⁹ Two months later Boise River flows increased dramatically, yet the Idaho State Commissioner of Reclamation still scoffed at the threat of flood, stating there was "nothing alarming about the present situation."¹⁰ However, just days later, devastating floods overwhelmed the Treasure Valley. The Boise River rose 2,000 cubic feet per second in a day, resulting in the inundation of hundreds of acres of farm and pasture land. Residents abandoned cars, fled from homes, and watched helplessly as the river washed away valuable property.¹¹

Following the 1936 flood, the Army Corps of Engineers conducted a flood control study on the Boise River, weighing whether additional storage or channel improvements should be the preferred method of future flood prevention. Two years later, the agency reported on and documented the potential benefits of a possible new reservoir, Twin Springs, which was proposed to operate in conjunction with Arrowrock and provide flood control on the Boise River.¹² While the Twin Springs site would resurface

⁷ "Arrowrock Dam Will Be 351 Feet High," *The Idaho Statesman*, Sept. 24, 1911. ([228B63](#))

⁸ "Rapid Increase in the Flow of Boise River," *The Idaho Statesman*, March 22, 1916. ([181B63](#))

⁹ "Nampa Battles Sudden Flood," *The Idaho Statesman*, Feb. 23, 1936. ([239B63](#))

¹⁰ "Cool Weather Slows Runoff in Boise River," *The Idaho Statesman*, April 20, 1936. ([240B63](#))

¹¹ "Boise Flood Situation," *The Idaho Statesman*, April 24, 1936. ([241B63](#))

¹² "Flood Control Benefits Derived Through Operation of Arrowrock Reservoir and Possibilities of Increasing Them by Construction of Twin Springs Reservoir", Boise-Weiser-Payette Investigations, Idaho, Nov. 1, 1938, Engineering

time and again over the course of several decades as an option for another dam, the relatively new recognition of dams' potential to serve flood control, irrigation, and power development all at once led to continued searches for still better sites than this one.¹³ But even a 1939 report on the Twin Springs site noted that, "in operating the reservoirs for flood control purposes, it is desired to avoid undue impairment of their value for irrigation purposes."¹⁴

This switch to thinking about multi-purpose works came at the same time that it became evident that Lake Lowell, the off-stream reservoir fed by the New York Canal and constructed in 1911, and Arrowrock Reservoir would not provide adequate irrigation water for the growing needs of the Boise Project. Anderson Ranch, the alternative site to Twin Springs, was needed because many farmers continued to experience water shortages in spite of Arrowrock's success at supplying irrigation water, and jumped at the opportunity to improve their storage holdings through the construction of additional capacity. Anderson Ranch Reservoir was ideally situated for power production, especially since any water released in the winter to produce power could be recaptured in Arrowrock Reservoir and not lost from irrigation. Part of Anderson Ranch Reservoir could also be used exclusively for flood control.¹⁵

Thus, through a series of surveys and a collaborative relationship with the Bureau of Reclamation, the Corps determined that a dam at Anderson Ranch on the South Fork of the Boise River provided better flood control than Twin Springs and was a superior location to serve irrigation and power development interests.¹⁶ The Bureau of Reclamation estimated that Anderson Ranch and its 500,000 acre-feet

and Research Center Project Reports, 1910-1955, Code BOI 551-564, Box 61, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([37B63](#))

¹³ J.H. Beddow to N.T. Nelson, Sept. 17, 1963, 1518-01 Boise River – Lucky Peak Powerplant - Twin Springs Report, Book 1, Accession 77-94-0036, Civil Works Project Files, Box 28, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, Washington (WA); ([129B63](#)) Thomas M. Robins to Chief of Engineers, April 29, 1940; Thomas M. Robins to Commissioner, May 15, 1940; Acting Commissioner to Chief of Engineers, May 29, 1940, 301.1 Boise Engineering Correspondence Re: Dams 1939 thru (3), Entry 7, General Administrative and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 301.1, Box 58, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([75B63](#))

¹⁴ J.R. Riter to Chief Engineer, June 28, 1939, 247.01 Boise of Construction to Flood Control and Navigation 247.01, Entry 7, General Administration and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 222.0, Box 57, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([31B63](#))

¹⁵ "Boise Project, Idaho, Revised Allocation and Repayment Report," Sept. 21, 1953, *United States Department of the Interior, Bureau of Reclamation Correspondence*, Boise River Operating Agreement, Allocation Report, and Repayment Analysis - Boise Project, Bureau of Reclamation, Snake River Office, Boise, Idaho. ([154B63](#))

¹⁶ "Supplemental Report on Twin Springs and Anderson Ranch Reservoir Sites," June 15, 1940; Acting Chief Engineer to Commissioner, June 26, 1940; 301.1 Boise Engineering Correspondence Re: Dams, Anderson Ranch Dam Thru 1941 Folder 1 of 2, Entry 7, General Administrative and Project Files 1919-1945, Project Correspondence

capacity would cost \$13,100,000 to construct, a cost that would be repaid over time by each interested party in proportion to its use of the reservoir. However, as steps were taken to secure construction contracts for Anderson Ranch, negotiating the cost and benefit allocations of the multifaceted features of the new dam proved challenging; farmers wanted to be sure that irrigation remained the primary use, even though much of the construction cost was being allocated to flood control. By entering into a contract with the Bureau of Reclamation, irrigation districts representing the farmers took on a small portion of the \$4,650,000 cost allocated for irrigation storage.¹⁷ But eventually, this reservoir was authorized "as a multi-purpose structure for the benefit of irrigation, flood control and power,"¹⁸ and in many ways, irrigators viewed Anderson Ranch as a win-win: not only did it provide supplemental water supplies, but it also added flood control benefits. Even as other purposes were allocated the cost of constructing Anderson Ranch, the Bureau of Reclamation recognized that "irrigation is the primary use of the reservoir," and it remained clear that Anderson Ranch's primary purpose was to store water and satisfy the growing irrigation needs of the Treasure Valley. The Bureau of Reclamation's District Counsel explained: "We recognize that irrigation is the primary use of the reservoir but it is nevertheless true that the major part of the cost has been charged to other purposes."¹⁹ Treasure Valley water users and state representatives remained involved in the use and construction of Anderson Ranch Dam

1930-1945, Boise 301.1, Box 60, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO, ([77B63](#)); Act. Hydr. Engr. To E.B. Debler, Feb. 7, 1940, 301.1 Boise Engineering Correspondence Re: Dams 1939 thru (3), Entry 7, General Administrative and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 301.1, Box 58, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([75B63](#))

¹⁷ "Contract with New Dry Creek Ditch Company, Concerning Construction of Anderson Ranch Reservoir and Related Matters," 222. - Boise Repayment Contracts New Dry Creek Ditch Co., Entry 7, General Administration and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 222.0, Box 45, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO, ([29B63](#)); "Contract with New York Irrigation District Concerning Construction of Anderson Ranch Reservoir and Related Matters," 222. Boise Corres. Rel to Organization of Irrigation Districts & Execution of Contracts, Nov. 1940 thru Dec. 1942, Entry 7, General Administration and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 201.05 to 222.0, Box 42, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([27B63](#))

¹⁸ Boise Project, Idaho, Revised Allocation and Repayment Report," Sept. 21, 1953, *United States Department of the Interior, Bureau of Reclamation Correspondence*, Boise River Operating Agreement, Allocation Report, and Repayment Analysis - Boise Project, Bureau of Reclamation, Snake River Office, Boise, Idaho. ([154B63](#))

¹⁹ District Counsel to Commissioner, July 10, 1940, 222. Boise Correspondence Rel to Organization of Irrigation Districts & Execution of Contracts Jan 1939 thru Oct 1940, Entry 7, General Administrative and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 222.0, Box 43, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([74B63](#))

throughout the 1940s, particularly as that dam's purpose evolved to form part of the comprehensive system of river management that evolved in the latter part of the decade.²⁰

In August 1941, construction began on Anderson Ranch Dam. But the start of World War II and a lack of overall funding delayed the project considerably.²¹ Flooding in the spring of 1943, which damaged 30,000 acres of farm land in the Boise Valley, reemphasized the need for this dam, even in the midst of the war.²² Following the flood, U.S. Senator Henry Dworshak not only pressed for the completion of Anderson Ranch, but he also collaborated with the Army Corps of Engineers as that agency once again renewed its studies of flood control on the Boise River.²³ Dworshak wasn't alone in his desire to remove the flood threat from the Treasure Valley. Boise River Watermaster William Welsh and the Boise River water users of Water District 12-A (predecessor to Water District 63) both urged the Corps of Engineers to take action for further flood control measures on the Boise River.²⁴ As Dworshak continued to lobby for additional flood protection, work progressed slowly on Anderson Ranch. Although Anderson Ranch Dam was only half complete, it was announced that it could store 45,000 acre-feet for irrigation purposes in the spring of 1946 to supplement the inadequate supply of the Boise Project.²⁵

The slow progress of Anderson Ranch's construction coupled with the fresh memories of flooding worried both Dworshak and his constituents. They felt that additional infrastructure beyond Anderson

²⁰ Memorandum to Chief of Engineers re: Collaboration with the Bureau of Reclamation on the Preparation of Flood Control Regulations for Anderson Ranch Reservoir, Sept. 11, 1946, Boise River Review Report Folder 2 41-1946 to ---, Walla Walla District Civil Works Project Files, 1946-1961, Box 32, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([123B63](#))

²¹ "Anderson Dam Work Nears Half Mark," *The Idaho Statesman*, June 13, 1945, Interior-Reclamation-Anderson Ranch Dam 1945, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, Idaho State Archives and Record Center, Boise, Idaho (ID); (hereafter referred to as ISA) ([91B63](#)) Michael W. Straus to Henry Dworshak, June 26, 1946 (92B63); Michael W. Straus to Compton I. White, July 16, 1946, Int-Reclam-Anderson Ranch Dam 1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([92B63](#))

²² "Need for Lucky Peak Flood Control Reservoir," War - Flood Control - 1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

²³ Thomas M. Robins to Henry C. Dworshak, Aug. 18, 1943; Henry C. Dworshak to Frank Herring, Sept. 22, 1943, 301.1 Boise Engineering Correspondence Re: Dams Anderson Ranch Dam 1941 Thru, Entry 7, General Administrative and Project Files 1919-1945, Project Correspondence 1930-1945, Boise 301.1, Box 60, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO, ([76B63](#)); Henry Dworshak to C.A. Bottolfson, Oct. 19, 1943, AR2/19 Bottolfson Correspondence 1943, Box 1, AR2/19, Papers of Governor Bottolfson (1943-1945), ISA, Boise, ID. ([79B63](#))

²⁴ "Boise River Flood Control, Proposal for Immediate Post-War Program," Jan. 1944, War-Flood Control-1944, MS84, Box 14, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([83B63](#))

²⁵ "Anderson Dam Work Nears Half Mark," *The Idaho Statesman*, June 13, 1945, found in Interior-Reclamation-Anderson Ranch Dam 1945, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([91B63](#))

Ranch was necessary to minimize the damage from future floods of similar magnitude, whether it be in the form of levees or still another dam. Citizens across the valley floor, including the water users, clamored not only for Anderson Ranch to be completed – and quickly – but for Watermaster Welsh’s recommendations for additional channel improvements and additional reservoir studies to be considered.²⁶ The Committee on Flood Control of the House of Representatives adopted a resolution in November 1943 requesting the Board of Engineers for Rivers and Harbors – a group of engineer advisers that studied and reported on the technical aspects of proposed projects for the Corps – to review the report on the Boise River and tributaries with the intent of determining whether additional flood control measures would be needed at the time.²⁷

Then, in 1946, valley residents breathed a sigh of relief when the Army Corps of Engineers issued a public notice confirming that it would construct a new project to be known as Lucky Peak Dam and Reservoir. The people receiving the notice – who ranged from federal and state representatives to individual water users and numbered in the hundreds – were even offered the opportunity to “[present] their views” on the plan to the Board of Engineers of the Corps through letters or testimony.²⁸ Unlike Arrowrock, which was designed for irrigation, and Anderson Ranch Dam, which was multipurpose in nature but predominantly developed for irrigation, Lucky Peak was authorized primarily for flood control. However, as the next section of this report will explain, the Bureau of Reclamation, Corps of Engineers, and State of Idaho had already hatched plans to operate the three dams as a comprehensive system. The Bureau of Reclamation and the Army Corps of Engineers recognized that a combined use of reservoir space for both irrigation and flood control could facilitate more efficient operations overall.²⁹

²⁶ William E. Welsh to Henry C. Dworshak, March 7, 1944; “Excerpts from Minutes of Annual Meeting of Boise River Waterusers held in the City Hall, Boise, Idaho, Monday, March 6, 1944: Resolution,” War-Flood Control-1944, MS84, Box 14, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([83B63](#))

²⁷ R.A. Wheeler to Chairman of House Committee on Flood Control, May 13, 1946, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID.; Board of Engineers Report on Boise River and Tributaries in Idaho, April 30, 1946, 2, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

²⁸ George Mayo to Henry Dworshak, March 18, 1946; “Public Notice,” March 22, 1946, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

²⁹ “Boise Project, Idaho, Revised Allocation and Repayment Report,” Sept. 21, 1953, Boise River Operating Agreement, Allocation Report, and Repayment Analysis - Boise Project, United States Department of the Interior, Bureau of Reclamation Correspondence, Bureau of Reclamation, Snake River Office, Boise, Idaho. ([154B63](#))

Adding Capacity: Anderson Ranch, Lucky Peak, and Multiple Purpose Operations: 1944-1974

Lucky Peak Dam and the Move Toward Multiple-Purpose Reservoirs

Such demands for additional infrastructure on the Boise River came at an interesting time in American history. By the end of 1945, World War II had ended, and Americans feared falling back into an economic depression like that which had dominated the 1930s. Significant technological leaps were made during the war, however, and there was a growing acceptance of the deficit-spending theories of John Maynard Keynes.³⁰ Together, these developments meant that the era of big dam building that had begun with the approval of the Colorado River's Hoover Dam in 1928 could continue apace and help prevent any return to the breadlines. On the Boise River, the result of these developments would be a new dam called Lucky Peak, located just upstream from Diversion Dam, which diverted water into the Boise Project's New York Canal. In communications with the Idaho Congressional delegation, Watermaster William Welsh conveyed his preference for this new reservoir over the construction of levees or other channel improvements, emphasizing "the importance of additional storage on the upper reaches of the Boise River" and the use of a reservoir that would essentially kill two birds with one stone – flood control as well as an additional supply of irrigation water.³¹ Water users in District 12-A (predecessor to Water District 63), representing the 340,000 acres of farmland in the Boise Valley, agreed with Welsh and adopted a resolution urging the expediting of the Lucky Peak report so that Congress could authorize the dam in the 1946 Omnibus Flood Control Bill. They wanted it constructed "at the earliest possible date."³²

The water users were clearly concerned not only with irrigation storage but also with flood control, as many of their farms had been flooded in the most recent event. Additionally, there was a still-evolving awareness that dams no longer had to serve just one or even two purposes. As the Reclamation Commissioner explained in later years, "there was a growing realization that the uses of reservoir space

³⁰ John Maynard Keynes, *The General Theory of Employment, Interest and Money* (London: Macmillan & Company, 1936).

³¹ William E. Welsh to Henry Dworshak, March 17, 1945; Henry Dworshak to William E. Welsh, March 20, 1945, Interior-Reclamation-Anderson Ranch Dam 1945, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([91B63](#))

³² "Statement of E.W. Rising, Vice President, Southwestern Idaho Water Conservation Project, Inc.," War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

in that area for irrigation and flood control were complementary rather than competitive. This realization opened up the possibility of using space jointly for each purpose, rather than requiring exclusive reservations for each purpose.”³³ Users and river operators alike were gradually coming to believe that dams and reservoirs could simultaneously provide electric power generation, irrigation storage, flood control, and – later – fisheries management. On the Boise River, the on-the-ground meaning of multi-purpose river management was still developing and would be fleshed out in the next 10 years as Lucky Peak was added to the system. But, despite this acceptance of the multi-use model and the desire for flood control, water users still wanted assurance that their irrigation supplies would remain senior and would not be trumped by efforts to control flooding.

Because these ideals of multiple use were in their infancy across the country, tension still arose in states which abided by the law of prior appropriation when new uses were proposed for rivers with senior water right holders. It was in the midst of this dynamic atmosphere that the Corps’ Board of Engineers for Rivers and Harbors recommended the construction of Lucky Peak in April 1946 in a report that captured the traditional tension between these various uses and illustrated the historically paramount interests and concerns of irrigators. Despite their desire for flood control, agricultural users were reluctant to permit alterations to reservoir management methods without clear assurances as to their existing storage water rights. Recognizing these tensions, the engineers’ report carried several important caveats, particularly with regard to the operation of Lucky Peak in relation to the other dams already on the river. First, the report noted that, although the dam would be authorized strictly for flood control, the project nonetheless anticipated the

coordinated operation of the Arrow-Rock [sic] and Anderson Ranch Reservoir. The district engineer finds that use of the storage to maximum advantage, including flood control, would require drawdown of the reservoirs early in the year and *refilling on the basis of runoff forecasts. Irrigationists oppose this method of operation as they fear that it might jeopardize the storage of water for irrigation.*³⁴ [Emphasis added.]

The Board clearly recognized both the water users’ need for flood control but also their equally significant protectiveness of their storage water. The Board explained that the system was intended to

³³ “Boise Project, Idaho, Revised Allocation and Repayment Report,” Sept. 21, 1953, United States Department of the Interior, Bureau of Reclamation Correspondence, Boise River Operating Agreement, Allocation Report, and Repayment Analysis - Boise Project, Bureau of Reclamation, Snake River Office, Boise, Idaho. ([154B63](#))

³⁴ Board of Engineers Report on Boise River and Tributaries in Idaho, April 30, 1946, 2, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

facilitate a sort of trade: extra water from Lucky Peak for the irrigators in exchange for allowing the storage space in Arrowrock and Anderson Ranch to be used for flood control. The idea was that if there was ever a shortage of irrigation water as a consequence of utilizing space in Arrowrock and Anderson Ranch for flood control, the extra water in Lucky Peak would make up for the loss. The plan also utilized runoff forecasting as the means by which a balance could be struck between flood control and irrigation storage:

The district engineer finds that with this added reservoir [Lucky Peak] and use of an adequate factor of safety in forecasting runoff, additional storage space in Anderson Ranch and Arrowrock Reservoirs can be used for flood control when needed without endangering the irrigation water supply and that additional water for irrigation would be made available thereby. [The district engineer] proposes to furnish this supplemental water to the irrigationists who use Arrowrock Reservoir water as a recompense for the proposed flood control use of that reservoir.³⁵

The added assurance of runoff forecasting was an important part of the compromise. In balancing flood control and irrigation storage, the Board's report recommended that the War Department be authorized to "install and operate the flood forecasting network of climatological and hydrological stations." Such equipment would assist the federal agencies that operated the three reservoirs and the watermaster in regulating the amount of water released for flood control by measuring snowpack and forecasting how much inflow to expect from snowmelt, thereby insuring that the agencies did not release or "waste" too much water downstream and cause a shortage of water for the farmers. Finally, in addition to the more precise forecasting expected from the new equipment and the additional storage water, the Board recommended that construction not begin until "satisfactory assurances" were given, to indicate that all parties – especially the water users – were in agreement with the plans.³⁶ Taken together, the report's recommendations demonstrated that obtaining the approval and buy-in of reticent farmers was critical to the Board of Engineers' recommendation and authorization of Lucky Peak and the coordinated plan of operating the three reservoirs as a system for flood control and irrigation storage. Although the farmers' and the water users' own voices were part of the clamor for additional flood control, the Board seemed to understand that those same users were uneasy about the possibility of their storage water being compromised.

³⁵ Board of Engineers Report on Boise River and Tributaries in Idaho, April 30, 1946, 4, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

³⁶ Board of Engineers Report on Boise River and Tributaries in Idaho, April 30, 1946, 5, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#))

The Board thus set out to secure water user approval of their plans and recommendations. Historical records suggest that the federal agencies, the state, and the water users agreed in principle to the concept of full-system operations in the spring of 1946, around the same time that the Board of Engineers submitted its report. Although irrigators had been approached previously with requests to use Anderson Ranch and Arrowrock in the same comprehensive manner, the addition of Lucky Peak to the system was the linchpin that permitted the compromise to proceed. At a conference that spring between the Bureau of Reclamation, the Corps of Engineers, and the water users, the water users made a distinction between operating Anderson Ranch for flood control when there were only two reservoirs on the stream versus three. They expressed their concern that with only two reservoirs, they did not want to “jeopardize the complete filling of Arrowrock Reservoir,” and could not support drawing Anderson Ranch down below 212,500 acre-feet for flood control purposes. However, water users agreed that once Lucky Peak Reservoir was added to the system, they “would have no qualms about draining Arrowrock Reservoir down for flood control and multipurpose uses and for encroaching below the 212,500 level at Anderson Ranch for flood control.” This was because the water users “believe that they always can be assured of an amount of water equivalent to that which they could obtain through the filling of Anderson Ranch and Arrowrock Reservoirs” with the construction of Lucky Peak Reservoir. Without such assurances, the move toward flood control operations in the older two reservoirs would be unacceptable. But with Lucky Peak authorized, they approved.³⁷

While the water users’ buy-in was certainly needed, the federal agencies needed and sought the state’s approval, as well. Idaho Governor Arnold Williams had traveled to Washington to discuss the dam and had indicated his approval while there.³⁸ Therefore, with the necessary pieces in place, the U.S. Senate Commerce Committee recommended the authorization of the Lucky Peak Dam project on June 28, 1946, directing the Army Corps of Engineers to construct the dam on the Boise River for flood control and recognizing that the prior water rights associated with storage in Arrowrock and Anderson Ranch were to be protected. The project became part of the Senate’s omnibus flood control bill. During the legislative process, the Commerce Committee added one final provision to the project: that the Lucky

³⁷ R.E. Hickson to District Engineer, April 15, 1946, Boise River Review Report Folder 2 41-1946 to ---, Walla Walla District Civil Works Project Files, 1946-1961, Box 32, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([123B63](#))

³⁸ “Idaho Governor Arrives in East,” *Idaho Statesman*, May 8, 1946, in War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#)); *Flood Control Act of 1946*, Public Law 526, 79th Cong., 2d Sess. (July 24, 1946), 650. ([247B63](#))

Peak Dam and Reservoir be operated "in such a manner as to not materially interfere with the operation of Arrowrock reservoir."³⁹ That committee's approval was based on the recommendation of the Chief of Engineers report explained above.⁴⁰

Finally, Congress authorized Lucky Peak in the 1946 Flood Control Act, passed on July 24, 1946.⁴¹ The ensuing plan was for each federal agency to draft regulations for more permanent operations that could then be reconciled and compiled into one operating manual. They wasted no time. In early September 1946, representatives from the two federal agencies conferred with representatives from the water users and the state, including the Idaho State Engineer, the Boise Project Board of Control manager, and the Boise River Watermaster at a meeting in Boise. They agreed that the draft regulations were to be drawn up according to several assumptions. First, that there would be an interim period of operation while Lucky Peak Reservoir was built – taking into account both irrigation and flood control – with slightly different operating procedures than those used once the interim period was over. Second, that the State Reclamation Engineer would be the water users' representative and would be advised in that role by the Boise River watermaster (an Idaho state employee), the Boise Project Board of Control manager, and legal counsel. Third, that the reservoirs would be operated on a forecast basis. Fourth, that channel capacity would not restrict the river's operation too much during the interim operation period. Fifth, that the flood control benefits of Anderson Ranch and Arrowrock Reservoirs would be reexamined, and that if any space in Arrowrock Reservoir was used for flood control, "the local water users should be recompensed." The attendees agreed to these terms of interim operation at this same meeting.⁴² Watermaster Welsh reiterated these points to the Corps of Engineers in early 1948. He explained that the water users would never have agreed to have both Anderson Ranch and Arrowrock "emptied at the beginning of the irrigation season in order that the space might be made available for flood control purposes," without the addition of Lucky Peak. They would never do this, Welsh argued, as

³⁹ "Senate Group Lends Okay to Lucky Peak," *Idaho Statesman*, June 28, 1946, War Flood Control -1946, Box 15, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([93B63](#)); *Flood Control Act of 1946*, Public Law 526, 79th Cong., 2d Sess. (July 24, 1946), 650. ([247B63](#))

⁴⁰ U.S. Senate Commerce Committee, *Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control*, 79th Cong. 2d Sess., Report No. 1624, Idaho Law Library, Boise, Idaho. ([122B63](#))

⁴¹ *Flood Control Act of 1946*, Public Law 526, 79th Cong., 2d Sess. (July 24, 1946), 650. ([247B63](#))

⁴² R.E. Hickson to District Engineer, April 15, 1946 ([123B63](#)); Outline of Main Points of Interim and Ultimate Plans to Govern Operation of Anderson Ranch and Arrowrock and Lucky Peak Reservoirs for Flood Control Purposes, Sept. 4, 1946, Boise River Review Report Folder 2 41-1946 to ---, Walla Walla District Civil Works Project Files, 1946-1961, Box 32, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([123B63](#))

they “would have everything to lose and nothing to gain.” According to Welsh, construction of Lucky Peak and the potential it offered for additional storage was the reason for the water users agreeing to allow the former two reservoirs to be used for such heavy flood control purposes.⁴³

Lucky Peak construction began in 1949. During the period of construction, interim reservoir operating plans were developed, and use of the reservoirs to store water increased as construction progressed.⁴⁴ Significantly, even during this interim phase before the dams were complete, the water users’ storage rights were protected as paramount. The use of forecasts was critical in this assurance. From the time the governing forecast was made (around April 15) to July 31 – a time period known as the “filling period” - the interim operating plan assured water users that no modifications could be made to the amount of water stored for flood control “without the concurrence of all entities having rights to storage in the Anderson Ranch and Arrowrock reservoirs.”⁴⁵

Determining Operations: The MOA and New Operations Manual, 1953-1956

By 1953, the Bureau of Reclamation, the State of Idaho, water users, and the Corps of Engineers came together to outline a more permanent method of operations. Congressional approval of the operating agreement was contingent on the formal approval of, and supplemental contracts with, storage right holders in Arrowrock and Anderson Ranch. The 1954 water users’ agreements specifically noted that no harm would come to water users with the change in operation of these reservoirs. Congress also required a revised allocation report for the three reservoirs, since the newly proposed flood control operation agreement provided for “joint use of the space in the three Federal reservoirs on the Boise River for irrigation and flood control,” despite the fact that this was not the original intent for those

⁴³ “Transcription of Telephone Conversation Between Colonel O.E. Walsh, District Engineer, Portland District Office and Mr. W.E. Welsh, Watermaster, Boise, Idaho,” War Department Office of the District Engineer Portland Engineer 628 Pittcock Block Portland, Oregon NPP 000.75 (Lucky Peak Dam), Walla Walla District Civil Works Project Files, Construction Files, 1925-1948, Box 3 [812.7-800.55], R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([136B63](#))

⁴⁴ “Operating Plan for Boise River Reservoirs for Irrigation, Flood Control and Power (Interim Plan – Without Mountain Home Project)” Draft 9/3/48, War Department Office of the District Engineer Portland District 628 Pittcock Block Portland, Oregon, PO 821.202 (Lucky Peak Dam), Walla Walla District Civil Works Project Files, Construction Files, 1925-1948, Box 3 [812.7-800.55], R. G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([135B63](#))

⁴⁵ “Operating Plan for Boise River Reservoirs for Irrigation, Flood Control and Power (Interim Plan – Without Mountain Home Project)” Draft 9/3/48, War Department Office of the District Engineer Portland District 628 Pittcock Block Portland, Oregon, PO 821.202 (Lucky Peak Dam), Walla Walla District Civil Works Project Files, Construction Files, 1925-1948, Box 3 [812.7-800.55], R. G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([135B63](#))

three reservoirs, nor how they were originally operated, governed, or paid for. These new allocations would constitute a revision for 418,000 acre-feet in Anderson Ranch and 285,000 acre-feet Arrowrock Reservoir because "the Boise Project was initially considered only in relation to irrigation," and power development and flood control were only considered "significant partners" after some time. Lucky Peak's 280,000 acre-feet, meanwhile, had been authorized solely for flood control and would now be used for irrigation as well. The goal now was to reallocate the storage space in all of the reservoirs so that they could all legally function for multiple purposes. Doing so was specifically designed not to harm existing storage rights.

The acceptance of the multiple use concept had opened the door to the new operational regime. Following many studies by the BOR and the Army Corps of Engineers, the 1953 revised allocation report proposed to use the active storage space in all three reservoirs "jointly for irrigation and flood control." Lake Lowell, an off-stem reservoir holding some of the earliest storage rights on the river for the Boise Project, would continue to serve solely irrigation purposes, though it would be indirectly associated with flood control. The diversion of water by the New York Canal, upstream from the City of Boise, by which that lake was filled, would be integrated into the flood control requirements as capacity allowed. This would allow system operators to bypass extra water around the productive area of the Boise Valley that was so often subject to flood damages, spilling it directly into the Snake River. The report summed up this change in thinking, asserting that "facilities originally undertaken solely for irrigation have been converted to multiple-purpose uses by making necessary additions and by improving plans for using them."⁴⁶ It was this change in thinking, coupled with assurances given to water users regarding their water rights that permitted the new reservoir operations to commence.

On November 20, 1953 the Secretary of the Army and the Secretary of the Interior signed a memorandum of agreement (MOA or "1953 Agreement") that outlined the new operational plan for joint use of the Boise River reservoirs for flood control and irrigation storage. Per earlier assurances, the agreement noted that Lucky Peak Reservoir would be operated in such a manner that it did not interfere with the operation of Arrowrock Reservoir – either the delivery of that reservoir's water to downstream farmers or the dam holding back the water. The 1953 Agreement specified that, "to achieve the greatest

⁴⁶ "Boise Project, Idaho, Revised Allocation and Repayment Report," Sept. 21, 1953, Boise River Operating Agreement, Allocation Report, and Repayment Analysis - Boise Project, United States Department of the Interior, Bureau of Reclamation Correspondence, Bureau of Reclamation, Snake River Office, Boise, Idaho. ([154B63](#))

multiple-purpose use" of the combined flood control and irrigation storage space of the 983,000 acre-feet in the three reservoirs on the system, "a coordinated plan of operation is necessary for this reservoir system on the Boise River." In other words, because even a combination of the three reservoirs could not store all of the water that came through the system during high runoff years, the flood control release and storage fill process was necessary to manage the system and ensure fulfillment of irrigation storage obligations. Successful operation of this combined system required coordination and cooperation between the two federal signatory agencies, the State of Idaho, and the waters users that had existing storage rights in the reservoirs. The plan was to use a total of 983,000 acre-feet of the 1,084,000 acre-feet in the reservoirs for irrigation and flood control in a balance dictated by runoff forecasts. Of that 983,000 acre-feet of space, 418,000 acre-feet would be stored in Anderson Ranch Reservoir, 285,000 acre-feet in Arrowrock Reservoir, and 280,000 acre-feet in Lucky Peak Reservoir. Any water stored in that 983,000 acre-feet of space at the end of each flood season would be "primarily considered as available for irrigation except as such amount must be reduced by evacuation requirements for flood control" that may occur late in the season due to unexpected weather events.⁴⁷

The agreement also stipulated that river channel flows on the Boise River below the Diversion Dam would not exceed 6,500 cubic feet per second, from January 1 to the date on which natural flows on the Boise River first exceeded allowable releases, a period known as "the evacuation period." This rate remained the target flow for the remainder of the year as well. During the evacuation period, the rate of discharge to the Boise River would be determined by the rate needed to achieve the combined total reservoir space required on approximately April 15 to be vacant according to the runoff forecasts. Evacuation of the storage space in the system would be made first from Lucky Peak, second from Arrowrock, and third from Anderson Ranch. Filling of the reservoirs would occur in the reverse order to the extent possible. If Anderson Ranch and Arrowrock Reservoirs did not refill because they had evacuated water for flood control, then storage in Lucky Peak "will be considered as belonging to Arrowrock and Anderson Ranch storage rights" in an amount that made up - but did not go beyond - the difference. Each year, after floodwaters receded, Lucky Peak Reservoir would be filled with water from Arrowrock Reservoir to enhance recreational value, if it was not already filled from flood water. Lucky Peak Reservoir would then be held full until September 15, except when Arrowrock Reservoir had been

⁴⁷ "Memorandum of Agreement Between the Department of the Army and the Department of the Interior for Flood Control Operation of Boise River Reservoirs, Idaho," Exhibit A, entered into on Nov. 20, 1953 by Secretary of the Army Robert T. Stevens and Assistant Secretary of the Interior Fred G. Aandahl, 5. ([18B63](#))

drawn down so much by irrigation requirements that Lucky Peak Reservoir water was needed to fulfill irrigation releases. Importantly, this 1953 agreement was only made effective once it was "formally accepted by the water users having storage rights in the reservoir system and Lake Lowell."⁴⁸ The agreement was made public in December of that year, and new contracts were signed with all space holders in 1954, to integrate the three reservoirs into one system-wide operation for flood control and irrigation and assuring water users that the new system would not harm existing rights, an action subsequently authorized by Public Law 660, which permitted the Secretary to operate the reservoirs jointly.⁴⁹ The dam was completed in 1955.⁵⁰

Once the contracts were signed and the dam operational, the Army Corps of Engineers adopted a manual which converted the tenets of the MOA to actual operational policies. The Corps operated the system according to this manual for the next 20 years or more.⁵¹ The manual did not substantially differ from the MOA, but it did flesh out in greater detail the specifics by which the system would be operated. Importantly, the manual noted that "satisfactory results from the operation depend to a great extent on the adequacy of the runoff forecasts," and required that the various agencies calculating snowpack arrive together at a common forecast "before any flood control operation is initiated."⁵² Other specifics included a clause requiring 60% of the flood control space to be held in Lucky Peak and Arrowrock, with the remaining 40% in Anderson Ranch. In addition to Lucky Peak, Congress authorized additional flood control projects as well, including a series of levees and channel improvements along seven miles of the

⁴⁸ "Memorandum of Agreement Between the Department of the Army and the Department of the Interior for Flood Control Operation of Boise River Reservoirs," Idaho, Exhibit A, entered into on Nov. 20, 1953 by Secretary of the Army Robert T. Stevens and Assistant Secretary of the Interior Fred G. Aandahl, 8, 10, 14. ([18B63](#))

⁴⁹ "Boise River Agreement Made by Reclamation and Army Engineers," Interior - Reclamation - June thru, Box 25, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID, ([94B63](#)); "Boise Project History, 1954," Boise Project History 1954, Engineering & Research Center Project Histories, Boise, 1952-1954, 8NN-115-90-039, Box 250, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO; ([34B63](#)) and Public Law 660, Chapter 909, 83d Cong., 2d Session (Aug. 24, 1954). ([248B63](#))

⁵⁰ "Reservoir Regulation Manual for Boise River Reservoirs," Office of the District Engineer, U.S. Army Corps of Engineers, August 1956 (Walla Walla, WA), Boise State University Special Collections, 13. ([173B63](#))

⁵¹ "Reservoir Regulation Manual for Boise River Reservoirs," Office of the District Engineer, U.S. Army Corps of Engineers, August 1956 (Walla Walla, WA), Boise State University Special Collections. ([173B63](#))

⁵² "Reservoir Regulation Manual for Boise River Reservoirs," Office of the District Engineer, U.S. Army Corps of Engineers, August 1956 (Walla Walla, WA), Boise State University Special Collections, 17-18. ([173B63](#))

lower Boise River.⁵³ The intent was that together, the three reservoirs and the levees would prevent damages from major floods while still maintaining the storage rights of prior water right owners.

Lucky Peak's Water Right and Contracts

Even with the manual in place, not all issues on the river were settled, especially when it came to permitting the new water storage use for irrigation with the State of Idaho, in accordance with the 1902 Reclamation Act. During the process of settling Lucky Peak water rights, the preeminence of senior water rights in the new management scheme was reiterated and defended by the valley's water users, who remained apprehensive of any new operation that could hurt their rights but willing to compromise given certain assurances. In late 1957, the Department of Interior/Bureau of Reclamation submitted an application to the State of Idaho to appropriate the storage of Lucky Peak Reservoir for irrigation purposes. According to the Bureau of Reclamation's regional director, the federal government only filed the application after discussions were held with the Boise Project Board of Control as well the Boise River Watermaster. All parties stated at the time that they wanted the storage water available for supplemental irrigation purposes. The Corps of Engineers concurred. Over the next two years, however, several water users in the valley protested the application out of apprehension that their own, prior rights would somehow be supplanted, particularly if proposed plans to transfer excess storage water on the Boise River to the Bureau of Reclamation's Mountain Home project came to pass.⁵⁴ The Reclamation director authored a memo to water users in 1962 that demonstrated the priority of senior rights and irrigation, explaining that the agency's application required there be "no interference with prior water rights in the natural flow and flood waters of the Boise River, and [that] the [pending] application would supplement the storage rights in Arrowrock or Anderson Ranch Dam to the extent required."⁵⁵ He

⁵³ "Water Resources Development by the Corps of Engineers in Idaho," U.S. Army Engineer Division North Pacific, Corps of Engineers, January 1957, Army Eng-Miscellaneous July-September, Box 70, MS84, Papers of Henry Dworshak, 1939-1962, ISA, Boise, ID. ([102B63](#))

⁵⁴ Richard Lindgren to Regional Supervisor of Irrigation, Aug. 5, 1966, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([218B63](#)); Regional Director, Bureau of Reclamation to Colonel O.E. Walsh, Sept. 4, 1948, War Department Office of the District Engineer Portland District 628 Pittock Block Portland, Oregon, PO 821.202 (Lucky Peak Dam), Walla Walla District Civil Works Project Files, Construction Files, 1925-1948, Box 3 [812.7-800.55], R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([135B63](#))

⁵⁵ H.T. Nelson to Boise Project Board of Control, et.al, April 3, 1962, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([218B63](#))

offered to change the language in the permit to be even more explicit, giving water users the assurance they needed. Eventually the protests were withdrawn.

It didn't take long for the benefits of the merged operations to become clear, helping to assure the acceptance of the Bureau's Lucky Peak application. Even during the interim period of river management that occurred while Anderson Ranch and Lucky Peak were being completed, the *Idaho Daily Statesman* ran an article explaining how the Boise River reservoir operations worked, and pointing out that if Lucky Peak Reservoir had been operated solely for flood control, it would not actually have filled during the previous two years. Instead, it was the multi-purpose nature of the operation that ensured its success. The article highlighted two often forgotten facts: first, that the annual runoff into, and therefore the flow of, the Boise River varied widely year to year; and second, that a large part of the flow was already appropriated by irrigation water rights. The article explained that there was only water in Lucky Peak Reservoir because of the coordinated system of reservoir operations, quoting Dan Applegate, Project Superintendent for Central Snake Projects at the Bureau of Reclamation. The fact that Lucky Peak Reservoir had water in it was also because the water users had allowed their storage water to be moved from Arrowrock Reservoir to Lucky Peak Reservoir for temporary storage during the early part of the irrigation season. If Lucky Peak Reservoir had been operated for flood control on its own, separate from the irrigation storage reservoirs, Applegate explained, it would have only held about 60,000 acre-feet during the last irrigation season, far less than its 278,000 acre-feet capacity. All of this was to say that the multi-purpose method of combined irrigation and flood control reservoir operations was actually responsible for the water in Lucky Peak Reservoir. Once again reiterating the seniority of storage water rights for irrigation within that multi-purpose system, Applegate's final comment in the article was that the water rights for direct irrigation diversions held priority in the system, and only flows in excess of those water calls were available for storage.⁵⁶

With their benefits clear and their concerns assuaged, irrigators from District 12-A, the watermaster, and the Bureau held a meeting in early 1964 to discuss finalizing a valid right to Lucky Peak water for irrigation.⁵⁷ That year, the Idaho Department of Water Resources granted a permit to the United States

⁵⁶ "Superintendent Cites Reservoir Filling Due to Coordinated System Operations," *Idaho Daily Statesman*, Oct. 4, 1960. ([220B63](#))

⁵⁷ Daniel L. Musselman to [Unidentified], undated, Boise R. Operation 1964 -, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([149B63](#))

Bureau of Reclamation to store 314,250 acre-feet in Lucky Peak Reservoir for supplemental irrigation and minimum winter flow.⁵⁸

Soon after Idaho granted the permit to the Bureau of Reclamation, the federal agency drafted a water service contract template that irrigation districts in the Boise River Basin would use to purchase supplemental water from Lucky Peak. The 1965 contract template contained several critical provisions. First, it set the rate of water at \$.50 per acre-foot; second, it laid out the procedure by which the contractor would request and pay for water each year, and third, it made the contract dependent upon the 1953 MOA between the Corps and the Bureau, “as it may be amended.” It further stated:

Subject to such operation for flood control, the United States will operate Lucky Peak Dam and Reservoir so as to store under existing storage rights all available water, and during each irrigation season, the United States will make available to the Contractor for irrigation the Contractor’s proportionate share of the stored water that accrues in each year to the active capacity of the Reservoir, together with any stored water that may have been carried over in the Contractor’s share of such active capacity from prior water years.⁵⁹

The Department of Interior approved the contract and, due to the dry year, agreements were signed with parties needing water in August 1965.⁶⁰ The Bureau preferred to sign 40-year contracts with water users’ organizations, and preferred not to sign with individual irrigators.⁶¹ By 1968, 18 contracts had been executed, totaling 104,000 acre-feet of Lucky Peak storage space.⁶²

⁵⁸ Memo Re: Boise Project Board of Control v. U.S., p. 4, Folder No. 1300837-0, Boise 1988 General File River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([214B63](#)) Permit 63-3618/R-1183, on file with the Idaho Department of Water Resources.

⁵⁹ April 2, 1965 Draft Template of “Water Service Contract Between the United States of America and _____, Providing for the Conservation Use of Lucky Peak Dam and Reservoir,” Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([218B63](#))

⁶⁰ Regional Supervisor of Irrigation to Regional Director, Aug. 3, 1965; Richard Lindgren to Regional Supervisor of Irrigation, Aug. 11, 1965; H.T. Nelson to M.A. Watkins, Aug. 13, 1965, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([218B63](#))

⁶¹ Norman H. Moore to James R. Klahr, Dec. 22, 1967, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([218B63](#))

⁶² Regional Supervisor of Irrigation to Regional Director, May 10, 1968, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([218B63](#))

Operations, 1956-1974

Examination of these operations in practice is critical to understanding the history of Boise River management. Daily reservoir operation logs from the time the Corps wrote the 1956 Manual through to the flood of 1974 reveal a meticulous effort to abide by the rules set in the manual to achieve a balance between uses and to assure refill for irrigators. The Corps of Engineers' daily operations logs are available dating to as early as 1962, and the details in these documents provide insight into the delicate equilibrium struck between flood control releases and reservoir fill for irrigation during both wet and dry years. The operations logs divulge three agencies – the Corps, the Bureau, and Idaho's Department of Water Resources – trying to balance the high and varied demand for the resource throughout the year. The first season was known as the flood control season and ran from approximately November 15 through approximately April 15, though it could run longer if spring snowmelt came late. This overlapped with refill season which began when irrigation season finally ended, usually in mid-October after the reservoirs had been drafted and the facilities cleaned out, and lasted until December 31 when flood control season began. Irrigation season began about midway during the flood control season, when farmers began to use their natural flow rights. During flood control season, the Corps operated the system. When irrigators began to require storage water due to dwindling natural flows and the start of the growing season, the Bureau of Reclamation took over operations, working with the watermaster to manage calls for water.⁶³ During all seasons, river operators, regardless of agency, recognized the process of spilling the water first for flood control in the spring, and subsequently filling the reservoirs based on snowpack forecasts as flood control season wound down. The logs demonstrate that concern for refill was at the forefront of the operators' minds.

Snow forecasts were a critical part of determining river operations every year and helped guide operators in each season as to the methods that would provide highest probability of refilling the reservoirs without risking floods. Operation logs demonstrated definitively that the monthly forecasts dictated virtually every decision the operators made with regard to releases during flood control season. Both agencies participated in planning efforts during all periods of the year, even when they were not officially in charge of operations. At the start of each month, the Bureau and the Corps each conducted a snow survey and predicted how much snowmelt could be expected as inflow, and consequently, how

⁶³ "General Plan – Boise River Operations," Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA, 54. ([146B63](#))

much space was required in the reservoirs to store that water and still keep downriver flows below flood stage. The Corps and Bureau would agree to a compromise on their results, and then operated the reservoirs accordingly, releasing water from the system based on projected needs for both flood control and irrigation storage. However, because the snow was surveyed only once monthly, the forecasts could vary wildly between dates if any severe storms had occurred in the interim. During the long periods between surveys, operators frequently expressed concern that the reservoirs were being made to store – or release – too much water.

1963 was one such year that began with “the lowest snowpack of record” but transitioned into a high water year well before irrigation season began, thanks to major weather events. Years of great fluctuation and uncertainty like 1963 required daily negotiation between the Corps of Engineers and the Bureau of Reclamation to make sure that an adequate balance was struck between flood control and irrigation storage. That year, with precipitation events occurring in April that changed the forecasts significantly, the Army Corps was still reluctant to allow Lucky Peak to fill as late as May 20, explaining that the agency “would prefer to begin increasing L.P. releases immediately because it appears that we will have to waste some water.” The Bureau of Reclamation disagreed, responding that “an increase of release now may result in *unnecessary* waste of water.” [Emphasis added.] In the end, the agencies compromised on a plan in which the amount of water released left more space in the reservoirs than the curves called for and for that water users worried might not fill; but such a “spill” was only agreed to after a forecast that predicted an additional 810,000 acre-feet of runoff into the reservoirs before July, an amount that would indeed fill storage rights in Anderson Ranch and Arrowrock. By June 10, the snow was nearly gone, but operation still “require[d] daily adjustment,” according to the log. The Corps turned over operations to the Bureau that year on June 11.⁶⁴

The use of runoff forecasts in conjunction with rule curves provided the method by which the reservoir system operators controlled reservoir releases to prevent flooding and assure that irrigation storage spaces would be filled to supply water for use when needed during the irrigation season. The agencies worked together through daily fine tuning, making every effort to conform reservoir operations to the requirements of the flood control curves. This desire to be “on curve,” in reservoir operations to assure reservoir refill, is evidenced from an Army Corps telegram sent on March 25, 1965, stating that they

⁶⁴ Project Logs, Feb. 2, 1963 to Oct. 23, 1963, Boise R. Operation 1962, 1963, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([150B63](#))

were “now on flood control parameter curves.”⁶⁵ A telegram sent in response noted that reducing releases from Lucky Peak was not a problem since there was “no threat of failing to refill at this time.”⁶⁶ Such concern over refill is replete throughout the Corps’ operation logs,⁶⁷ demonstrating an on-the-ground recognition of these senior storage water rights. Additionally, the logs illustrate the basic philosophy of conserving water supply during years of low forecasts and releasing more water during years of higher snowpack, as well as the dread of releasing too much water to make space for spring snowmelt, only to result in “failure to refill.”⁶⁸

In addition to this constant concern over filling the reservoirs by the time flood control season officially ended – usually in late spring when the majority of snowpack had melted – records also demonstrate that existing accounting methods determined the extent of reservoir inflow accruals to storage spaces, and allocated the accrued water to storage water rights at the time the reservoirs reached actual physical maximum fill, usually between the end of June and the middle of July. The chart below shows when the Bureau of Reclamation and the Boise River Watermaster calculated the accrual of water to storage rights for the reservoirs between 1971 and 1974. It’s important to note that the day of physical, actual maximum fill was the date of concern to all parties during this period.

⁶⁵ Telegram dated March 26, 1965, Boise R. Operation 1964, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([149B63](#))

⁶⁶ Telegram dated March 29, 1965, Boise R. Operation 1964, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([149B63](#))

⁶⁷ See Project Log for May 26, 1967: “I am a little concerned about refilling the system with present rate of L.P. releases if the season should turn out to last until 1 July before max storage is attained. Dick assured me that all the water from L.P. is being used for irrigation and we agreed in view of the late season, failure to refill would probably not be serious;” and June 22, 1967: “we need to determine how to minimize spill rate after system fills,” Boise River 1965-67, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([148B63](#))

⁶⁸ Project Logs, Oct. 1, 1965 to May 3, 1966, as well as June 22, 1967, Boise River 1965-67, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([148B63](#))

Year	Point of Maximum Fill and allocation calculation	Date of last flood release	Comments	Total Storage and Allotment Percentage
1971	July 13	July 13	18 June: "After discussion of weather outlook, it was agreed to increase L.P. release to 9,000 cfs about noon today. USBR was urging this adjustment as full insurance against premature filling." ⁶⁹	976,313 acre-feet/95.8% ⁷⁰
1972	July 6	Unclear	13 June: "After a review of forecasts made by FRC and talking with Mr. Ord, I called Blevins and told him it looked like we should increase outflow from Lucky Peak in order not to fill too rapidly." ⁷¹	965,607 acre-feet/91.95% ⁷²

⁶⁹ Project Log, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA, 54. ([146B63](#))

⁷⁰ D.W. Applegate to Regional Director, July 16, 1971, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Denver Federal Record Center. ([218B63](#))

⁷¹ Project Log, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA, 5. ([146B63](#))

⁷² Robert Brown to Regional Director, July 13, 1972, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Denver Federal Record Center. ([218B63](#))

1974	July 7	Unclear	1 July: "Boise natural has dropped throughout the weekend down to 7800 for Sunday. Present discharge is 8300 & drafting slightly. Would prefer to cut to 7000 today and possibly cut further tomorrow." ⁷³	957,633 acre-feet/89.1% ⁷⁴
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The daily operational logs indicate that the two agencies generally collaborated well. And yet people began to recognize the imperfections of the 1953 Agreement and the 1956 Manual on which these daily operations were based as early as 1972, even before the floods of the ensuing years that instigated operational changes. Part of the issue was the use – or not – of New York Canal and Lake Lowell in the flood control curves and release calculations. During a meeting that included several representatives of the Bureau of Reclamation, Army Corps of Engineers, the Boise Project Board of Control, the Idaho State Engineer’s office, and others, Mel Ord, the Corps’ Water Control Section Chief, noted that the operations plan included flood control curves that were dependent on diversions into the New York Canal to the tune of 1,365 cubic feet per second in March and 2,820 cubic feet per second in April, numbers that were not realistic and which had almost never come to pass between 1955 and 1971.⁷⁵ The volume of water diverted into that facility was in reality much lower, meaning that much more water was left in the main stem of the Boise River. Additionally, the main river channel had deteriorated and had less capacity than when the 1953 agreement was reached. Ord recommended the revision of the plan and the rule curves in order to be more realistic and reflective of actual conditions.⁷⁶ The Boise Project often needed the canal to be empty for maintenance during the winter, and it was not clear that the agencies could actually depend on these diversions or that the Boise Project had agreed to them.

⁷³ Boise River Log, Boise River Log Jan 1974-1975, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle. ([145B63](#))

⁷⁴ Robert Brown to Regional Director, July 15, 1974, Folder No. 1300715-0 Boise Project Lucky Peak Space 1965 General File River Basin Management, PT-115-2014-027, PN Box 1063, R.G. 115, Records of the Bureau of Reclamation, Denver Federal Record Center. ([218B63](#))

⁷⁵ "Minutes of Boise River Operations Meeting," Jan. 20, 1972; New York Canal Diversions, 1955-1971, Boise R 1971 – 1973, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([146B63](#))

⁷⁶ "Minutes of Boise River Operations Meeting," Jan. 20, 1972, Boise R 1971 – 1973, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([146B63](#))

Ord and the others wanted to be sure that in the event of a large flood, they had a plan that would actually help avert damages.

Revising the Balance Between Flood Control and Storage for Irrigation, and Other Uses, 1974-1993

Idaho-Led Review of Boise River Reservoir Management

Ord and his fellow committee members saw these issues as practical, operational reasons why operations on the Boise River needed adjustment. Additionally, several events transpired over the next several years that reflected a changing world and imposed new requirements on the resource that were outside the immediate realm of flood control and irrigation delivery. For one, a worldwide energy crisis put new pressure on rivers to be fully harnessed for energy generation. Additionally, the mushrooming of recreational and environmental values meant that valley citizens were intent on maintaining sufficient instream flows to encourage vibrant fisheries and healthy fish habitat on the Boise River.⁷⁷

With these tangential issues looming, it was the old issues of flooding and irrigation that precipitated an urgent review of operations. In 1974, a particularly wet spring led to reports in the *Idaho Statesman* of a farmer who asked for a “Remedy as Boise River Submerges Pastures,” and of other farmers who were facing a “man-made flood” due to river operations that some said lacked foresight.⁷⁸ Landowners along the river complained not only to the local paper, but to the governor himself regarding mismanagement of flood waters in the spring of 1974 and the years immediately prior. People protested alternately that either too much water or not enough water was released in a timely manner, depending on the year and on their perspectives. In the spring of 1974, the public’s dissatisfaction with river operations finally led

⁷⁷ “Development of an Ecological Model,” a 1973 study by the Idaho Water Resources Board designed to expand the Army Corps of Engineers’ waste management model to include instream flow information and improve water quality. Meeting No. 3-73 of IWRB, Boise, Idaho, April 27, 1973, 20061987, Idaho Water Resource Board, Board Folders, 1972-4/73, AR 53, Records of the Idaho Water Resource Board Administration, ISA, Boise, ID. ([160B63](#))

⁷⁸ “Farmer Asks Remedy as Boise River Submerges Pastures,” *Idaho Daily Statesman*, March 23, 1974; “Man-Made Flood,” *Idaho Statesman*, March 30, 1974, found in Feasibility Public Involvement Appendix March 1984 Copy No. 3 Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([145B63](#))

Idaho Governor Cecil Andrus to request the Idaho Department of Water Resources (IDWR) to review Boise River operations.⁷⁹

In April, IDWR Director Stephen Allred wrote to the Corps of Engineers and carried the governor's message. The crux of Allred's comments, written in response to a draft Environmental Impact Statement that had been prepared by the Corps as a requirement to construct a second outlet at Lucky Peak dam,⁸⁰ suggested that the river had not been operated in strict accordance with the 1956 Manual for some time, and he urged the Manual's modification to reflect actual conditions and thus provide a more reliable guide to operations.⁸¹ He closed by offering to meet with the Corps to discuss ways to accomplish the work. Shortly thereafter, a meeting was held between the Director of the Bureau of Reclamation, Colonel Conover of the Army Corps of Engineers, and Allred to determine how to gather the technical information requested by the Governor. Together, they hatched a plan to assemble a work committee with representatives from all three agencies.⁸²

By May 1974, a formal process was underway to review Boise River management, a project that ultimately took a mere six months. The formed committee included representatives from the Bureau of Reclamation, the Idaho Department of Water Administration (now Idaho Department of Water Resources, or IDWR), the Army Corps of Engineers, and the Idaho Water Resources Board (IWRB). The first meeting was held in May and was chaired by Murland Parker of the Idaho Department of Water Resources. Although the federal agency representatives believed that this initial meeting would be exploratory, one Bureau of Reclamation attendee who reported on the event opined that "the entire

⁷⁹ Cecil Andrus to Tom Doerr, Feb. 13, 1976, Folder No. 1300867-0, Boise Project Operations 1976, General File, River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO; ([199B63](#)) Idaho Department of Water Resources, "Review of Boise River Flood Control Management," November 1974, in 141-3, Box 101, Folder 21, Water Resources (II) 1973-74: Drilling Plan, Boise River, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([106B63](#))

⁸⁰ Walla Walla District Corps of Engineers, "Final Environmental Impact Statement, Lucky Peak Dam and Lake," August 1976, Special Collections, Boise State University, Boise, ID. ([175B63](#)) The public was invited to comment on the draft of this Environmental Impact Statement, and many such comments were received and published with the final document. The draft was available in 1974 or earlier.

⁸¹ Stephen Allred to Nelson P. Conover, April 23, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#))

⁸² B.E. Manderscheid to Regional Planning Officer, May 31, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#))

meeting was somewhat of a 'steam roller' affair in which the IWRB sought a complete dominant role . . . and succeeded." At the start of the meeting, Murland explained that the purpose of the committee "was to review the flood control operation of the Boise River and determine if there were any changes in that operation which should be made." They read Governor Andrus's memorandum of direction and a draft of the Boise River Review plan. The plan explained the method for review of the Boise River flood control system and how to become familiar with reservoir and streamflow regulations as well as with legal constraints on those regulations. From there, a report outline would be drawn up, report assignments would be made to various involved agencies for completion, and committee recommendations would be made. The committee as a whole was to report its findings to the governor, along with any recommendations for modifications to river operations. Finally, the group would meet with the public as necessary. Although one Bureau representative believed that the final report should represent the opinion of the entire committee rather than that of just one agency, Allred had already stated that the committee's results were to come in the form of "a State report." He indicated that the report should be in a form that answered the governor's request directly. Federal representatives did not believe, however, that the Bureau "should establish the precedent of being technical consultants for the State."⁸³ Nevertheless, the die was cast for the state to lead the charge. Although the immediate impetus for review was flooding, the committee ultimately took into account all of the new demands being placed on the watershed: power production, irrigation, flood control, and minimum flows.

Early on in the review process, participants recognized that one of the constraints on the existing operating system was the 1953 Agreement's requirement for a 40/60 flood control space split between Anderson Ranch on the one hand, and Arrowrock and Lucky Peak on the other. The original thinking behind the split was to permit better power potential in Anderson Ranch. But now, in light of some years of practice, committee members recognized that the 40% space limitation in Anderson Ranch made for an inflexibility that could actually be "eased considerably without any interference with the system flood control effectiveness." The requirement to leave 60% of the flood control space in Lucky Peak and Arrowrock Reservoirs was "unduly restrictive in that no allowance is made for releases from Lucky Peak Reservoir which reduce the need for flood control space in Arrowrock and Lucky Peak

⁸³ B.E. Manderscheid to Regional Planning Officer, May 31, 1974; B.E. Manderscheid to Chief, Planning Field Branch, May 30, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#)). We attempted to locate the governor's memo referred to in this source but were unsuccessful.

Reservoirs."⁸⁴ The Corps also asserted that changing this requirement in the operating manual would actually allow for materially increased power production.⁸⁵ With this in mind, Allred asked the Bureau of Reclamation to write "a discussion of power benefits that would arise from modification of flood space distribution among Boise River Reservoirs."⁸⁶ Just two months later, the Bureau's regional director Rod Vissia reported his findings to Allred. He informed Allred that it was impractical to provide a single percentage, like the old 40/60 split, as a basis for upstream/downstream distribution of flood control space in the Boise River reservoirs. Instead, he said that the split should vary with the forecasts; bigger runoff volumes would permit Anderson Ranch's full 423,000 acre-feet to be used for flood control storage. Additionally, he also believed that another set of parameter curves should be developed based on records of flood inflow below Anderson Ranch that were in excess of the downstream channel capacity.⁸⁷ New rule curves would provide better guidance to ensure that too much water was not allowed to go to waste. By the time the report was released in November 1974, the agencies had already come to agreement on a temporary modification of the split, although the issue would be resolved more permanently in later years.⁸⁸

The committee met again in July 1974. Aerial photos were examined at the meeting to show changes in Boise River channel capacity over time; frequency curves of river discharge and flood parameter curves were discussed, and the Army Corps was asked to provide a frequency curve that reflected river flow frequencies under current operations. Public awareness of the flood plain was another topic of conversation, as was the need for flood plain zoning. At the end of the meeting, it was decided that

⁸⁴ Richard E. Lindgren to Murland R. Packer, July 26, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#))

⁸⁵ Richard E. Lindgren to Murland R. Packer, July 26, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#))

⁸⁶ C. Stephen Allred to Rodney J. Vissia, Aug. 15, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#))

⁸⁷ Rod Vissia to Stephen Allred, Sept. 12, 1974, Boise River Log Jan 1974 -1975, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([145B63](#))

⁸⁸ Idaho Department of Water Resources, "Review of Boise River Flood Control Management," November 1974, in 141-3, Box 101, Folder 21, Water Resources (II) 1973-74: Drilling Plan, Boise River, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([106B63](#))

IDWR would combine and revise various report sections, and that it would distribute draft recommendations to the Bureau and Army Corps for their review by October 1, 1974.⁸⁹

The report that resulted from this study by committee was released in November 1974. A few key operational issues were clarified – primarily related to releases and curves – and recommendations were made. The report focused primarily on elements of the 1953 MOA because “it is the only part of the Regulation Manual that was formally agreed to by the Departments of the Army and Interior.” One of the items clarified by the review report was the MOA’s strict provision for a maximum regulated flow of 6,500 cfs below the Diversion Dam during the reservoir refill period. The 1950s planners had arrived at this discharge by studying historic floods, and designed the parameter curves around the presumption that future floods would behave in a similar fashion. The 1974 review report, however, noted that this provision’s historical intent was for this volume of water to represent the upper limit of flows *below the City of Boise* (not below the Diversion Dam) and assumed that diversions between Diversion Dam and the City of Boise were at their full capacity, particularly at the New York Canal. This meant that the historical intent was actually for a higher flow below the Diversion Dam than the regulated 6,500 cfs. The report thus explained that the allowable release “will be considered to vary from 6500 cfs below Diversion Dam before irrigation begins, to a maximum of 8000 cfs when all canals are diverting at or near capacity.”⁹⁰ The question of whether management could depend on such large diversions into the New York Canal, in particular, would later come under debate.

Other parts of the report identified additional flaws with the existing system of operations and recommended revision of the 1956 Manual. In particular, the report’s discussion of the curves by which the river was managed was a significant addition to the debate and ultimately became the focus of future modifications to the 1956 Manual. The flood storage allocation parameter curves, which the report pointed out had been developed by analyzing past floods, used the date and forecasted runoff to tell operators how much total flood space storage was required to control runoff to the allowable discharge of 6,500 cfs. But the problem with the curves, IDWR concluded in its report, was that they

⁸⁹ “Summary Minutes, Committee on Review of Boise River Management,” May 22, 1974, Folder No. 1300873-0, Boise Project Review of IDWR Report 1974, Boise Project, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([201B63](#))

⁹⁰ Idaho Department of Water Resources, “Review of Boise River Flood Control Management,” November 1974, quote at 28, in 141-3, Box 101, Folder 21, Water Resources (II) 1973-74: Drilling Plan, Boise River, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([106B63](#)).

“are conservative for refill of the reservoirs, but not conservative for flood control.” In other words, in following the curves, there was a low risk of not refilling the reservoirs for the irrigation season, but only at the price of a higher risk for large flood damage, a risk that Treasure Valley farmers had been paying over the past few decades. The report also argued that the relative inaccuracy of early season forecasts led to a general reluctance to rely on them for early releases out of a fear of not achieving total refill.⁹¹ IDWR recommended reexamination of the flood curves for possible modification, aiming to better balance the risk between flood protection and refill. In the end, the state agency wanted to see a greater assurance of flood control in exchange for a greater risk of refill; the report strongly urged the federal agencies to carefully evaluate the trade-offs between the two.⁹²

Interim Changes and Additional Studies, 1975 - 1980

The next several years saw a flurry of activity on the Boise River. The recommendation to revise the 1956 Manual ultimately resulted in several new river studies, and the Bureau was already involved in an ongoing effort called the Southwest Idaho Water Management Study, which included sub-inquiries on issues such as the Boise River’s water quality.⁹³ Additionally, this era witnessed several proposals to harness additional hydroelectric potential on the Boise River, operations that could potentially alter the reservoir storage balance as well as the minimum instream flows in order to maintain adequate head to generate power.⁹⁴

Following the conclusion of the IDWR review process and report release, Governor Andrus urged the Bureau of Reclamation and the Army Corps of Engineers to act upon the report’s recommendation to

⁹¹ Idaho Department of Water Resources, “Review of Boise River Flood Control Management,” November 1974, in 141-3, Box 101, Folder 21, Water Resources (II) 1973-74: Drilling Plan, Boise River, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([106B63](#))

⁹² Idaho Department of Water Resources, “Review of Boise River Flood Control Management,” November 1974, in 141-3, Box 101, Folder 21, Water Resources (II) 1973-74: Drilling Plan, Boise River, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([106B63](#))

⁹³ “Water Quality Study – Boise Valley,” Volume 1, Jan. 1977, 1/5, 8NS-115-95-083 Project Reports, 1910-1995, Boise, Box 18, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([58B63](#))

⁹⁴ Studies were underway for power at Lucky Peak as well as an additional unit at Anderson Ranch Dam. R.E. Cuckler to John Mangen, Feb. 3, 1976, Folder No. 1300867-0, Boise Project Operations 1976, General File, River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO, ([199B63](#)); “Boise Project, Idaho-Oregon Anderson Ranch Powerplant Third Unit, Idaho, Feasibility Public Involvement Appendix,” November 1979, Copy No. 5, 8NS-115-95-083, Project Reports 1910-1955, Boise, Box 22, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([66B63](#))

revise reservoir operations under the 1953 Agreement and 1956 Manual collaboratively with IDWR. Both federal agencies agreed that such review was necessary. The Corps informed the governor that it had set aside funds and personnel to begin an “extensive review” of the manual in fiscal year 1976, and the Bureau told Andrus that it already had three studies underway. The two agencies planned to devise a joint plan early in the new fiscal year.⁹⁵

In the meantime, new technology was making more precise river management possible. Hydrologists were just beginning to utilize the power of computer-aided technology such as modeling programs to better understand hydrology. Some of the studies being conducted at the Bureau utilized these new technologies, including analysis and trials of the ARS streamflow forecasting procedure and the development of a computer model (SSARR) to help provide short-term forecasts and analyses of daily streamflow. The Bureau was also working on revising the flood parameter curves to include data from the post-1950 era. If these studies were completed and provided new data in the near-term, then interim changes to river operations could be made before the 1956 Manual was fully revised.⁹⁶

Although the two federal agencies were responsible for reservoir operations, IDWR was directly involved in the reservoir operations review and revision process. The triple-agency effort – Corps, Bureau, and IDWR – to revise the manual got underway in December 1976.⁹⁷ Although concerns about flooding had been the immediate impetus for reviewing reservoir operations, the agencies recognized that a manual revision would need to account for all modern uses of the river: power production, minimum flows, flood control, and irrigation. The agencies adopted a study plan in December that took these issues into account and also included a public information program and use of the SSARR forecast

⁹⁵ Cecil Andrus to U.S.B.R. Regional Director and Corps of Engineers District Engineer, Jan. 10, 1975; Nelson O. Conover to Cecil D. Andrus, Jan. 21, 1975; Rod Vissia to Cecil Andrus, Feb. 5, 1975, MSS141-3, Box 101, Folder 23, Water Resources (II), Dec. 1974-Apr. 1975: Wild and Scenic Rivers, Aquaculture, Hells Canyon, Idaho Wildlife Federation, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([108B63](#))

⁹⁶ Rod Vissia to Cecil Andrus, Feb. 5, 1975, MSS141-3, Box 101, Folder 23, Water Resources (II), Dec. 1974-Apr. 1975: Wild and Scenic Rivers, Aquaculture, Hells Canyon, Idaho Wildlife Federation, 141.1, State Files, Box 101, MSS141, Papers of Cecil D. Andrus, 1970-1995, Boise State University Special Collections, Boise, ID. ([108B63](#))

⁹⁷ In fact, the Corps and Bureau had made an effort in the 1960s to revise the manual, but the Bureau was unable to meet the study deadlines. Memo to North Pacific Division Engineer, re: Requirements for Reservoir Regulation Manuals, June 1, 1966, and Report of Status of Reports on Reservoir Regulations for Other Agency Reservoirs, March 6, 1967, in Boise River 1965-67, Accession 77-95-0111, Box 14, R.G. 77, Records of the Army Corps of Engineers. U.S. National Archives, Seattle, WA. ([148B63](#))

model. The plan identified five technical studies that would be required in order to make the desired changes to operations. The studies were assigned to the agencies as follows:

- Army Corps of Engineers: This agency would study winter flood control requirements to determine flood control needs from November through February for 50-year, 100-year, and 500-year floods.
- Bureau of Reclamation: This agency was responsible for the computation of reservoir flood control rule curves for the January through July period, keeping in mind the objective of staying within river flows of 6,500 cfs. These curves would also include refill assurances.
- Idaho Department of Water Resources: The state would study fall and winter assured refill curves, and would develop assured refill curves that plotted storage versus refill assurances for various conditions, including the system's total capacity, total allocated space, and total unallocated (that water not assigned to water users or sold) space. They were to develop separate curves for 90%, 95%, and 98% assurance of refill of the system's allocated space.
- Army Corps of Engineers and Bureau of Reclamation: Together, these agencies would study volume forecast procedures to update equations, refine models, improve forecast reliability, and improve late season forecasting.
- Army Corps of Engineers, Bureau of Reclamation, and Idaho Department of Water Resources: The three agencies together would study reservoir storage balance to determine required individual reservoir space for flood control and how to distribute storage and flood control space in the system.⁹⁸

On December 14, 1976, representatives of the three agencies – including Bob Sutter, Alan Robertson, and Bill Ondrechen for IDWR – met to discuss the operation criteria and considerations that had to be identified. Several items had already been agreed to, including that the point of measurement would be the Old Strawberry Glenn Bridge below Boise, where flows were not to exceed 6,500 cfs. They had also agreed that all parties would consider fall and early winter evacuation based on high refill assurance and that releases in excess of that would be permitted in times of emergency flood situations. Finally, all parties had agreed that space unallocated for storage or sale by the Bureau would have a lower refill

⁹⁸ "Draft Plan of Study, Boise River Regulation Manual," Folder No. 1300858 - 0 Boise Project Operations 1977 Boise Project, River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([210B63](#))

priority than allocated space. The three agencies also intended to include input from flood control districts, irrigation districts, fish and wildlife agencies, and city and county governments before adopting a final plan. The study schedule predicted that the final manual would be completed by January 15, 1979.⁹⁹

Studies commenced, and useful data were obtained relatively quickly that led to the adoption of interim operational changes. 1977, for starters, was a significantly dry year. Declaring the current allocation method “unreasonable and inadequate,” the Bureau of Reclamation adopted a new reservoir allocation method after consultation with the watermaster and the Boise Project Board of Control. The new method calculated storage carryover and new accrual “more strictly,” including Lake Lowell in the allocation procedure for the first time and recognizing its first priority storage right.¹⁰⁰ Second, results from some of the early studies convinced the Corps and Reclamation to adopt interim rule curves that would have a greater safety factor for floods. These appear to have been developed by the Bureau as part of the agency’s current and ongoing studies of river operations for the manual revision urged by the State’s 1974 *Review of Boise River Management*.¹⁰¹ The Corps’ Project logs from spring 1978 indicate that the Bureau agreed to use of the interim curves in April 1978, and by virtue of their derivation – better flood control – they called for greater space in the reservoirs at the start of irrigation season on April 15.¹⁰² [See Figure 1 for a chart comparing the curves, found in the Corps’ daily project log.]

⁹⁹ “Draft Plan of Study, Boise River Regulation Manual,” Folder No. 1300858 - 0 Boise Project Operations 1977 Boise Project, River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([210B63](#))

¹⁰⁰ 761 Memorandum to Project Superintendent, et al., May 3, 1977, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources, http://idwr.idaho.gov/files/legal/WD63/WD63_19770503_Memorandum_Re_New_Method_Adopted_for_Allocation_of_Boise_System_Storage.pdf, (accessed April 24, 2015.) ([non-internet hyperlink](#))

¹⁰¹ Boise River Log, April 1, 1978, Boise R. Log 1978-1981, Accession 77-95-0111, Box 14, R. G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([139B63](#))

¹⁰² Hand-written calculations included in the Corps’ daily river operation logs show the agency comparing the “old USBR curves” with the “new USBR curves,” the difference resulting in a 60,000 af difference in storage space requirement by April 15. Hand-written 1978 USBR Chart, Boise R. Log 1978-1981, Accession 77-95-0111, Box 14, R. G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([139B63](#))

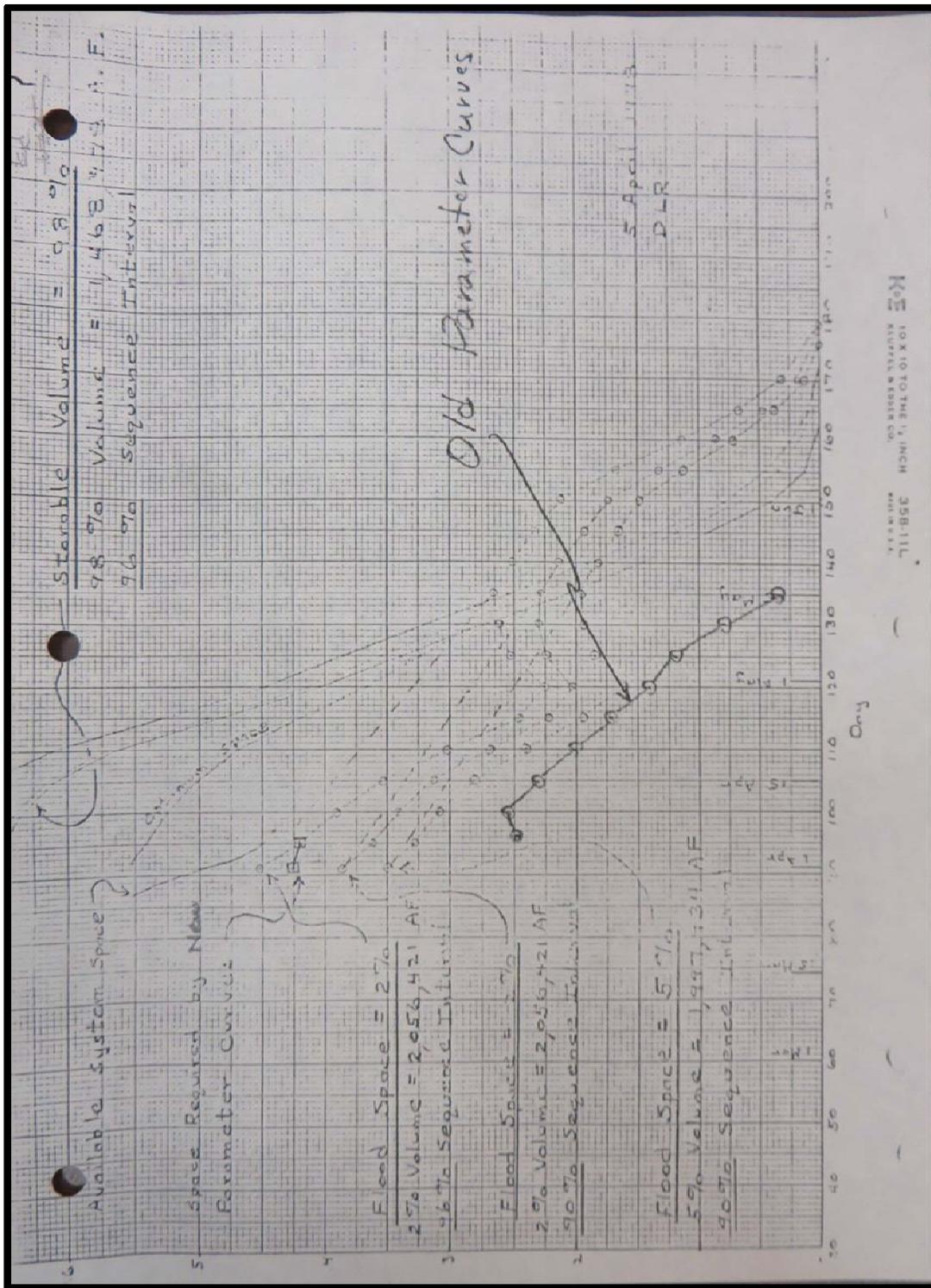


Figure 1 1978 Chart from Corps' Project Logs Showing Results of Using New Rule Curves [\(139B63\)](#)¹⁰³

¹⁰³ Hand-written calculations included in the Corps' daily river operation logs show the agency comparing the "old USBR curves" with the "new USBR curves," the difference resulting in a 60,000 af difference in storage space

Another issue, however, was that the 40/60 split between flood control space in Anderson Ranch and the lower reservoirs had not yet been permanently changed, and operators were still attempting to adhere to it. Adherence to that requirement led to excess spilled water during the spring of 1978 when the new interim curves were implemented. The Bureau complained that 47,000 acre-feet of storage water had been wasted down the river that spring merely to maintain the required split, hard to swallow on the heels of a dry season the previous year. According to Bureau planning officer Larry Vinsonhaler, while there might be good reasons for the split – such as better power production at Anderson Ranch – those reasons were not valid criteria for flood control operations. He again reiterated, as others had done earlier, that the split should be removed from the Operations Manual so as to use Anderson Ranch more effectively for overall system flood control.¹⁰⁴ Thus, the newly adopted curves could not be changed in isolation; other changes were needed concurrently. As such, the split was changed sometime in 1979, and no longer restricted where in the system the flood storage space was kept.

That change emerged from a series of meetings held between the Corps, the Bureau, and IDWR to discuss these points and also to discuss the unallocated space for storage or sale in Lucky Peak. In what must have been a lengthy meeting held in February 1978, the groups came together to discuss progress on their technical studies and other unresolved issues. A list of meeting topics indicated that the Bureau was working on the new flood parameter curves and developing criteria for reservoir balance, among other things; IDWR was developing storable flow curves and comparing refill assurances of unallocated space used entirely for flood control versus existing use of unallocated space; and the Corps was focused on flood control issues exclusively.¹⁰⁵ Meanwhile, with the changes to the interim rule curves and the consequentially greater flood control releases, it was unclear how water rights would be protected going forward. Part of the discussion at the February meeting and another meeting of Bureau and city officials with engineers in August 1979 was how to account for the 116,500 acre feet of unallocated

requirement by April 15. Hand-written 1978 USBR Chart, Boise R. Log 1978-1981, Accession 77-95-0111, Box 14, R. G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([139B63](#))

¹⁰⁴ Larry Vinsonhaler to Robert G. Rickel, Feb. 12, 1979, Folder No. 1300860-0, Boise Project Operations 1979, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([204B63](#))

¹⁰⁵ "Meeting Topics, Feb. 9, 1978," Folder 1300855 - 0 Boise Project Operations 1978 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([211B63](#))

storage space in Lucky Peak.¹⁰⁶ This was space that had not yet been contracted to irrigation districts and had yet to be assigned to a specific beneficial use. One proposal urged emptying all of that space annually by January 5, and another suggested operating on that basis in the interim period.¹⁰⁷ Neither proposal was accepted, in part due to concern over irrigation water rights protection.

Around the same time, a proposal was made for a third power unit at Anderson Ranch, an additional pressure on the river that simply exacerbated the concerns of water users who worried that the additional spills that would occur during winter peak demand times would affect their storage.¹⁰⁸ The Bureau recognized the issue, and noted that in their minds, an “acceptable” Anderson Ranch power operation “first satisfies the irrigation and flood control needs.”¹⁰⁹ Irrigators sought to have their voices heard on these points. The Boise Project Board of Control, representing the Boise Project irrigation districts, asked the Bureau for an opportunity to provide input to the new operations manual in June 1978.¹¹⁰ But it took until April 1979 before approximately 20 Anderson Ranch Reservoir spaceholders had the opportunity to meet with the Bureau of Reclamation to express their concern “that their water rights be protected and the proposed hydropower operation be secondary to the operation of the system for irrigation and flood control.”¹¹¹ The concern over protection of existing rights continued to be paramount throughout the operations review process.

¹⁰⁶ “Meeting Topics, Feb. 9, 1978,” Folder 1300855 - 0 Boise Project Operations 1978 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO; ([211B63](#)) Harry E. Slixen to Jerry W. Eggleston, Sept. 20, 1979, Lucky Peak Second Outlet 10, Accession 77-95-0048, Civil Works Project Files, Box 6, Accession 77-95-0111, Box 14, R. G. 77, Records of the Army Corps of Engineers, U.S. National Archives, Seattle, WA. ([125B63](#))

¹⁰⁷ Meeting Topics, Feb. 9, 1978, Folder 1300855 - 0 Boise Project Operations 1978 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([211B63](#))

¹⁰⁸ “Boise Project, Idaho-Oregon Anderson Ranch Powerplant Third Unit, Idaho, Feasibility Public Involvement Appendix,” November 1979, Copy No. 5, 8NS-115-95-083, Project Reports 1910-1955, Boise, Box 22, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([66B63](#))

¹⁰⁹ Ronald Golus to Robert Brown and Howard Chitwood, Sept. 15, 1978, Folder 1300855 - 0 Boise Project Operations 1978 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([211B63](#))

¹¹⁰ Royse Van Curen to Robert J. Brown, June 19, 1978, Folder 1300855 - 0 Boise Project Operations 1978 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([211B63](#))

¹¹¹ “Boise Project, Idaho-Oregon Anderson Ranch Powerplant Third Unit, Idaho, Feasibility Public Involvement Appendix,” November 1979, Copy No. 5, 8NS-115-95-083, Project Reports 1910-1955, Boise, Box 22, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([66B63](#))

IDWR continued to play a major role in the manual's revision as it related to existing water rights. Director Stephen Allred notified the Corps in late 1979 that IDWR would accept that agency's new runoff projection techniques, declaring them to be "consistent with the recommendations" in the 1974 Review of Boise River Operations report.¹¹² The following year, Allred again wrote to the Corps, proposing that IDWR prepare a description of the "full annual operating cycle" of the reservoirs, "including the fill sequence, the irrigation use period, and the fall-winter operations for flow maintenance" for inclusion in the manual. He continued:

Accrual of storage water to the respective reservoirs is determined by the reservoir rights under the priority system. It is the responsibility of the watermaster to determine this fill in relation to the other rights that he administers. A description of this process should be included in the manual.¹¹³

Allred offered to draft the section he was recommending, which his staff then proceeded to do. The manual as it was ultimately adopted included language similar to that of Allred's letter.¹¹⁴

In 1981, IDWR's engineer Bob Sutter completed his draft on the subject of Boise River Reservoir Fill, which IDWR's Hydrology Section Supervisor Alan Robertson sent to the Corps for inclusion in the revised manual.¹¹⁵ Sutter described the reservoir rights of Arrowrock, Anderson Ranch, and Lucky Peak as the only diversion rights in effect during the non-irrigation season between November 1 and April 15. During the remainder of the year, when the natural flow of the Boise River was capable of meeting some, if not all of the reservoir rights, the storage rights were considered equal in stature to other rights. Sutter explained that to provide for efficiency and flexibility in reservoir operations, storage under these rights could physically occur in any of the four reservoirs without regard to the reservoir specified in the right as long as the capability of any other right to be exercised was unaffected. He also noted that yearly storage could not surpass the volume specified in a water right or the physical capacity of the reservoir

¹¹² Stephen Allred to Henry J. Thayer, Nov. 30, 1979, Folder No. 1300853 - 0 Boise Project Operations 1980 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([207B63](#))

¹¹³ Stephen Allred to Henry J. Thayer, Sept. 30, 1980, Folder No. 1300853 - 0 Boise Project Operations 1980 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([207B63](#))

¹¹⁴ U.S. Army Corps of Engineers, Walla Walla District, "Water Control Manual for Boise River Reservoirs," Section 7-06e, pp. 7-24, April 1985. ([10B63](#))

¹¹⁵ Alan Robertson to Robert Rickel, April 2, 1981, including Boise River Reservoir Fill Memo dated March 3, 1981 by Bob S., http://www.idwr.idaho.gov/files/legal/WD63/WD63_19810402_Letter_from_IDWR_to_USACE.pdf (accessed on June 10, 2015) ([non-internet hyperlink](#)).

unless all subsequent (junior) rights had been met. Furthermore, the volume of water stored (which included unused storage) could not on any given day exceed the specified or physical volume of the reservoir. Lastly, Sutter noted that unused storage, or carryover, that was released during the non-irrigation season for a specified beneficial use (such as fish release) could be replaced in the same year within the constraints of the water right governing the allotted space. The details in this document demonstrated IDWR's detailed participation in the manual's revision and highlighted the agency's concern for fulfilling reservoir water rights.¹¹⁶

By 1981, many issues had been settled, but some procedures remained unclear. Operational guidance was still murky. Continued technological advances, together with another proposal for power on the river at Arrowrock and Diversion Dam, meant that studies and results that would inform the changes to operation of the system were still ongoing. Those involved were getting anxious to complete the manual, having missed the 1979 timeline now by two years.

1982 Power and Modification Study and Adoption of New Operations Manual

Complicating the timeline for completion of a revised manual was the Bureau of Reclamation's ongoing Boise Project Power and Modification Study that had begun in 1979.¹¹⁷ The concept behind this modeling study was to compare the present operation of Lucky Peak Reservoir against the myriad possible alternative operations in the event that system hydroelectric generation was maximized by proposed facilities at Anderson Ranch, Boise Diversion, Lucky Peak, and Arrowrock Dams. The study compared potential operational schemes by applying streamflow depletion patterns and reservoir

¹¹⁶ Boise River Reservoir Fill, Redraft Bob S. March 3, 1981, Water District 63 Contested Cases, Archived Documents, Idaho Department of Water Resources, http://idwr.idaho.gov/files/legal/WD63/WD63_19810303_IDWR_File_Notes_Boise_River_Reservoir_Fill.pdf, (accessed April 24, 2015) ([non-internet hyperlink](#)). Furthermore, the Department had also determined by 1980 that the Boise River above Lucky Peak dam had been fully appropriated. In accordance with that finding, the director issued a memorandum to IDWR staff informing them that no additional water permits would be issued for consumptive uses between June 15 and November 1. C. Stephen Allred to IDWR Staff, Memorandum Regarding Boise River Appropriations, Jan. 22, 1980, Water District 63 Contested Cases, Archived Documents, Idaho Department of Water Resources, http://idwr.idaho.gov/files/legal/WD63/WD63_19800122_Memo_Boise_River_Appropriations.pdf, (accessed April 24, 2015) ([non-internet hyperlink](#)).

¹¹⁷ Ron Golus to PN725 et al, Oct. 30, 1979, Folder No. 1300853 - 0 Boise Project Operations 1980 Boise Project River Basin Management, PT-115-2014-027, PN Box 1064, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([207B63](#))

drafting practices to the natural reach inflows, using precipitation and flow data from 1928 to 1977.¹¹⁸ Using 22 reaches along the Boise River as well as four reservoirs, the BOR measured all natural flow, flood control, diversion, and most other data pertinent to the Boise River operation. The model – developed by IDWR for use on the Upper Snake and modified by the BOR with IDWR’s permission for the Boise – ran using monthly increments and progressed down the river, reach by reach, using the outflow of the reach just examined as the inflow to the next reach. The goal of the study was to determine “whether reservoir and river operations can be improved to serve new needs while still meeting all existing water rights, storage contracts, and authorized project purposes.”¹¹⁹

All three agencies were heavily involved in the process. IDWR was involved specifically by providing the modeling software, and many meetings were held between the two federal agencies. For instance, on August 11, 1982 the BOR met with the Army Corps of Engineers so the Corps could discuss their recommended revisions to the Boise River reservoir manual. The meeting allowed the BOR to better grasp what sorts of changes the Corps was recommending to the 1953 Agreement and 1956 Manual so that they could appropriately incorporate the Corps’ new proposed flood control rule curves (from December 1981) into one of the modeling study’s alternate plans.¹²⁰ In many ways, the modeling study itself was a collaboration between the Bureau of Reclamation and IDWR, since simulations of monthly operations were performed using the model referenced above. To fit the Bureau’s study parameters, the IDWR model was modified to reflect only the Boise River and its tributaries, eliminating the Snake from the picture.¹²¹

¹¹⁸ Larry Vinsonhaler to Douglas E. Sprenger, June 21, 1982; Description of Boise River System Operation Studies, Undated, Project Plan and Feasibility Reports, Boise Project, Project Development, Construction, and Operation and Maintenance (O&M) (Folder No.1283637-0), PT-115-2014-0123, PN Box 445, Box 18, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([196B63](#))

¹¹⁹ “Planning Report and Draft Environmental Statement,” Undated, Folder No. 1283716, Boise Project, Boise Power and Modification Study, Project Development, Construction, and Operation and Maintenance, PT-115-2014-0123, PN Box 449, Box 16, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO ([197B63](#)) (Note: The PN Box number is listed for Federal Record Center identification); “Description of Boise River System Operation Studies,” Project Plan and Feasibility Reports, Boise Project, Project Development, Construction, and Operation and Maintenance (O&M) (Folder No.1283637-0), PT-115-2014-0123, PN Box 445, Box 18, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([196B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

¹²⁰ “Feasibility Public Involvement Appendix,” March 1984, Copy No. 3, 23, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹²¹ “Planning Report and Draft Environmental Statement,” Undated, Folder No. 1283716, Boise Project, Boise Power and Modification Study, Project Development, Construction, and Operation and Maintenance, PT-115-2014-

The report that emerged from this modeling study was critical to the ultimate development of the new manual and therefore, the design of the studies was of utmost importance. The results would be used to provide guidance for river operations to achieve the greatest degree of flood control, the greatest assurance of reservoir refill, the greatest opportunity for power production, and minimum winter flows adequate for ecological and recreational purposes. The myriad public information meetings revealed that the choice of which flood control curves to use in the studies was critical to the public. Many believed that the Corps' new flood control curves did not meet the stream maintenance requirements satisfactorily enough, but whether the studies would use the old curves from the 1956 Manual, or new, revised curves that were some sort of compromise between conservative for flood control or conservative for refill, remained to be seen. Additionally, how to account for the unallocated space for storage or sale in Lucky Peak Reservoir remained a major concern.¹²²

To accommodate all of the possible combination of factors, many models were run. For example, one group of studies used the rule curves developed in June 1976 (referred to as the “1976 curve”) and gave all Lucky Peak Reservoir space assignments the same refill priority, while the second group of studies used the draft 1981 rule curves (referred to as the “new curve”) prepared as part of a draft regulation manual and assigned Lucky Peak’s uncontracted space the lowest refill priority.¹²³ The results showed that the latter effort “significantly reduces the assurance that the Boise River system reservoirs will fill.”¹²⁴ Several other scenarios were modeled, tweaking other smaller factors or isolating certain management policies to come up with the perfect solution.

The three most important initial studies were BS13, BS16, and BS18, and the public was invited to comment on the results of them all. BS13 was the Trial Recommended Plan. This version of the model was the first to attempt to incorporate the findings of preliminary studies on stream flow, hydroelectric

0123, PN Box 449, Box 16, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO ([197B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

¹²² “Feasibility Public Involvement Appendix,” March 1984, Copy No. 3, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹²³ John W. Keys III to Robert Williams, April 8, 1983, United States Department of the Interior, Bureau of Reclamation Correspondence, Bureau of Reclamation, Snake River Area Office, Boise, Idaho. Obtained in February 2015. ([link](#))

¹²⁴ John W. Keys III to Robert Williams, April 8, 1983, United States Department of the Interior, Bureau of Reclamation Correspondence, Bureau of Reclamation, Snake River Area Office, Boise, Idaho. Obtained in February 2015. ([link](#))

generation, and reservoir recreation while still meeting the needs of irrigation and flood control. It showed that it was possible to balance all of these needs and still meet the minimum flow requirement of 150 cubic feet per second in 90% of the years. The Bureau briefed the Boise Project Board of Control on the updated results at a meeting on May 14, 1982,¹²⁵ and then the results of B13 and the other original runs were presented at a public workshop on June 24, 1982. The public workshop identified BS13 as the preferred option, and from there several more variations were created to improve the operation and the model's rendition of that operation.¹²⁶ Following newspaper coverage of the public meeting, the Bureau's regional director reassured the chair of the Board of Control that their "full input will be sought before any plan of operation is recommended." The director explained the importance of considering the implementation of an updated manual together with the changes suggested by the Power and Modification Study, "since they counteract in some instances."¹²⁷

The Second Trial Recommended Plan, BS16, was designed to simulate the proposed operations as they stood on February 10, 1983. This model used the 1976 curve, maintained 13,900 acre-feet of space in Lucky Peak Reservoir for flood control, and committed the rest of the uncontracted space in that reservoir to "winter minimum streamflow maintenance." It also maintained a 10% minimum pool in Arrowrock Reservoir. It was the most detailed model that the study group had run, and the results were checked against an external storage rights accounting for Lucky Peak Reservoir.¹²⁸ Another alternative, BS18, assessed operations using the 1981 draft rule curves. However, the Bureau's Pacific Northwest Regional Director John Keys wrote to the Corps' District Engineer, explaining that this model "significantly reduces the assurance that the Boise River system reservoirs will fill." Keys noted that

¹²⁵ L.W. Lloyd to Warren Tolmie, June 16, 1982, in Project Plan and Feasibility Reports, Boise Project, Project Development, Construction, and Operation and Maintenance (O&M) (Folder No.1283637-0), PT-115-2014-0123, PN Box 445, Box 18, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([196B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

¹²⁶ Boise Project, Idaho-Oregon Power and Modification Study, Boise River Basin: Hydrology Appendix, Hydrology Appendix, August 1984, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, Copy No. 3, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([64B63](#))

¹²⁷ L.W. Lloyd to Warren Tolmie, June 16, 1982, in Project Plan and Feasibility Reports, Boise Project, Project Development, Construction, and Operation and Maintenance (O&M) (Folder No.1283637-0), PT-115-2014-0123, PN Box 445, Box 18, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([196B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

¹²⁸ Boise Project, Idaho-Oregon Power and Modification Study, Boise River Basin: Hydrology Appendix, Hydrology Appendix, August 1984, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, Copy No. 3, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([64B63](#))

while this "may be good for flood control," it unfavorably impacted the yield of Lucky Peak Reservoir's uncontracted space. Additionally, the B18 model's use of the 1981 draft rule curves had a negative impact on the required minimum pool at Arrowrock, which would only have filled 41 out of 50 years, or 82% of the time, versus 46 years out of 50 years, or 92% of the time, as it did when using the old rule curves.¹²⁹

Still more studies were conducted before settling on the final decision.¹³⁰ Reaching agreement on a final recommendation required negotiation, because the Corps and the Bureau interpreted the data differently. In a letter to the Bureau in April 1983, the Corps of Engineers expressed dissatisfaction with the Bureau's recent recommendation to revert to the 1976 rule curve. Corps' District Engineer Williams explained that in his agency's view, the 1981 draft rule curves were a substantial improvement over the 1976 curve, and that use of the 1981 curves did not result in a significant difference in the chance of refill.¹³¹ The Bureau representative acknowledged the discrepancies between the two agencies' rule curve calculations and suggested a working meeting, *with the IDWR*, to resolve the differences and determine the best approach for the future, a meeting which occurred in May 1983.¹³² IDWR's involvement was critical both because of their development of the software program that was responsible for the recommendations, as well as their need to administer the water rights regardless of what operational scheme was chosen.

¹²⁹ John W. Keys III to Robert Williams, April 8, 1983, United States Department of the Interior, Bureau of Reclamation Correspondence, Bureau of Reclamation, Snake River Area Office, Boise, Idaho. Obtained in February 2015. ([link](#))

¹³⁰ Boise Project, Idaho-Oregon Power and Modification Study, Boise River Basin: Hydrology Appendix, August 1984, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, Copy No. 3, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([64B63](#))

¹³¹ John W. Keys to Robert Williams, April 8, 1983; Robert B. Williams to John W. Keys, III, April 22, 1983; Comparison of Rule Curve Space Requirements, Boise Reservoir System, April 22, 1983; Project Plan and Feasibility Reports, Boise Project, Project Development, Construction, and Operation and Maintenance (O&M) (Folder No. 1283637-0), PT-115-2014-0123, PN Box 445, Box 18, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([196B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

¹³² Neil Stessman to Robert Williams, May 16, 1983; Neil Stessman to A. Kenneth Dunn, May 16, 1983; Project Plan and Feasibility Reports, Boise Project, Project Development, Construction, and Operation and Maintenance (O&M) (Folder No.1283637-0), PT-115-2014-0123, PN Box 445, Box 18, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([196B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

At this meeting, the Bureau pointed out that the 1981 curves used to run the models were not able to meet Boise River minimum streamflows, regardless of whether an equal refill priority system or a last-fill priority system for the uncontracted space in Lucky Peak Reservoir was used. The conclusion from this meeting was that both the BOR and the Corps modeling systems had some problem areas that needed refining "to try to improve the flood control operation and meet Boise River minimum streamflows," but without harming storage rights. If one model or set of rule curves could not achieve this, then "a compromise may have to be reached," the meeting summary noted. The main goal, the summary emphasized, was to improve flood control while not majorly impacting Boise River minimum streamflow releases from storage.¹³³

The four models shown in the table below were the finalists in 1984 when the 1985 Manual was being finalized. The agencies chose BS23 as the model for the final recommendation. This model was studied in the Power and Modification Study and reflected the negotiations and compromises that occurred at the May 1983 meeting between the three agencies.¹³⁴ It used the flood control operation and storage allocation system of the most recent, May 1983 draft regulation manual, which included refined rule curves and space distribution curves dated 1982, allocation of the top five feet of Lucky Peak Reservoir storage as "exclusive flood control space," and assignment of 60,000 acre-feet of the uncontracted space as last to fill priority to be used to compensate for shortfalls in refilling Arrowrock and Anderson Ranch reservoirs. The BS23 model also included the continuation of Anderson Ranch Reservoir operations as suggested in the power plant enlargement study, and commitment of 102,400 acre-feet of uncontracted Lucky Peak space to winter streamflow maintenance, to be used in conjunction with Idaho Fish and Game's 50,000 acre-feet of winter minimum flows to reach the desired 150 cubic feet per second winter release. Other provisions included filling Lucky Peak Reservoir as soon as possible for recreation and maintaining a minimum pool in Arrowrock Reservoir for fish habitat.¹³⁵ The other final models are described in Table 1.

¹³³ "Feasibility Public Involvement Appendix," March 1984, Copy No. 3, p. 23, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹³⁴ "Feasibility Public Involvement Appendix," March 1984, Copy No. 3, pp. 23-24, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹³⁵ Hydrology Appendix, August 1984, Boise Project, pp. 34-35, Idaho-Oregon Power and Modification Study Boise River Basin, Copy No. 3, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver. ([64B63](#))

Study Number	Study Name	Power Modifications	Flood Curve	Top Five Feet of Lucky Peak	Lucky Peak Recreation	Lucky Peak Summer Drawdown	Arrowrock Minimum Pool	Lucky Peak Uncontracted Space
BS23	Final Recommended Plan	All potential power projects assumed in place	New (1981)	Reserved for flood control	Maintained	Drawdown to elevation 3,050 to increase generation	Maintained	60,000 acre-feet for flood control buffer with last refill priority; 102,400 acre-feet for winter streamflow maintenance
BS24	Future Without	No potential power projects included	New (1981)	Reserved for flood control	Not maintained	No summer drawdown	Maintained, but given lower priority	60,000 acre-feet for flood control buffer with last refill priority; 102,400 acre-feet for winter streamflow maintenance
BS25	Alternative Future Without	No potential power projects included	Existing (1976)	Reserved for flood control	Not maintained	No summer drawdown	Maintained, but given lower priority	60,000 acre-feet for flood control buffer with last refill priority; 102,400 acre-feet for winter streamflow maintenance
BS26	Recommended Plan Except 5-Foot Drawdown	All potential power projects assumed in place	New (1981)	Reserved for flood control	Maintained	No summer drawdown	Maintained	60,000 acre-feet for flood control buffer with last refill priority; 102,400 acre-feet for winter streamflow maintenance

Table 1. Hydrology Appendix, August 1984, Boise Project, Idaho-Oregon Power and Modification Study Boise River Basin, Copy No. 3, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver. ([64B63](#)). See Appendix 1 for flood curve information. **Bold indicates the primary unique factor of each study.**

It is important to note that the Bureau had invited the public's involvement throughout the various stages of the Power and Modification Study through public meetings that took place from 1981 to 1983. For example, with regard to the water users, no fewer than six meetings were held between the Bureau and the Boise Project Board of Control representatives, most of which related to plans for co-developing power at Arrowrock. However, the Board of Control was also committed to protecting "the best interests of the existing space contractors," as it expressed in a November 1981 meeting. The two groups also met in July 1982, October 1982, and several additional times in 1983.¹³⁶

By December 1983, the issue of the curves had been resolved. The May 1983 meeting must have resulted in a compromise on revised rule curves designed by the Corps of Engineers to which both federal agencies agreed, noting that they improved flood control by making more space available in the reservoirs during wet years. These are curves which appeared in the May 1983 draft manual. The BOR also admitted that "the use of these curves will slightly increase the risk that all the reservoir space may not fill, especially the last 60,000 acre-feet of Lucky Peak Lake uncontracted space, which is to have the last fill priority." The BOR concluded that the top five acre-feet of uncontracted space in Lucky Peak Reservoir would continue to be used exclusively for short-term flood control space, while the rest of the uncontracted space would go towards streamflow maintenance and municipal and industrial use. A pool of 28,700 acre-feet would be maintained in Arrowrock Reservoir to preserve the trout fishery, a requirement that could be violated "only in case of drought, unusual maintenance needs, or in anticipation of extremely large flood events requiring drafting to provide space to control the flood."¹³⁷ The two federal agencies agreed with this final compromise, and IDWR did, as well, as evidenced by a letter written by the agency's director in 1987.¹³⁸

A few items had to be finalized before the BOR and Corps could enter an agreement to approve the new manual. Now that agreement had been reached on the uncontracted space, the Bureau of Reclamation

¹³⁶ "Feasibility Public Involvement Appendix," March 1984, Copy No. 3, p. 23, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹³⁷ "Feasibility Public Involvement Appendix," Addendum K - Information Update December 1983, quote at 5-6, March 1984, Copy No. 3, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹³⁸ Director Higginson to Charles Blanton, November 30, 1987, Folder No. 1300837-0, Boise 1988 General File River Basin Management, Denver Federal Record Center, R.G. 115, Records of the Bureau of Reclamation, Denver Federal Record Center. ([214B63](#))

had chosen to pursue an amendment to its Lucky Peak water right permit issued by the Idaho Water Resources Board IDWR, thanks to the guidance of IDWR staff, whose representatives had met with Bureau staff on June 17, 1982.¹³⁹ The amendment specified that the 228,200 acre-feet dedicated to irrigation in the original permit would be changed to devote 102,300 acre-feet in the reservoir to stream flow maintenance and 111,950 acre-feet to irrigation, leaving 13,950 for flood control. At the December 1984 meeting where the Water Board considered the request, representatives attended from Pioneer Irrigation District and the Idaho Water Users Association. The board unanimously approved the amendment.¹⁴⁰

Importantly, the public, state agencies, and various other agencies remained involved in the process leading up to the final adoption of the manual. Finally, after all recommendations of the Power and Modification Study had been incorporated into the new manual, including recommended uses for Lucky Peak Reservoir's uncontracted space, a recommended operation was drafted as "the best balanced and most beneficial system operation."¹⁴¹ The agencies signed a new memorandum of understanding to confirm, ratify and adopt the new April 1985 Water Control Manual for Boise River Reservoirs. The new MOU, which supplemented but did not replace the 1953 Memorandum of Agreement, directed that the Boise River reservoirs would be regulated according to the new manual, and that any future revisions to regulation criteria could be executed through a new Letter of Agreement for Revisions. All changes were made through compliance with Article 7 of the 1953 MOA.¹⁴²

One of the key changes in the 1985 Manual was the detailed manner in which it balanced flood control and storage for beneficial use, along with other demands. The Manual's operating criteria varied during

¹³⁹ "Feasibility Public Involvement Appendix," March 1984, Copy No. 3, Boise Project, Idaho - Oregon Power and Modification Study Boise River Basin, 8NS-115-95-083, Project Reports, 1910-1995, Boise, Box 20, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver, Broomfield, CO. ([67B63](#))

¹⁴⁰ "Minutes of Meeting No. 10-84," Idaho Water Resources Board, Boise, ID Dec. 13, 1984, in 10-84 IWRB Minutes December 13, 1984 Boise, Idaho, 20061995, Idaho Water Resources Board, Board Minutes 1/80-10/84, AR 53, Idaho Water Resource Board Administration, ISA, Boise, ID. ([115B63](#))

¹⁴¹ "Planning Report and Draft Environmental Statement," Undated, Folder No. 1283716, Boise Project, Boise Power and Modification Study, Project Development, Construction, and Operation and Maintenance, PT-115-2014-0123, PN Box 449, Box 16, R.G. 115, Records of the Bureau of Reclamation, Federal Record Center, Broomfield, CO. ([197B63](#)) Note: The PN Box number is listed for Federal Record Center identification.

¹⁴² Memorandum of Understanding for Confirmation, Ratification, and Adoption of Water Control Manual, Boise River Reservoirs, Boise River, Idaho, Sept. 25, 1985, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources, http://www.idwr.idaho.gov/files/legal/WD63/WD63_19850925_Memorandum_of_Understanding.pdf, (accessed May 5, 2015) ([non-internet hyperlink](#)); U.S. Army Corps of Engineers, Walla Walla District, "Water Control Manual for Boise River Reservoirs," July 1988. ([10B63](#))

the flood control season, beginning in November and sometimes extending into July with a period of overlap when flood control season coincided with irrigation season, usually starting around April 1 and extending as late as July 1. From November 1 to March 1, the Manual required minimum flood control spaces in the reservoirs “without consideration to either existing climatic conditions or refill potential.”¹⁴³ (See Appendix 1, Figure 3, for adopted flood control curve.) If those requirements were violated, the operating agency at the time was required to evacuate water as quickly as possible while not exceeding the 6,500 cfs flood control objective at the Glenwood gauge on the Boise River. From January 1 to March 1, winter space requirements were determined by the flood potential related to periodic runoff volume forecasts. During that time, the Manual required that at least 55% of the total winter flood control space requirement be held in Lucky Peak and Arrowrock Reservoirs, with no less than 50,000 acre-feet of space in Lucky Peak Reservoir. As releases were made, 95% refill assurance information could be used to determine how maintenance of required flood control and scheduled releases would impact refill. During the refill period, from April 1 through July 31, snowmelt was stored to refill the emptied flood control spaces in the reservoirs. Filling these spaces prematurely was dangerous, so just the prescribed flood control spaces had to be maintained as refill occurred. At the same time, release fluctuations from Lucky Peak had to be “limited as much as practical to avoid unnecessary interference with irrigation diversions during this period.”¹⁴⁴ The Water Control Manual also prescribed the order that the reservoirs were filled and drafted, as well as how Lake Lowell fit into the scheme of operations. IDWR’s staff concurred with the adopted curves, reflecting on the curves in 1987 that: “We feel that the new manual responds well to current conditions on the Boise River and provides a balance between flood protection and refill of storage.”¹⁴⁵ Operations today – which follow this Manual – maintain the same requirements.

¹⁴³ U.S. Army Corps of Engineers, Walla Walla District, “Water Control Manual for Boise River Reservoirs,” April 1985, revised November 1993, Walla Walla District, page 7-4 (Revised July 1988). ([10B63](#))

¹⁴⁴ U.S. Army Corps of Engineers, Walla Walla District, “Water Control Manual for Boise River Reservoirs,” April 1985, revised November 1993, Walla Walla District, page 7-11 (Revised July 1988). ([10B63](#))

¹⁴⁵ Director Higginson to Charles Blanton, November 30, 1987, Folder No. 1300837-0, Boise 1988 General File River Basin Management, Denver Federal Record Center, R.G. 115, Records of the Bureau of Reclamation, Denver Federal Record Center. ([214B63](#))

Accounting for Water Rights on the Boise River, 1981-1987

As previously discussed, in 1981 IDWR's Bob Sutter was tasked with preparing a paper entitled "Boise Reservoir Fill" to be included in the storage accrual section of the Water Control Manual. In preparing to draft that paper, Sutter first talked with the Boise River Watermaster and examined Watermaster reports, and prepared an internal memorandum to explain current reservoir fill methods.¹⁴⁶ In a January 1981 memorandum that preceded writing the storage accrual section, Sutter explained that: "Reservoir fill is computed each spring when the three main reservoirs (Anderson, Arrowrock, Lucky Peak) reach their maximum combined contents." The computation of reservoir fill was not based solely on the measured contents of the reservoirs, because water stored in one reservoir could be credited to the water right for another reservoir. In average or above water years, runoff was computed to fill the reservoirs in simple order of the priorities of the three reservoir rights, without including the contents of Lake Lowell in the computation. Sutter found that, in below average years, there was "no set procedure for allocating the new fill between Lake Lowell and Arrowrock," due to the Board of Control's decisions about how to classify storage as between Arrowrock, Anderson Ranch and Lake Lowell. Sutter made note of the Bureau of Reclamation's 1977 decision to include Lake Lowell in the fill computation, but could not determine whether that procedure had been adopted and used since. Sutter's research resulted in several questions, all relating to "off-stream storage in Lake Lowell," which could not be answered by "the usual water right conventions." He therefore suggested that "we possibly cannot provide a written fill procedure for the Boise," and that "the accounting of what water is going where and under what right on the Boise River is very confusing to the observer."¹⁴⁷

Two months later, Sutter prepared the "Boise Reservoir Fill" paper for the Water Control Manual, providing a basic description of reservoir accrual without delving into the intricacies and unanswered questions he identified in his January memorandum.¹⁴⁸ The paper described the reservoir water rights,

¹⁴⁶ Bob Sutter to Robert J. Sutter, Redraft: RJS:mb, Jan. 23, 1981, Boise River Reservoir Fill and Stored Water Use, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources, http://www.idwr.idaho.gov/files/legal/WD63/WD63_19810123_IDWR_File_Memo.pdf (accessed May 5, 2015). ([non-internet hyperlink](#))

¹⁴⁷ Bob Sutter to Robert J. Sutter, Redraft: RJS:mb, Jan. 23, 1981, Boise River Reservoir Fill and Stored Water Use, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources, http://www.idwr.idaho.gov/files/legal/WD63/WD63_19810123_IDWR_File_Memo.pdf (accessed May 5, 2015). ([non-internet hyperlink](#))

¹⁴⁸ Redraft, Boise River Reservoir Fill, Bob S./mb, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources,

stating that “storage accrues on a daily basis to each reservoir according the priority of the water rights(s) for the reservoir(s) and the natural flow supply available at the point of diversion.” The paper explained that the reservoir rights were the only ones in effect during the non-irrigation season, and that, during the irrigation season, when there was sufficient natural flow, they “are considered equal in stature to all other rights subject to priority date and other conditions imposed by State water law.” Regarding the complex storage of water as between reservoirs Sutter discussed in his prior memorandum, the paper simply stated that: “To provide for efficiency and flexibility in reservoir operations, storage under these rights can physically occur in any of the four reservoirs without regard to the reservoir specified in the right as long as the capability of any other right to be exercised remains unaffected.” In basic terms, then, the paper described the annual and daily limits of storage rights, the treatment and reporting responsibilities for reservoir carryover, the Watermaster’s responsibility to determine and report the accumulation of storage in the reservoirs, and the Bureau of Reclamation’s responsibility to inform the Watermaster of “each user’s stored water allocation.”¹⁴⁹

In November 1981, not long after IDWR delivered Sutter’s reservoir fill paper to the Corps for inclusion in the Manual, IDWR staff members held an internal meeting to discuss the adaption of an existing computerized water delivery accounting system – created for Water District 1 located far to the east on the Snake River – for use on the Boise River. Minutes from the meeting indicate that the decision was motivated by revision of the operations manual and the availability of funding from the Water Use Data fund.¹⁵⁰

The sources available to the author contain no record of IDWR’s development of a computerized accounting system for the Boise River during the five year period between November 1981 and 1986. I find this highly unusual in my experience investigating such matters. The next available record regarding IDWR’s development of a computerized accounting system for the Boise River was an August 7, 1986

http://www.idwr.idaho.gov/files/legal/WD63/WD63_1981_IDWR_File_Notes_Boise_River_Reservoir_Fill.pdf (accessed May 5, 2015). ([non-internet hyperlink](#))

¹⁴⁹ Redraft, Boise River Reservoir Fill, Bob S./mb, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources,

http://www.idwr.idaho.gov/files/legal/WD63/WD63_1981_IDWR_File_Notes_Boise_River_Reservoir_Fill.pdf (accessed May 5, 2015). ([non-internet hyperlink](#))

¹⁵⁰ Boise River Accounting Meeting, Nov. 18, 1981, attendees included Ken Dunn, Norm Young, Wayne Haas, and Alan R., Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources,

http://www.idwr.idaho.gov/files/legal/WD63/WD63_19811118_IDWR_File_Notes_Meeting_of_Nov.18,1981.pdf (accessed May 5, 2015). ([non-internet hyperlink](#))

“Study/Project Request” from IDWR’s Resources Administration Division to the Resource Analysis Division to “complete development of accounting procedures which have been initially set up and are now being installed on a temporary basis for the 1986 season.” The request stated: “The Boise River Watermaster needs a computerized accounting system to determine natural flow and stored water use including the determination of storage accrual under the various storage rights.” The requested work included preparing a “discussion memorandum for consideration by department administration and watermaster dealing with water delivery policy questions,” and preparation of “a draft user’s manual for watermaster.”¹⁵¹

The Boise River Watermaster used the new accounting system for the first time during the 1986 water year. The Boise River Watermaster’s report of Water Distribution of Boise River for that year reported:

Several *small additions* were made by [new watermaster] Mr. Sisco, one of these was the computerized storage accounting program that was developed by Mr. Bob Sutter of the Department of Water Resources. This program, once implemented, should provide an accurate up-to-date accounting of not only storage use, but of reservoir accrual.

This annual report is reflective of the new computer use, with several of the charts and/or appendixes being generated by this new process.¹⁵² [Emphasis added.]

There is no further record of IDWR’s internal development of the accounting system, or of notice to the Boise River water users regarding the adoption of the computerized accounting system. There is also no record of the “discussion memorandum” or “user’s manual” that were called for in IDWR’s August 1986 project request.

The last available record which discusses the adoption of new Boise River accounting system is contained in a paper entitled “Water Delivery Accounting” that was sent to Watermaster Lee Sisco with a March 19, 1987 letter from IDWR Director Ken Dunn to provide Sisco “guidance on the procedure to use in allocating storage accruals to the various reservoirs on the Boise River system.”¹⁵³ The paper

¹⁵¹ Study/Project Request, Aug. 7, 1986, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources, http://www.idwr.idaho.gov/files/legal/WD63/WD63_19860807_Study_Project_Request_Boise_River_Accounting.pdf (accessed May 5, 2015). ([non-internet hyperlink](#))

¹⁵² 1986 Boise River Watermaster Report, Summary, Water District 63 Contested Cases Archived Documents, Idaho Department of Water Resources, http://www.idwr.idaho.gov/files/legal/WD63/WD63_1986_WD63_Watermaster_Report_Pg_1.pdf ([non-internet hyperlink](#))

¹⁵³ A. Kenneth Dunn to Lee Sisco, March 19, 1987, Bureau of Reclamation, Snake River Office, Boise Idaho. http://www.idwr.idaho.gov/files/legal/WD63/WD63_19870413_BOR_Memo_Re_KDunn_Letter_to_LSisco.pdf

expanded on the discussion of storage accrual in Bob Sutter's 1981 paper that was published in the 1985 Water Control Manual by summarizing the new accounting procedures. Accounting for the accrual of water to the reservoirs by source and priority, rather than by priority only, was the only significant change in the accrual of water to storage water rights that was described in Dunn's 1987 letter and the accompanying paper. This meant that water from Mores Creek that flowed only into Lucky Peak Reservoir would be attributed to the Lucky Peak storage water right, rather than the earlier priority Arrowrock and Anderson Ranch water rights. Dunn described the new system this way: "While the allocation procedure cannot accurately be described as new because it simply applies the appropriations doctrine, *it is a modification from procedures applied from time-to-time in the past.*"¹⁵⁴ [Emphasis added.] The paper explained that earlier priority deliveries to the New York Canal for Lake Lowell, and to earlier priority water rights during the irrigation season, affected the accrual of water to storage: "Accrual ceases when the reservoir rights are all filled or when the natural flows are all credited to earlier irrigation rights." Allocation of storage to storage space holders, he explained, was then made to the storage space holders.¹⁵⁵ The paper did not directly address the questions Bob Sutter raised in 1981 regarding the relationship between storage in Lake Lowell and the three main river reservoirs, but simply stated that Lake Lowell's storage condition would have no direct effect on accrual on those reservoirs.

Dunn described the paper's cryptic explanation of the accounting method for storage accrual during flood control operations as, "based on the storage accrual procedure described at paragraph 7-06e (page 7-24) of the 'Water Control Manual for Boise River Reservoirs' published in April 1985."¹⁵⁶ The Water Delivery Accounting paper stated that flood control releases did not affect reservoir accrual, and that reservoir accrual "continues in accordance with the rights in effect" after stored water is released for flood control. While the accounting program showed that the storage rights were "filled 'on paper' as a result of flood control releases," actual storage continued and was accounted for as "unaccounted

(Accessed June 19, 2015). ([non-internet hyperlink](#))

¹⁵⁴ A. Kenneth Dunn to Lee Sisco, March 19, 1987, Bureau of Reclamation, Snake River Office, Boise Idaho. http://www.idwr.idaho.gov/files/legal/WD63/WD63_19870413_BOR_Memo_Re_KDunn_Letter_to_LSisco.pdf (Accessed June 19, 2015). ([non-internet hyperlink](#))

¹⁵⁵ A. Kenneth Dunn to Lee Sisco, March 19, 1987, Bureau of Reclamation, Snake River Office, Boise Idaho. http://www.idwr.idaho.gov/files/legal/WD63/WD63_19870413_BOR_Memo_Re_KDunn_Letter_to_LSisco.pdf (Accessed June 19, 2015). ([non-internet hyperlink](#))

¹⁵⁶ A. Kenneth Dunn to Lee Sisco, March 19, 1987, Bureau of Reclamation, Snake River Office, Boise Idaho. http://www.idwr.idaho.gov/files/legal/WD63/WD63_19870413_BOR_Memo_Re_KDunn_Letter_to_LSisco.pdf (Accessed June 19, 2015). ([non-internet hyperlink](#))

for storage.” If the reservoir system did not totally fill after flood control releases, deficit was assigned to the storage rights in reverse priority order: first to the top 73,900 acre feet in Lucky Peak, then proportionally contracted and uncontracted Lucky Peak space, and finally, to Anderson Ranch space holders if the deficit exceeded the capacity of Lucky Peak Reservoir. The procedure described in this paper was overtly synchronous with the 1985 Manual as well as with the 1953 Agreement. There is no discussion or suggestion that the new accounting system was intended to alter or remove the protections given to existing storage right holders in any of the previously described negotiations.

The historical record does not reveal that either the Department of Water Resources or the Boise River Watermaster had any additional discussions with Boise River water users, or collaborated with the Corps of Engineers or the Bureau of Reclamation, in the development and adoption of the new accounting system for the Boise River, other than informing them after the fact of its implementation in 1986. There is no indication that adoption of the accounting system was intended to alter the manner in which water was stored for irrigation use under the reservoir operating plan that was adopted in 1953 and modified by the 1985 Water Control Manual. The fact that the reservoir operating plan had just been modified through a decades-long process a year earlier, combined with the lack of broader public notice and agency consultation, lead to the conclusion that adoption of the computerized water accounting system was not intended to diminish the storage right protection and storage filling assurances provided by the reservoir operating plan that had been in effect since 1953.

Appendix 1 – Comparison of 1950 and 1982 Rule Curves

1950 Rule Curves

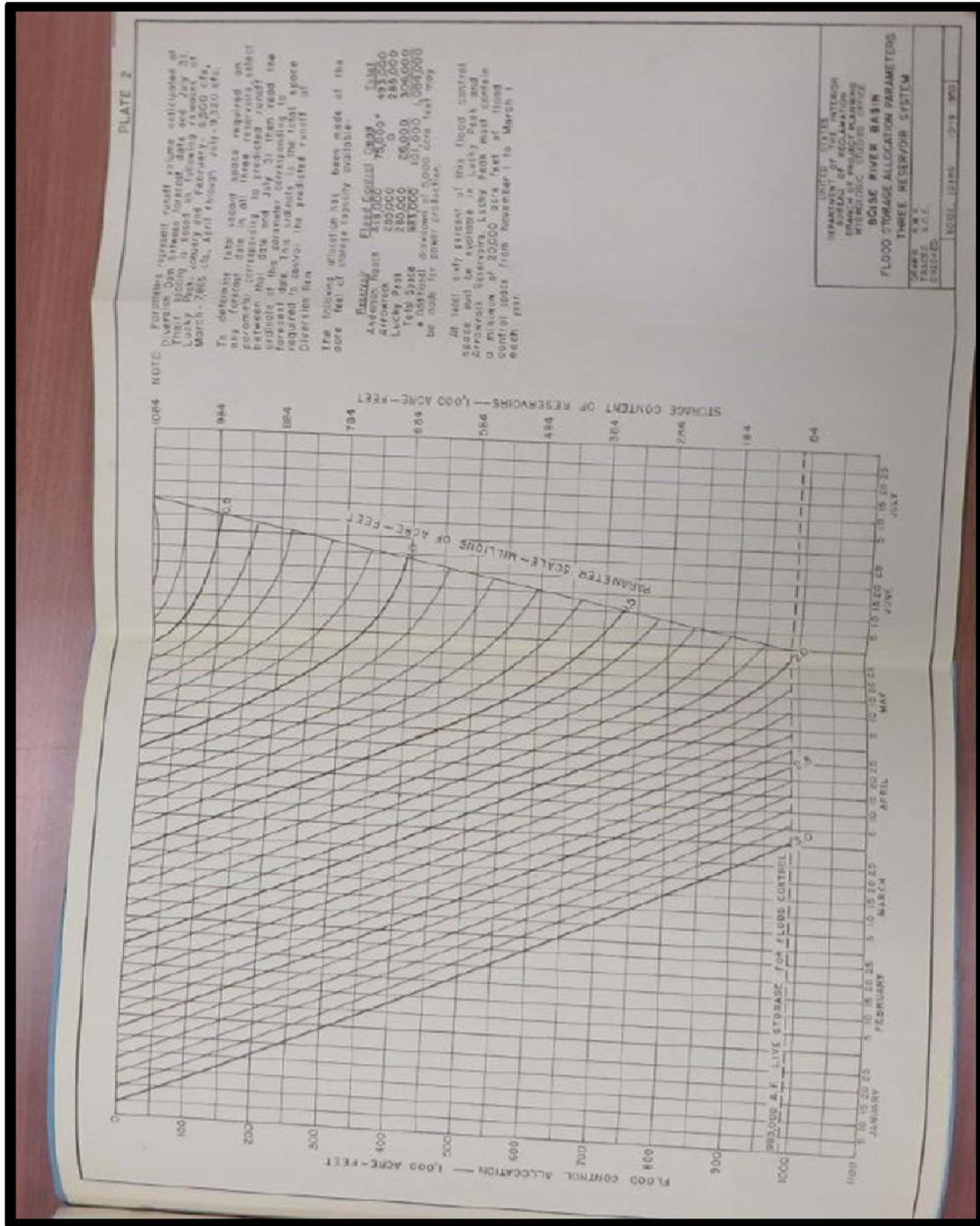


Figure 2 Boise River Basin, Flood Storage Allocation Parameters, Three Reservoir System, 1950, Plan for Flood Control Operations of Boise River Reservoirs, Idaho, Interim Plan Without Mountain Home Project, Engineering and Research Center Project Reports, 1910-1955, Code BOI 551-564, Box 61, R.G. 115, Records of the Bureau of Reclamation, U.S. National Archives, Denver. ([39B63](#))

Explanation of Figure 2:

This diagram shows the curves developed in 1950 to correlate runoff volume forecasts on various dates with required vacant space in all three reservoirs between the date of the forecast and July 31. For any forecast on any date, this diagram could be used to determine the amount of reservoir space needed to control river flows at the Diversion Dam to required levels. To use the diagram on the date of any given forecast, or in between forecasts, river managers selected the parameter curve that best matched the current runoff forecast, found where that curve crossed the appropriate vertical date line, and read off the required storage space of all three reservoirs for that date and runoff. Releases downriver could then be adjusted to keep reservoir storage capacity “on curve.” For example, if a runoff forecast came in on April 1 calling for 2.1 million acre-feet between then and July 31, on April 10th a river manager would determine that 464,000 acre-feet of storage space was needed in the reservoir system to stay on curve. For this 1950 set of curves, target flows at the Diversion Dam were set at 6,500 cfs for January and February, 7,865 cfs for March, and 9,320 cfs for April through July. There were 418,000 acre-feet available for flood control in Anderson Ranch, 285,000 acre-feet in Arrowrock, and 280,000 acre-feet in Lucky Peak. An important stipulation in 1950 was that 60% of the flood control space had to be available in Lucky Peak or Arrowrock Reservoirs. In addition, Lucky Peak had to have at least 20,000 acre-feet of flood control space available from November through March.

1982 Rule Curves

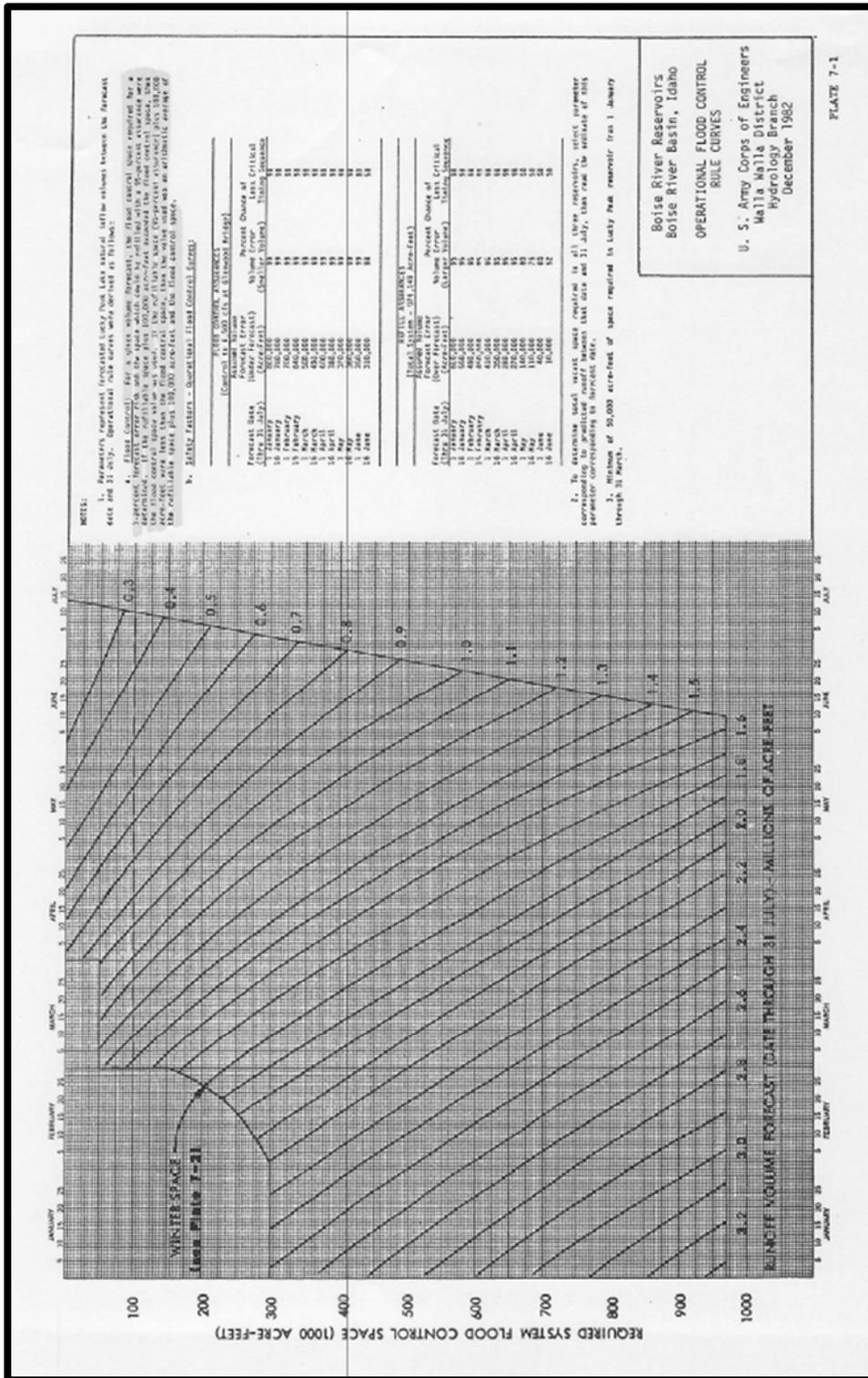


Figure 3 Boise River Reservoirs, Boise River Basin, Idaho, Operational Flood Control Rule Curves, 1982, Boise Project, Idaho-Oregon, Power and Modification Study, Boise River Basin, Hydrology Appendix, Copy No. 1, Snake River Area Office, Pacific Northwest Region, U.S. Bureau of Reclamation. (64aB63)

Explanation of Figure 3:

New parameter curves were incorporated into the 1985 Water Control Manual. They worked the same way as the old curves, but had some new characteristics. First, there was no longer any requirement to make sure that 60% of the flood control space was kept in Arrowrock or Lucky Peak Reservoirs. Second, at least 50,000 acre-feet of flood control space had to be maintained in Lucky Peak from January through March, more than doubling this emergency flood buffer from that of 1950 but shortening the time period over which it was required by two months. Third, the curves now represented specific flood control and refill assurances. The curves were designed to provide 95% refill assurance given a 1% forecast error. If the amount of space that irrigators wanted refilled plus a buffer of 100,000 acre-feet was greater than the flood control space required, meaning that irrigators wanted more water than there was safely room for, then the target space requirement was set to match the available flood control space. If the amount of space that irrigators wanted refilled plus the 100,000 acre-feet buffer was less than the flood control space required, meaning that irrigators didn't need to fill all the available space, then the target space requirement used was the average between the two. This system was more conservative for flood control than the 1950 curve and therefore, there was a slightly greater risk that the reservoirs would not be completely filled at the conclusion of flood control operations. To compare to the 1950 curves, if a runoff forecast came in on April 1 calling for 2.1 million acre-feet between then and July 31, on April 10th a river manager would determine that 780,000 acre-feet of storage space was needed in the reservoir system to stay on curve to capture runoff and control releases to prevent Boise River flows from exceeding the 6,500 cfs flood control objective.

Bibliography

Archival Collections Consulted

Boise State University Special Collections, Boise, Idaho

Papers of Cecil D. Andrus, 1970-1995, MS141

Idaho State Archives and Record Center, Boise, Idaho

Papers of Governor C.A. (Clarence) Bottolfsen, 1938-1941, AR2/17

Papers of Governor C.A. (Clarence) Bottolfsen, 1943-1945, AR2/19

Papers of Henry Dworshak, 1939-1962, MS84

Records of the Idaho Water Resource Board Administration, AR 53

U.S. National Archives

Seattle, WA: Records of the Army Corps of Engineers, Record Group 77

Broomfield, CO: Records of the Bureau of Reclamation, Record Group 115

U.S. Federal Record Center

Broomfield, CO: Records of the Bureau of Reclamation, U.S. Federal Records Center

Miscellaneous

Records of the Bureau of Reclamation, Snake River Office, Boise, Idaho

Newspapers

The Idaho Statesman

Government Documents

U.S. Congress, Senate Commerce Committee. *Authorizing the Construction of Certain Public Works on Rivers and Harbors for Flood Control*. Report No. 1624 79th Cong., 2d sess., 1946.

Reservoir Regulation Manual for Boise River Reservoirs, Office of the District Engineer, Corps of Engineers, August 1956 (Walla Walla, WA) Boise State University Special Collections.

Secondary Sources

Keynes, John Maynard. *The General Theory of Employment, Interest, and Money*. London: Macmillian & Company, 1936.

U.S. Department of the Interior. *The Boise Project*, by Wm. Joe Simonds. Open-file report, Bureau of Reclamation History Program, Denver, Colorado, 1997. Reformatted, reedited, and reprinted by Brit Storey, December 2009.

http://www.usbr.gov/projects//ImageServer?imgName=Doc_1261497242949.pdf

Websites

Idaho Department of Water Resources. "Water District 63 Contested Cases, Archived Documents."

<http://idwr.idaho.gov/news/issues/WD01/>