

The Crescent Lake Dam Project

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1999

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Crescent Lake Dam Project

Though some people might consider Oregon to be less arid than the majority of western states, Washington being another notable exception, in fact all the land east of the Cascade Mountain Range in both Oregon and Washington qualifies as part of the region once known as the Great American Desert. Dry, dusty, hot, and hostile, these lands did not easily support the farmers who sought to cultivate them. Irrigation became a necessity for those trying to survive east of the Cascades. These irrigation works began in earnest near the turn of the twentieth-century and took various forms. State, local, and Federal interests all attempted to cultivate land through irrigation with some efforts succeeding while others did not. Failure often forced residents to seek assistance in constructing irrigation works, usually from state or Federal entities, or abandon their lands.

Residents in the vicinity of the Crescent Lake Dam Project chose the former route, requesting assistance from the United States Bureau of Reclamation when failure of an existing dam structure, the Crescent Lake Dam, seemed eminent. Though this project does not qualify as one of Reclamation's most notable achievements it had a profound impact on the local residents by allowing them to maintain their established lifestyle.

Project Location

The Crescent Lake Dam Project, situated in Klamath and Deschutes Counties, Oregon, consists of the Crescent Lake Dam and nearly one-hundred miles of canals and laterals. Crescent Lake Dam sits on Crescent Creek at the outlet of Crescent Lake in northern Klamath County. A natural body of water, Crescent Lake originates in a glacial deposit high on the eastern slopes of the Cascade Mountain Range with a drainage area of about fifty-eight square miles. In its natural state the lake was roughly four-miles long and two-miles wide, covering

nearly 4,000 acres. In places the water depth exceeded 200 feet. Roughly twenty-five miles of canals and some seventy miles of laterals extend through the project lands in Deschutes County. The canals and laterals supply irrigation water to 8,000 acres of land in the Tumalo Irrigation District located on the west side of the Deschutes River in central Oregon near Bend. Irrigation water comes from Tumalo Creek, Little Crater Creek, Crater Creek, Three Springs Creek, and the Deschutes River.¹

Historic Setting

Prehistoric Setting

The archeological record places various native dwellers in the Great Basin, specifically the Crescent Lake area, approximately 12,000 years ago. The Great Basin region—eastern Oregon, southern Idaho, Nevada, Utah, and portions of California, Wyoming, and Colorado—provided homes for many different, mostly nomadic inhabitants. The culture of these residents remained relatively contiguous and largely free of outside influence. Eventually, perhaps thousands of years later, these nomadic groups settled into particular areas and established distinct cultures and bands. Over time these early cultures gradually adopted similar languages, allowing them to communicate with each other but yet retain their individual lifestyles. Despite their unique cultures archaeologists classify these linguistically connected bands together as a single tribe, the Northern Paiute.²

Historic Setting

The Northern Paiute settled throughout eastern Oregon and western Nevada about one-thousand years ago. At the time of European contact the Paiute consisted of several culturally

1. *Project Data*, 395; “Annual Project History, Crescent Lake Dam Project, volume I, 1955-1960,” 3.
2. William C. Sturtevant, ed, *Handbook of North American Indians*, Vol. 11, *Great Basin*, Warren L. D’Azevedo, ed, (Washington, D.C.: Smithsonian Institution, 1986), 121, 124.

and politically distinct cultures bound linguistically, all speaking the Northern Paiute language. These early tribes were semi-nomadic and traversed the region in small bands hunting, gathering, and fishing.

Life changed rather dramatically for portions of the Northern Paiute, principally those living in eastern Oregon, during the late eighteenth century when the horse, originally brought to the Americas by Spanish conquistadors and readily taken up by the Plains tribes, made its way to the northern reaches of the Great Basin. The acceptance of the horse by the Plains tribes accelerated the horse's migration throughout the west. The first group of Northern Paiute to adopt the horse radically altered their culture in response; after traveling with their Northern Shoshone neighbors for many years this portion of the tribe became known as the Bannocks.

Not all the Northern Paiute adopted the horse as readily as the Bannocks. Peter Skene Ogden of the Hudson's Bay Company documented in detail his travel throughout the region as a trapper, including descriptions of the various inhabitants he encountered. Ogden's 1926 account included a description of a group of Northern Paiute living in north central Oregon near the Deschutes River. This particular band of Northern Paiute that Ogden encountered either used few horses or none at all. Instead the majority of the Northern Paiute continued their traditional means of subsistence, fishing, gathering, and hunting. Many of the trappers and explorers documented the existence of horses throughout the Great Basin and the apparent choice by the Northern Paiute not to integrate the animal into their established cultures.

As the Euro-American presence in the west increased through migration and settlement so did the outside influences on the native inhabitants. Not surprisingly local acceptance and use of the horse coincided with the marked increase in traffic west through the Northern Paiute country during the late 1840s and 1850s. With the arrival of the horse many Paiute hunters

consolidated into mounted raiding groups targeting the migrating settlers which escalated already hostile relations between the two entities.

Anglo migration west devastated the Paiute culture. The California Trail passed through the center of Paiute territory disrupting traditional Paiute subsistence patterns. Many Paiute responded to the invasion of their native lands by moving further north into Oregon; the Oregon Trail touched only a small part of Paiute territory in the far north. Others chose to capitalize on the situation and found new means for subsistence in the wagons and stock traveling west to California in search of gold.³

The California gold rush did more to Oregon than just devastate the native landscape and inhabitants. Overland westward migration also brought settlement to the Oregon territory, then comprising most of Oregon and Washington as well as part of Idaho; Oregon officially became a territory in August of 1848. Previous attempts to settle the region, primarily missionary endeavors, made little overall impact on the region, however the massive western migration undertaken after 1848 provided the impetus needed to actually settle parts of the region. Many of these early settlement logically occurred on the western side of the Cascade Mountains, the east retaining its distinction of being part of the “Great American Desert.”

Beginning about 1859, sheep and cattle ranching moved into eastern Oregon due to the overwhelming influence and dominance of wheat farmers in the western region. Cattle and sheep ranching originally began on the western side of the Cascades, however the profitability and ease of wheat farming in the region eventually drove the ranchers east where land remained plentiful. The wheat farmers also moved east when they determined that the high bench lands

3. Sturtevant, 126, 435, 436, 455, 456.

above the above the Columbia provided an excellent location for growing wheat.⁴

The same year, 1859, that settlement of the Oregon territory began in earnest, prospectors discovered gold and silver and in Northern Paiute territory; the Virginia Range in western Nevada and the Owyhee basin in Oregon and Idaho. The promise of mineral wealth brought prospectors and businessmen to the region, joining the farmers and missionaries already there. The Northern Paiute, for the most part mounted by this point, responded to this new influx of settlers with hostility. In an attempt to forestall any further damage to their native lands the Paiute chose to attack various encampments throughout the region. In the vicinity of Crescent Lake these attacks lasted nearly ten years prompting military intervention and ultimately led to the establishment of reservations. The Federal government designated several reservation areas, primarily in Nevada, as early as 1859.⁵

Settlement patterns in Oregon changed somewhat dramatically after the conclusion of the Civil War. Previously settlement of the region centered primarily on the west side of the Cascade Mountains. By the early 1880s, much of the usable western Oregon farmland was inhabited forcing new settlers to look for new areas to homestead and farm. Initially, new settlers on the eastern side of the Cascades caused problems for the existing cattle ranchers and farmers; the farmers eventually prevailed and the cattlemen moved on, most of them choosing to settle in Idaho.⁶

Not surprisingly the advent of farming in eastern Oregon brought a new set of problems to residents. Access to water and timber proved highly challenging, as neither one occurred in abundance east of the Cascades. Later residents found access to these vital natural resources

4. Gordon B. Dodds, *Oregon: A Bicentennial History*, (New York: W. W. Norton, 1977), 82-3, 95.

5. Sturtevant, 456-7.

6. Dodds, 115, 131, 135.

even more difficult. To address the need for water local farmers banded together creating irrigation districts. The irrigation districts then developed plans for long term water usage, including provisions for storage if necessary. In many cases, due to lack of financial resources, irrigation districts often lobbied either state or federal interests for aid in constructing necessary irrigation facilities in their region.

In 1902, local water users formed the Tumalo Project, for irrigation of lands on the west side of the Deschutes River in Deschutes County, Oregon. Direct flows from Tumalo Creek and its tributaries provided irrigation water for the initial project. As the project grew so did the need for supplemental storage facilities. To address this need, in 1913 and 1914, the State of Oregon constructed the Tumalo and Bull Creek Dams which formed the Tumalo Reservoir on the southern edge of the project, to be filled with water diverted through a seven-mile feeder canal from the Tumalo Creek. Unfortunately, highly faulted lava comprised the majority of the reservoir floor causing the reservoir to leak to the extent that storage proved infeasible. For this reason, the Deschutes Land Company, predecessor to the Deschutes County Municipal Improvement District, refused the structures; as a result title to the dams and reservoir remained with the State of Oregon.

In 1922, the Deschutes Land Company reorganized itself into the Deschutes County Municipal Improvement District, predecessor to the Tumalo Irrigation District. At the same time the water users reorganized the project and decreased the number of acres available for use. To augment the water supply from Tumalo Creek and replace the storage capabilities of the Tumalo Reservoir, the improvement district purchased the storage rights of the Walker Basin Irrigation Company at Crescent Lake. The improvement district then constructed the original Crescent Lake Dam intending to provide for 86,000 acre-feet of storage in the resulting Crescent Lake

Reservoir. The improvement district also obtained from the city of Bend, Oregon, a nine and one-half second-foot continuous flow in the Deschutes River. To divert irrigation water from the Deschutes River the improvement district built a diversion dam near the north limits of Bend and the Bend Feed Canal to deliver water to project lands. In 1959, the Deschutes County Municipal Improvement District officially became the Tumalo Irrigation District.⁷

Reclamation constructed the new Crescent Lake Dam, at the original damsite, replacing the existing structure built in 1922. The original dam, a timber and rock-fill structure thirty-feet high and 150-feet long, formed a reservoir designed to store 86,000 acre-feet of water, though the reservoir only reached a maximum level of 72,5000 acre-feet. As the dam aged its capacity progressively diminished due to the steady deterioration of the timber and fill structure. By 1953, reservoir storage had decreased to 36,000 acre-feet. Settlement of the fill also caused difficulties in operation of the outlet gates. The water users feared that the gates might jam and become entirely inoperable, at the same time the rotting of the timber cribbing in the dam raised questions regarding the safety of the structure. Failure of the dam threatened both the downstream community of Crescent Lake as well as crop production due to the loss water storage for necessary irrigation water.

Project Authorization

During the early 1950s, to ensure the safety of the Crescent Lake Dam and provide dependable storage water for local residents, Reclamation investigated the project at the request of the local water users. At the same time, a private organization investigated the canals and laterals to determine their structural integrity. The investigations led by Reclamation were detailed in the Definite Plan Report which led to Congressional authorization for rehabilitation

7. "Annual Project History, Crescent Lake Dam Project, volume 1, 1955-1960," 1-2, 10A.

of the project. On July 1, 1954, Congress authorized emergency rehabilitation of the dam structure through the Interior Department Appropriation Act of 1955. Congress authorized the rehabilitation of the canal and lateral system in the Public Works Appropriation Act of 1971, on October 7, 1970.⁸

Construction History

Reclamation began investigations on rehabilitation of the project at the close of the irrigation season in 1953. After approval of the project in July, Reclamation opened bids for construction of Crescent Lake Dam on December 8, 1954. Reclamation awarded the contract on December 30, 1954, to Inter-City Sand and Gravel Company and John Kovtynovich of Eugene, Oregon. Construction work on the project did not begin until the following April due to adverse weather conditions including heavy snowfall. On April 25, 1955, the contractor began actual construction work by entirely removing the old Crescent Lake Dam. Excavation for the dam embankment and other related structures followed, and in July the contractor placed the first concrete in the outlet works conduit. On July 1, 1955, work began on the diversion channel to divert the flow of the river away from the damsite. The contractor completed the diversion on July 23. Work on the project continued steadily until mid-December when weather conditions halted work until May of 1956. The contractor finished all work on the project in October of 1956 and Reclamation accepted the contract as complete on October 24, 1956.⁹

The Crescent Lake Dam Project consists of the Crescent Lake Dam and multiple canals and laterals, including the Bend Feed Canal and the Tumalo Feed Canal. Crescent Lake Dam, a zoned earthfill structure, extends 450 feet across the outlet of Crescent Lake, high on the eastern slope of the Cascade Mountain Range, with a structural height of forty feet. A saddle on the

8. *Project Data*, 397.

9. "Final Construction Report on Crescent Lake Dam," 1-3, 5.

right abutment holds an uncontrolled spillway forty-five feet wide. The dam itself sits roughly one-mile upstream of the town of Crescent Lake, Oregon. Crescent Lake Reservoir holds a maximum of 86,900 acre-feet of water. The reservoir stores water from the Deschutes River and provides supplemental irrigation releases when necessary. Water users then divert water to project lands through the river system and privately constructed canal and lateral system. Irrigation water from the reservoir flows into Crescent Creek, which flows into Little Deschutes River and then into the Deschutes River about twenty miles south of Bend, Oregon. From the Deschutes River water travels into the Bend Feed Canal and from there to the 6,650-acres of irrigable lands of the Tumalo Irrigation District, formerly the Deschutes County Municipal Improvement District.¹⁰

Additional project features not owned or constructed by Reclamation include the Tumalo Dam and Reservoir, the Crater Creek Diversion Canal, the Columbia Southern Canal, The Tumalo Feed Canal Diversion Dam, and the Diversion Dam for the Bend Feed Canal. The Tumalo Dam and Reservoir provide temporary regulatory storage for about 800 acre-feet of water; the reservoir does not hold water making it ineffective as a long term storage facility. The Crater Creek Diversion Canal, built in 1913 and 1914, diverts water from Crater and Little Crater Creeks which drain the west slope of Broken Top Mountain augmenting the flow of Tumalo Creek. The Columbia Southern Canal, constructed in 1900 in one of the first attempts to provide water to the district lands, diverts from Tumalo Creek to the Tumalo Feed Canal. The Tumalo Feed Canal Diversion Dam, built in 1913, sits on Tumalo Creek. The Tumalo Feed Canal, also built in 1913 and 1914, was originally constructed to divert the unregulated flows of Tumalo Creek to the off-stream Tumalo Reservoir. As the reservoir did not hold water, the canal

10. *Project Data*, 395-7; “Final Construction Report on Crescent Lake Dam,” 5.

serves as the main delivery canal during irrigation months and provides stock and domestic needs during the remainder of the year. Built in 1922, the Diversion Dam for the Bend Feed Canal sits on the Deschutes River in the northern part of the city of Bend, Oregon. Though not part of the Crescent Lake Dam Project these features aid water users by delivering water to project lands.¹¹

Post-Construction History

In 1968, after lengthy negotiations with Reclamation and the Forest Service, the improvement district began additional clearing of the reservoir area to increase the storage capacity. Though designed to hold 86,000 acre-feet actual storage capacity of the reservoir has never reached that amount. Actual clearing work began in September of 1968, after the close of the irrigation season and was completed the following spring.¹²

In May of 1970, the improvement district requested funds from Reclamation's Rehabilitation and Betterment program (R&B) for repairs to their irrigation system. Nothing came of the request, due largely to the fact that the district and not Reclamation owned the distribution portion of the irrigation system making it ineligible for federal funds. In 1973, Reclamation and the district came to an agreement regarding the transfer of ownership of the facilities and both entities approved the R&B program. In the meantime, in July of 1972, a break occurred in the Tumalo Feed Canal. The following September, flume no. 2 of the Bend Feed Canal failed causing considerable damage to the area below the flume. Finally in October a section of flume no. 1 of the Bend Feed Canal failed. These failures provided the necessary impetus for approval of the R&B program on the project. On November 1, 1974, Frank Coluccio Construction Company of Seattle, Washington, began construction work on the R&B

11. "Annual Project History, Crescent Lake Dam Project, volume 1, 1955-1960," 3-5.

12. "Annual Project History, Crescent Lake Dam Project, volume 4, 1963-1965," 51-90, 96-102.

program. All rehabilitation work of the canal and lateral system was finished in 1977.¹³ No significant problems have occurred on the project since completion of the R&B program.

Settlement of the Project/ Uses of Project Water

Operated and maintained by the Tumalo Irrigation District, the Crescent Lake Dam Project provides irrigation water to 8,000 acres of highly developed land in central Oregon. Principal crops grown in the area include grain, alfalfa, grass hay, and irrigated pasture. Reclamation did not develop any new project lands in conjunction with the project.

Located entirely within the Deschutes National Forest roughly seven miles from the crest of the Cascade Mountain Range, Crescent Lake Reservoir provides recreation opportunities, including camping, picnicking, swimming, boating, and fishing, to nearby residents. The reservoir recreation area consists of nearly 2,000 acres of land and 4,000 acres of water surface with twenty-one miles of shoreline. The Forest Service, responsible for management of the recreation area, constructed public facilities for camping, picnicking, and boat launching and mooring. The Crescent Lake Organization Camp, owned the by the Forest Service, consists of a mess hall, powerplant building, sleeping cabins, and miscellaneous other buildings. In addition, individual entities constructed numerous private cabins and a Boy Scout camp at the lake. A commercial resort provides lodging and supplies for visitors. Visitor days numbered 135,000 in 1992.¹⁴

Conclusion

The Crescent Lake Dam Project does not bring to mind visions of elaborate construction works designed to benefit large areas and multiple people the way the Columbia Basin Project

13. "Annual Project History, Crescent Lake Dam Project, volume 6, 1972-1974," 119-21; "Annual Project History, Crescent Lake Dam Project, volume 7, 1975-1977," iii.

14. *Project Data*, 398; United States Department of the Interior, Bureau of Reclamation, *1992 Summary Statistics: Water, Land and Related Data*, 115.

and the Boulder Canyon Project do. Instead the project stands out for more mundane reasons, including its location on the eastern slope of the Cascade Mountain Range and the relative ease with which the project was completed. The project itself did not make a significant impact on the local community in terms of additional settlement or land cultivation. Through construction of a new dam and the rehabilitation of the distribution system, the project helped the local community maintain their current way of life and standard of living by ensuring a necessary long term water supply for local farmers which in turn benefitted the entire region.

About the Author

Toni Rae Linenberger, a Colorado native, received her B.A. in History from The Colorado College in Colorado Springs, Colorado in 1996. In 1998, she earned a MS in Western American History from Utah State University in Logan, Utah. Ms. Linenberger's final paper, a case study entitled *A Dam for All Seasons: Hollywood, the Bureau of Reclamation, and Construction of Parker Dam*, explored the relationship between the growth of a small town in California and the development of the Colorado River.

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