Vale Project

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Vale Project

The Vale Project is the result of Reclamation saving a private irrigation system from financial ruin and reclaiming additional arid lands. In 1926, Reclamation decided on a project in Malheur, meaning "bad hour", County, Oregon. The county's previous unsuccessful private irrigation attempts left large areas water-logged and unproductive. At the request of the Warmsprings Irrigation District, Reclamation assisted with seepage problems and decided to construct a new irrigation system.

Project Location

The Vale Project is located in east-central Oregon near the Oregon-Idaho State line. The Project provides irrigation water for 35,000 acres lying adjacent to the confluence of the Malheur River and Willow Creek, near the town of Vale. Five irrigation divisions are included in the Vale Project. The Harper and Little Valley units contain a total of approximately 4,000 acres, the Bully Creek West and East Bench combine 17,000 acres, and the Willow Creek Division comprises 14,500 acres.

The primary source of water for the project is the Malheur River. Water stored at Warm Springs, Beulah, and Bully Creek Reservoirs combines with natural stream flow to provide irrigation water. Warm Springs Dam and Reservoir is on the Middle Fork of the Malheur River. A contract executed by Reclamation and the irrigation district provides one-half of the reservoir's storage capabilities to the Vale Project. The Beulah Reservoir behind the Agency Valley Dam is on the North Fork of the river. Water from the two reservoirs is released into the Malheur River in times of demand. The Harper Diversion Dam on the Malheur River 20 miles southwest of Vale, diverts water into the Vale Main Canal to irrigate land on the west side of the river and along Willow Creek.[1]

The Vale Main Canal parallels the west bank of the Malheur River in a northeasterly direction until it reaches Willow Creek. The canal then heads northwest and runs along the

1. U.S. Department of the Interior, Water and Power Resources Service, *Project Data*, (Denver: United States Government Printing Office, 1981), p. 1249.

south side of Willow Creek to a point near Jamieson, Oregon. The total length of the canal is 74 miles with a diversion capacity of 662 cubic feet per second. Five tunnels are included in the canal system, and siphons cross streams at Bully Creek, Chicken Creek, and Fairman Coulee. Another siphon, 1.5 miles southwest of Little Valley, conveys water to the Little Valley Canal for irrigating 1,100 acres on the south side of the river.[2]

An intake structure on the Vale Main Canal eight miles west of Vale diverts excess water into the Bully Creek Feeder Canal. This water then combines with stream water from Bully Creek for storage in the Bully Creek Reservoir. Two laterals distribute the stored water to 3,000 acres of project land south of Willow Creek. The first lateral is at the outlet works of the Bully Creek Dam, and the second lateral is at the Bully Creek Diversion Dam, one mile downstream from the reservoir.[3]

Reclamation came to a project with favorable conditions: deep soil, low elevation (2,500 feet), 159 day growing season, and adequate water supply. Yet low annual precipitation of 9.1 inches made irrigation necessary to reclaim the arid land and to take advantage of the area's potential.

Historic Setting

Before development of Reclamation's Vale Project, approximately 28,000 acres in the project area had never experienced any form of irrigation. The remaining 7,000 acres received an inadequate water supply through private enterprise.[4]

In 1904, Reclamation first became involved in the valley while investigating the proposed Malheur Project. The Malheur Project included lands subsequently incorporated into the Vale Project. Reclamation declared the Malheur Project infeasible due to excessive construction costs and a high estimated cost per acre.[5]

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2. U.S. Department of the Interior, Bureau of Reclamation. Vale Project: *Annual Project History 1930, vol. 2*, R.G. 115, Records of the Bureau of Reclamation, Project Histories, Vale, 1930, Box 210, p. 5. (located in the National Archives, Denver, Colorado), Hereafter cited as R.G. 115, followed by box number, volume, year, and page number.
3. *Project Data*, p. 1249.
4. U.S. Department of the Interior, Bureau of Reclamation, *Repayment of Reclamation Projects*, (Washington: United States Government Printing Office, 1972), p. 486.
5. Bashore, H. W. "Dedication of First Unit, Vale Irrigation Project," *New Reclamation Era*, May 1930, p. 92.

Activity in the valley increased in 1910, and there was interest in promoting the construction of a project using Bully Creek for irrigation. Settlers improved public lands by clearing off sagebrush, breaking virgin land, and fencing, and the settlers did manage to survive for a few years on savings and non-farming work. The promoting company failed, however, and settlers realized the futility of farming in the face of limited water supply. Further residence on the land was hopeless.[6]

The most significant event in the development of the Vale Project was completion of the Warm Springs Dam and Reservoir in 1919. The construction of this reservoir and distribution system for 30,000 acres next to the Vale Project directly influenced Reclamation's interest in the Vale Project. The Warmsprings Irrigation District was formed in May 1916 to construct a system supplementing the water supply of 12,000 acres under decreed water rights, and to provide water for additional areas.[7]

A bond sale financed construction of the Warm Springs Dam. The reservoir's 170,000 acre-foot storage capacity exceeded the needs of the irrigable acreage. However, this capacity could be provided at the lowest cost per acre foot of water. The District decided the extra water stored would be worth its cost to the lands of the District and new lands might be irrigated using the reservoir's stored water.[8]

The dam is a concrete arch located on the Middle Fork of the Malheur River. The original structural height of the dam was 100 feet. The reservoir provides irrigation water for 18,000 acres in the Warmsprings Irrigation District.[9]

Seepage was confined to small localized areas until construction of the Warm Springs Reservoir, but then over-estimates of irrigable lands coupled with excessive use of surplus water caused extensive seepage and water-logging. The water table gradually rose and irrigated land

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6. R.G. 115, Box 209, vol. 1, 1928, p. 34.
7. U.S. Department of the Interior, Bureau of Reclamation. Vale Project: *Report on Drainage Construction-Warmsprings Irrigation District, Vale Project, Oregon.* R.G. 115, Records of the Bureau of Reclamation, Project Reports, Vale, 1910-55, Box 847, p. 1.(located in the National Archives, Denver, Colorado).
8. R.G.115, Box 210, vol. 2, 1930, p. 3.
9. U.S. Department of the Interior, Bureau of Reclamation. Vale Project: *Report, Malheur Project Oregon, January 1923*, R.G. 115, Records of the Bureau of Reclamation, Project Reports, Vale, 1910-55, Box 844, p. 37.(located in National Archives, Denver, Colorado).

decreased from 14,232 acres in 1922 to 9,424 acres in 1926. The irrigation district lacked the funds and means to construct the necessary drainage system.[10]

Seepage problems experienced by the District brought Reclamation engineers into the valley to conduct field investigations. At the request of the Warmsprings Irrigation District in 1925, Reclamation investigated seeking a solution to the drainage problem. Reclamation also began to investigate the feasibility of developing a project in the area. Thereafter, the difficulties experienced by the Warmsprings Irrigation District led to Reclamation developing the Vale Project.

Project Authorization

Reclamation began surveys for an irrigation system from the Malheur River in the summer of 1922. A contract dated August 26, 1922 between the Secretary of the Interior Albert B. Fall and the Warmsprings Irrigation District allocated $10,000 to conduct investigations. The investigations resulted in a plan for using surplus water stored in Warm Springs Reservoir to reclaim additional lands[11]. Based on good survey results, Reclamation decided to further study the Harper and Little Valley areas.[12]

Investigations conducted by Reclamation in August and September 1924 examined the agricultural and economic viability of the Vale Project. The scope of the surveys included: soil surveys and land classifications, studies of drainage conditions and water requirements, collection of data concerning the yields of various crops grown in adjoining areas, studies of meteorological factors having agricultural or economic importance, and studies of transportation facilities and market conditions.[13]

Reclamation's investigations determined the Vale Project to be feasible and economically viable. In the fall of 1926, Secretary of the Interior Hubert Work recommended approval of the Vale Project to President Calvin Coolidge. The President approved construction on October 21,

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10. *Report on Drainage Construction*, p. 1; R.G.115, Box 210, vol. 2, 1930, p. 3.
11. U.S. Department of the Interior, Bureau of reclamation, Boise Project: *Annual Project History 1922, vol. 6*, R.G. 115, Records of the Bureau of Reclamation, Project Histories, Boise, 1922, Box 257, pp. 60-1(located in National Archives, Denver, Colorado).
12. *Report, Malheur Project Oregon*, pp. 1, 6.
13. "Economic Phases of the Vale Project, Oregon," *New Reclamation Era*, May 1925, p. 66.

1926. The Vale-Oregon Irrigation District executed a contract with the United States the following day for the expenditure of $4,500,000 for construction. Under the terms of the contract Reclamation would: purchase of one-half interest in Warm Springs Reservoir from the Warmsprings Irrigation District; construct a diversion dam in the Malheur River; construct a distribution system, consisting of a main canal, laterals, sublaterals, and appurtenant structures; and, construct a drainage system.[14]

Reclamation signed a separate contract with the Warmsprings Irrigation District the same day. The contract fixed sale prices to Reclamation for excess stored water in Warm Springs Reservoir at $8.00 per acre foot. Reclamation agreed to construct a drainage system for the district, relieving the water-logging problem, and to increase the structural height of the storage dam, providing greater storage capacity. The contract considered the construction of a drainage system partial payment for excess stored water.[15]

By signing these contracts, Reclamation saved the Warmsprings Irrigation District from financial ruin and eventually reclaimed 34,000 acres of arid land. Improvements in technology and construction techniques transformed an area once considered too expensive to irrigate into an agriculturally successful and economically viable project.

Construction History

During construction of the Vale Project, Reclamation's first task was building a drainage system for the Warmsprings Irrigation District. Construction by force account began on March 4, 1927, and Reclamation completed the work in December of 1928.

Reclamation investigations conducted in 1927 and 1928 revealed 1,400 acres of Class I lands, land with productive soil, underlain by ground water within six feet of the ground surface. High ground water rendered an additional 20,000 acres unproductive.

Reclamation employees used electric draglines to excavate 2,293,860 cubic yards of Class I earth. Installation of 56.85 miles of drainage channels, averaging a depth of 10.8 feet,

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14. R.G. 115, Box 209, vol. 1, 1927, p. 12.
15. *Report on Drainage Construction*, p. 3; R.G. 115, Box 210, vol. 2, 1930, p. 1.

alleviated water-logging.[16]

Upon completion of the drainage system, productivity returned to the Warmsprings Irrigation District. Lands cultivated before the spread of seepage were again productive and the area of producing land gradually extended. After construction the water plane showed an average drop of four feet throughout the district.[17]

In 1930, Reclamation installed a stop-plank crest with operating machinery on the Warm Springs Dam to increase the dam's structural height by six feet. Reclamation and the district shared installation expenses, and the reservoir's storage capacity increased from 170,000 to 190,000 acre feet. Work was completed by contract on July 8, 1930.[18]

Construction of the 74 mile Vale Main Canal and 279 mile lateral system occurred between 1927 and 1935. Reclamation built laterals and main canal extensions simultaneously. Excavation and construction of concrete structures occurred as work progressed.

Geographic conditions forced Reclamation to use tunnels and siphons at some locations. Reclamation surveyed alternative routes because: of the narrowness of the valley in the first three miles of the canal route; the presence of the Oregon Short Line railroad in the route required for the canal; and the prevalence of slide rock and unstable material on both sides of the river. Reclamation compiled studies, preliminary designs, and cost estimates for the alternative locations, including two river and railroad crossings. A three tunnel route, keeping entirely on the north side of the Malheur River, was selected as most feasible. According to Reclamation construction engineer H. W. Bashore, the route offered "the most safety, permanence, and equal economy for first cost and greater economy for future operation and maintenance."[19]

Tunnels on this difficult route are concrete lined with a 10 foot 6 inch diameter horseshoe design. The tunnels are 2,136, 4,997, and 1,360 feet long, respectively. There is 2,360 feet of open canal between Tunnel No. 1 and Tunnel No.2, and 1,600 feet between Tunnel No. 2 and

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16. R.G.115, Box 209, vol. 1, 1927, p. 20; *Report on Drainage Construction*, p. 4.
17. R.G. 115, Box 209, vol. 1, 1928, p. 26; *Report on Drainage Construction*, p. 10.
18. R.G. 115, Box 210, vol. 2, 1930, p. 1; R.G. 115, Box 210, vol. 5, 1941, p. 45. Contract awarded to Gabby and McNeil of Boise, Idaho.
19. Bashore, H. W. "Vale Irrigation Project Tunnels, Oregon," *Western Construction News*, February 25, 1930, p. 99.

Tunnel No. 3[20]. Excavation began in November 1928 and completed in 1930.[21]

Excavation of the main canal began in 1928. Electric draglines removed disintegrated basalt, burntlava, talus rock, river gravel, and other loose materials. Drilling and blasting was necessary when contractors encountered hard material. The canal route traversed steep side-hills and rock canyons.[22]

Contractors constructed three riveted plate steel siphons in 1930 and 1931 for creek crossing. Bully Creek Siphon is 6,225 feet with an 8 foot 5 inch diameter. Fairman Coulee Siphon also has a 8 foot 5 inch diameter and is 1,010 feet long. A stretch of 1,300 feet of concrete lined canal passing through porous earth connects the two siphons. The Chicken Creek Siphon is a 430 foot, 12 foot 9 inch diameter steel siphon.[23]

A 34 inch steel siphon, 2,289 feet long, crossing under the Malheur River, delivers water to the Little Valley Canal. The canal and siphon were constructed in 1929-1930 to deliver water to 1,132 acres on the south side of the river.[24]

Construction of the Harper Diversion Dam, on the Malheur River 20 miles southwest of Vale, Oregon, occurred in 1929 between March and November. The dam diverts water directly from the river near the upper portal of Tunnel No. 1. Reclamation believed the design offered the least obstruction to the passage of large quantities of floating ice during periods of heavy runoff and prevented excess accumulation of silt in the river channel, avoiding the problem of diversion of silt into the main canal[25]. In fact, water diverted from the river was clear and free of silt.

This diversion dam is a concrete slab with hinged steel gates and an embankment wing. The dam lies at right angles to the line of flow of the main channel. The spillway has seven 20-

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20. R.G. 115, Box 209, vol. 1, 1929, pp. 26-7. The Derbon Construction Co. of Seattle awarded contract for construction of the tunnels.
21. R.G. 115, Box 209, vol. 1, 1928, p. 19; R.G. 115, Box 210, vol. 5, 1941, p. 45.
22. R.G. 115, Box 209, vol. 1, 1928, pp. 16-7; Ketchum, Charles C. "Earth Lining of Main Canal, Vale Project, Oregon," *New Reclamation Era*, December 1931, p. 270.
23. R.G. 115, Box 210, vol. 2, 1930, p. 5; "Vale Main Canal, Bureau of Reclamation, Oregon," *Western Construction*, February 25, 1931, p. 98. W. H. Puckett was awarded contract for earthwork and canal lining. Western Pipe and Steel Co. of California awarded contract for Bully Creek, Fairman Coulee, and Chicken Creek siphons.
24. R.G. 115, Box 210, vol. 2, 1930, p. 5; *Project Data*, pp. 1249, 1253.
25. R.G. 115, Box 209, vol. 1, 1929, pp. 35-6; Bashore, H. W. "Harper Diversion Dam, Vale Project, Oregon," *New Reclamation Era*, March 1930, p. 40.

by 10 foot steel hinged gates that, when raised, elevate the river 10 feet. The structural height of the dam is 21 feet, and it has a diversion capacity of 662 cubic feet per second.[26]

In February 1920, the canal was completed to mile 20 and water sent through for irrigation. No lining provisions had been made, and there were leading to numerous leaks due to the porous nature of the canal route. Lining was necessary to insure satisfactory delivery. During construction, the nature of the land led to difficulties in determining the material class through which the canal passed. Reclamation decided to test the material in the canal before resorting to reinforced concrete lining, bench flume or other lining methods. Reclamation believed considerable savings could be effected by this method, instead of attempting to decide in advance the type of lining to use.[27]

Reclamation tests determined earth lining with some concrete lining in extremely porous sections would relieve most of the seepage. Reclamation employees hauled dirt for silt lining with trucks and horses with fresnos. Since the canal had to be in operation for irrigation, water could be taken out of the canal only for short periods. This time constraint required concentrating on lining the canal bottom and as far up the sides as time permitted. Work was then completed to the required height after the removal of water from the canal in the fall and spring.[28]

Reclamation was convinced earth lining would successfully reduce seepage. This belief was proved as the years advanced and increased amounts of silt were carried into the canal by river water. That strengthened the canal sides and bottom. This resulted in decreased water losses. Extremely porous sections, however, did require a permanent concrete lining.[29]

Post-Construction History

Construction of Beulah Reservoir behind the Agency Valley Dam in 1934-1935 conserved the waters of the North Fork of the Malheur River and increased the water supply of the Vale Project. Reclamation investigations and surveys completed in 1931 sited the reservoir.

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26. R.G. 115, Box 209, vol. 1, 1929, pp. 36-7; *Project Data*, p. 1253; Bashore, p. 40.
27. Ketchum, p. 270.
28. *Ibid*, p. 271; R.G. 115, Box 210, vol. 2, 1931, pp. 44-5.
29. Ketchum, p. 271.

A site near Beulah was chosen as the most feasible, and on March 28, 1932, Reclamation executed a supplemental contract with the Vale-Oregon Irrigation District to provide funds for construction of the Agency Valley Dam.[30]

The contractor began construction of the zoned earthfill dam on March 30,1934. Initial construction included driving a 520 foot tunnel to divert river flow around the damsite during construction. The tunnel was then converted and currently serves as an outlet for reservoir water. Three hundred feet into the tunnel, water enters two 42 inch diameter steel pipes to be carried to the outlet portal. Two 36 inch needle valves regulate water flow in the concrete lined tunnel.[31]

The volume of the dam is 637,000 cubic yards of earth and rock, including riprap. Trucks hauled the earth to the dam site, where it was dumped, spread into layers, moistened, and compacted by rollers passing over each layer 11 times. Thus, 603,000 cubic yards of earth excavated from the borrow pits became 525,000 cubic yards when compacted into the dam. The structural height of the dam is 110 feet with a 3:1 slope on the upstream face.[32]

A curved spillway, located on the west abutment, drops steeply from the dam's crest to a stilling pool. The spillway is concrete lined and approximately 400 feet long. Three balanced 18-by 17-foot radial steel gates control water flow through the spillway. The Agency Valley Dam was completed December 13, 1935, and first storage occurred January 1, 1936. The Beulah Reservoir behind Agency Valley Dam stores 60,000 acre-feet.[33] Stored water is released into the river channel as needed.

In 1938, the Civilian Conservation Corps established a camp at Beulah to construct a rock masonry parapet wall on the dam's upstream crest. The wall is 3 and ½ feet high, 1,782 feet long, and very hard basalt rock. Construction was completed in November 1939.[34]

As settlement grew and water demands increased, seepage from the main canal continued

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30. R.G. 115, Box 210, vol. 2, 1932, p. 5.
31. *Project Data*, p. 1252; Lumpee, Henry L. "Agency Valley Dam," *The Reclamation Era*, April 1936, p. 86. Hinman Brothers contractors.
32. Lumpee, p. 86.
33. Lumpee, pp. 86-7; *Project Data*, p. 1252.
34. R.G. 115, Box 210, vol. 5, 1941, pp. 55-6.

to be a problem. Reclamation continued earth lining the canal throughout the 1930's. Earth lining was effective in areas where leaks were readily discernable. The action of water around leaks left the lining in whirlpool formations, which could be easily dug out and repaired. From 1930 to 1935, Reclamation forces placed 50,214 cubic yards of earth lining.[35]

According to initial lining plans, silt deposits in the canal were to increase as the years progressed. By 1935 it was evident the river flow was clear and free from silt. Reclamation decided to resort to a hydraulic method of silt lining from 1936 to 1940. A high-lift pump, located on the lower bank of the canal, pumped water from the canal to the hillside above the canal. A hydraulic nozzle eroded material which flowed in zigzagging returning stream on a steep grade resulting in the courser material dropping out, while finer material passed into the canal through a box flume. The box flume distributed silt evenly across the canal. Reclamation employed this method the entire length of the system.[36]

The silt lining operation resulted in dramatic declines, from 75% in 1930 to 20% in 1940, in the percent of water loss in the canal. Reclamation continued concrete lining in sections where excessive leakage developed.[37]

In 1938, Reclamation began investigating a reservoir at Bully Creek for flood control and additional irrigation water for meeting greater demands resulting from increased settlement. Secretary of the Interior, Harold Ickes, approved a plan to irrigate 5,000 acres adjacent to the existing Vale Project and forwarded it to President Roosevelt for authorization, but World War II and the scarcity of construction materials delayed approval.[38]

Investigations for the Bully Creek Extension resumed after the war. In September 1957, a feasibility report increasing acreage on the Vale Project from 32,000 to 35,000 formed the basis for authorization of an extension. Congress authorized the Bully Creek Extension on September 9, 1959. The project includes a feeder canal to deliver water from the Main Canal to the reservoir for delivery into two irrigation laterals, the first at the outlet works of the storage

35. Ketchum, Charles C. "Silt Canal Lining Saves Irrigation Water," *The Reclamation Era*, April 1941, p. 114.
36. R.G. 115, Box 210, vol. 5, 1941, p. 11.
37. *Ibid*.
38. R.G. 115, Box 210, vol. 5, 1945, p. 23; *Project Data*, p. 1254.

dam, and, the second at the Bully Creek Diversion Dam.[39]

The contractor began work on the Bully Creek Dam and feeder canal in May 1962. The 121 foot tall zoned earthfill dam, made from 1,017,210 cubic yards of earth, is on Bully Creek, eight miles northwest of Vale. Other important features include a concrete lined spillway in the right abutment and ten 48-inch square sluice gates to control water flow through the channel. First storage in the 31,600 acre-foot capacity reservoir was realized in February 1963.[40]

The Malheur River delivers water to the Bully Creek Feeder Canal, built in 1962-63, to supply water for the reservoir. The Bully Creek Siphon transports water from the Vale Main Canal to the feeder canal at a point eight miles west of Vale. The unlined 2.5 mile canal has a diversion capacity of 300 cubic feet per second.[41]

The Bully Creek Diversion Dam, on Bully Creek, is one mile downstream from the Bully Creek Dam. The 12 foot rockfilled structure with a timber cutoff diverts 26.7 cubic feet per second of water into a lateral for irrigation. A 10- by 6-foot radial gate in the reinforced concrete sluiceway regulates water flow. Two 5- by 3- foot steel slide gates disburse water into Lateral 197-20. Construction was completed in 1964.[42]

The three reservoirs in the Vale Project are instrumental in reducing floods on the Malheur River that could cause considerable damage and losses. The Bully Creek Reservoir controls flood damage along Bully Creek and on the Malheur River below the mouth of Bully Creek.[43]

Settlement of the Project

Settlement on the Vale Project occurred in order of construction progression and water availability. Reclamation did not encourage settlement until irrigation water could be delivered to a division. The project combined public and private land. Reclamation regulated settlement on public lands under the selective process authorized by the Fact Finders Act. The Vale-

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39. *Project Data*, p. 1251.
40. *Project Data*, p. 1253. Contractors H. O. Montag and W. H. Gregory.
41. *Project Data*. p. 1253.
42. *Ibid*.
43. *Ibid*, p. 1251.

Owyhee Government Projects Land Settlement Association controlled private land settlement. Would-be buyers were graded according to their estimated chances for success.[44]

Two important articles incorporated into the contact of October 22, 1926 protected settlers against land speculators. The articles prevented the prices of private land from escalating to unreasonable prices. Therefore, settlers who acquired land, built a home, and paid part of the cost of construction, were not burdened with heavy debts for the purchase of land.[45]

Article 25 states the water supply provided by the irrigation system shall be delivered only to district lands whose owners executed contracts agreeing that if they sold their lands in excess of a price fixed by an appraisal approved by the Secretary of the Interior Hubert Work, one-half the excess must be paid to the Vale-Oregon Irrigation District. These funds were credited as an advance payment against future construction and operation and maintenance charges.[46]

Article 26 provides landowners holding more than 160 acres must sell the excess under terms and conditions satisfactory to the Secretary of the Interior and at prices not to exceed those fixed by the Secretary.[47] Refusal to sell excess lands meant denial of project water. Secretary Work placed land values at from $1 to $15 per acre for unimproved land, dependant on fertility of soil and topography. The Vale Project is an early example of Reclamation offering project lands for settlement on an unimproved land price basis, eliminating speculation and commissions for selling land.[48]

Contracts signed in 1927 by the Oregon and Western Colonization Company, the Willow Creek Land Company, Malheur County, and two smaller land owners provided the sale of 9,300 acres of excess lands to the Irrigation District at prices approved by the Secretary. On September 20, 1928, the remaining owners of excess lands received notices scheduling January

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44. Alfred R. Golze, *Reclamation in the United States*, (New York: McGraw-Hill Book Co., Inc., 1952), pp. 365-6.
45. R.G. 115, Box 209, vol. 1, 1928, p. 28.
46. *Ibid*, pp. 29-30.
47. *Ibid*, pp. 28-9.
48. Jacob Ray Gregg, *Pioneer Days in Malheur County*, (Los Angeles: Lorrin L. Morrison, Printing and Publishing, 1950), p. 424; Kreutzer, George C. "Settlement and Farm Development Problems of the Vale and Owyhee Projects, Oregon," *New Reclamation Era*, December 1928, p. 179.

1, 1929, as the final date for designating the 160 acres of land the owner desired to have retained in the project as non-excess land[49]. By 1931, the District acquired all remaining excess lands.

In 1927, Congress initiated a program requiring settlers to meet certain qualifications before being allowed to settle on project lands. This program further enhanced the chances of success on the Vale Project. Settlers on irrigated public lands now had to meet these criteria: $2,000 in cash or its equivalent in livestock and equipment; satisfactory evidence provided to a local examining board exhibiting at least two years actual farming experience; and facts about health, character, and industry.[50]

The Vale-Owyhee Government Projects Land Settlement Association organized in 1929 to initiate a settlement program. A local organization of farmers and businessmen residing on the Vale and Owyhee Project, the association desired to interest industrious settlers in locating on and developing unimproved lands on the project. The association published booklets to help accomplish their goals[51]. At the close of 1940, the association reorganized and renamed itself the Malheur County Land Settlement Association.[52]

Settlement on the Vale Project grew steadily because of the association's activity and the effectiveness of the irrigation system built by Reclamation. Settlement grew as the canal and lateral system expanded. The Harper and Little Valley Divisions, comprising approximately 4,142 irrigable acres, opened for entry in 1930. The Bully Creek West Bench, 3,798 irrigable acres, opened for settlement in January 1931. The Bully Creek East Bench contains 7,774 irrigable acres and opened in February 1932. The 14,568 acres in the Willow Creek Unit were ready for irrigation in 1938[53]. In 1930, 1,412 acres on the project were irrigated. This figure steadily increased to 8,070 in 1935 and 24,340 in 1940[54]. By 1945, the project was running at near full capacity with 518 out of a possible 521 farms settled with a population of 1,847[55].

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49. *Ibid*, pp. 7-8; "Contracts with Landowners on Vale and Owyhee Projects," *New Reclamation Era*, July 1927, pp. 102-3.
50. Kreutzer, p. 179.
51. Gregg, p. 425; R.G. 115, Box 210, vol. 2, 1930, p. 46.
52. R.G. 115, Box 210, vol. 5, 1941, p. 84.
53. *Ibid*, pp. 81-3.
54. Ketchum, p. 115.
55. R.G. 115, Box 210, vol. 5, 1945, p. 60.

A contract signed in 1948 between Reclamation and the Vale-Oregon Irrigation District transferred operation and maintenance of the Vale Project, with the exception of the storage facilities, to the District effective January 1, 1949. The district assumed responsibility for the Agency Valley Dam and Beulah Reservoir in January 1955 and the Bully Creek facilities in January 1965.[56]

Uses of Project Water

Water on the Vale Project is used for irrigation and recreation, transforming almost 35,000 acres of sagebrush and rangeland into productive farmland. Principal crops produced are alfalfa, grain, hay, pasture, sugar beets, sweet corn, and potatoes. During the first ten years of irrigation, alfalfa was grown on over one-half of cultivated project lands[57]. In the late 1930's, the Amalgamated Sugar Company of Salt Lake City constructed a sugar factory at Nyssa, Oregon, and promoted sugar beet cultivation. Sugar beet acreage increased from virtually nothing in early 1930's to 1,321 in 1945. Increased sugar beet cultivation affected the total value of crops. The total value of crops rose from $721,936 in 1938 to $2,371,299 in 1945.[58]

Three reservoirs provide recreational facilities. Bully Creek Reservoir and Beulah Reservoir are in scenic valleys and provide excellent fishing, camping, and boating facilities. The Warm Springs Reservoir lies against tall, steep hills and is used for fishing.

Conclusion

Reclamation's efforts to reclaim arid lands sometimes involved improving existing private systems as well as constructing new irrigation systems. The Vale Project exemplifies Reclamation's desire to not only build new systems, but to assist with irrigation where private enterprise projects faltered. By constructing the Vale project, Reclamation was able to reclaim an additional 35,000 acres of arid land and save the Warmsprings Irrigation District from financial ruin.

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56. R.G. 115, Box 3, 1962, p. 1; *Repayment of Reclamation Projects*, p. 486.
57. Lumpee, Henry L. "Vale Project Goes Forward," *The Reclamation Era*, May 1936, p. 121.
58. R.G. 115, Box 210, vol. 5, 1941, p. 125; 1945, p. 61.

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