

# Avondale Project

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## **Avondale Project**

The Avondale Project was developed privately in the early 1900s to bring irrigation water to approximately 860 acres of land in northern Idaho. Reclamation stepped in to help rehabilitate and improve this irrigation system in the mid-1950s , and again in the early 1960s in order to provide local water users with a stable supply of irrigation and domestic water.<sup>1</sup>

### **Project Location**

The Avondale Project is located approximately four miles north of Coeur d’Alene, Idaho, in Kootenai County. Project lands are in the Idaho panhandle on the eastern edge of an extensive glacial outwash plain known as Rathdrum Prairie. The plain is several miles wide, and is surrounded by forested mountains on the north, south, and east. On the west it merges into the Spokane Valley plain at the Washington-Idaho border.<sup>2</sup> The region experiences warm, dry summers, and cool winters.<sup>3</sup> Average annual precipitation is about twenty-five and one-half inches. Temperatures in the region range from minus 26 degrees Fahrenheit to 104 degrees Fahrenheit. The growing season lasts approximately 180 days.<sup>4</sup> Drainage within the region is very good, eliminating problems of salinity or alkalinity.<sup>5</sup>

### **Historic Setting**

Early inhabitants of Idaho’s panhandle consisted of the Kootenai and Coeur d’Alene Indians, who were hunters and gatherers until the encroachment of trappers and explorers brought about changes to their lifestyles, turning them toward more settled agriculture.<sup>6</sup>

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1. Water and Power Resources Service, Project Data, (Denver: GPO), 1981, 15.
  2. Department of the Interior, Bureau of Reclamation, “Project Histories: Avondale Project,” 1955-1963, 15 (hereafter referred to as “Project History” followed by year and page).
  3. Department of the Interior, Bureau of Reclamation, “Project Histories: Rathdrum Prairie Project,” 1976-1978, iii (hereafter referred to as “Project History: Rathdrum Prairie Project” followed by the year and page).
  4. Water and Power, *Project Data*, 17.
  5. “Project History: Rathdrum Prairie Project,” (East Greenacres Unit) 1972-1973, 183.
  6. Robert F. Peterson. *Idaho: A Bicentennial History*. (New York: W. W. Norton & Company, Inc., 1976), 20-21.

Trappers, traders, explorers, and settlers on their way westward, traveled through this region of Idaho, but few had designs on settling the area until the latter half of the 1800s.<sup>7</sup> However, David Thompson established Kullyspell House as a trading post on Lake Pend Oreille in 1809; and Father Pierre-Jean DeSmet, a Jesuit priest, established a mission at Cataldo, Idaho in 1842, for the purpose of bringing Christianity to the Coeur d'Alene Indians. The first recorded settler in the region was a trapper named Conners, who established the town of Rathdrum in 1861.<sup>8</sup>

Completion of Mullan Road by the U.S. Army in 1861, increased the number of settlers in the region by creating a trail linking Missouri and Columbia River traffic, and bringing goods, soldiers, settlers, and miners from Fort Benton, Montana, around the north end of Coeur d'Alene Lake to Fort Walla Walla, Washington. The first extensive agriculture in the area resulted from the existence of Fort Sherman, which was built as a way station on Mullan Road in 1878. The post provided a market for feed, as the Army kept approximately 100 mules and horses at the post. Several of the region's settlers began growing barley, hay, and oats to meet the Army's needs. Additional agricultural markets appeared with the completion of the Northern Pacific Railroad's mainline, which passed through Rathdrum Prairie in 1883. As a result, a number of irrigation schemes were promoted during the 1890s to stimulate land sales; however, little in the way of construction on these irrigation systems was accomplished until after the turn of the century.<sup>9</sup>

The Avondale Project was one of several small irrigation projects undertaken in this region of Idaho from 1900-1910. Like most of the projects in the region, the project was developed for fruit-raising in small tracts. The Avondale Irrigation Company formed in 1908 to

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7. Ibid., 22-29.

8. "Project History: Rathdrum Prairie Project," (East Greenacres Unit) 1972-1973, 1-3.

9. Ibid., "Project History," 1955-1963, 2.

build an irrigation system for 860 acres. In 1912, the irrigation company reorganized to become the Avondale Irrigation District.<sup>10</sup>

The project's original facilities consisted of a pumping plant with one, seven cubic foot per second capacity pump. This pumped water from Hayden Lake into a 720 foot low-pressure, wood-stave discharge line, which was connected to a concrete pipeline, three small low-head wooden storage tanks, and a low-pressure pipeline distribution system. The irrigation district built a new pumping plant in 1922 on the foundation of their original 1906 plant.<sup>11</sup>

Through the years the district's irrigation system experienced frequent system failures, and often proved inadequate to serve the water users' needs. The district's pipelines had deteriorated causing leaks, and bursting at the joints. Additionally, their pump was old, worn out, and inadequate for their needs. In fact, the pump was so obsolete that the irrigation district could no longer acquire replacement parts.<sup>12</sup> In the early 1950s, these problems prompted Reclamation to conduct a survey of the project, and produce a reconnaissance report. Initially, Reclamation regarded the Avondale Irrigation District as a possible unit to the much larger irrigation development known as the Rathdrum Prairie Project, on which Reclamation had worked, beginning a decade before. What Reclamation was considering as the Eastern Division of the Rathdrum Prairie Project consisted of three small irrigation districts which used Hayden Lake as their source of water. These districts were Dalton Gardens, consisting of 979 acres; Avondale, consisting of 860 acres; and Hayden Lake, consisting of 1,577 acres.<sup>13</sup> In the summer of 1952, Reclamation conducted an investigation of the irrigation systems within the proposed Eastern Division of the Rathdrum Prairie Project. In October of 1952, Reclamation issued a report which stated the necessity of rehabilitating the irrigation works within all three districts.

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10. "Project History," 1955-1963, 2.

11. Water and Power, *Project Data*, 17.

12. "Project History," 1955-1963, 5-6.

13. Water and Power, *Project Data*, 17.

As a result, both Dalton Gardens and Hayden Lake Irrigation Districts immediately appealed to Reclamation for assistance in rehabilitating their systems.<sup>14</sup>

The Board of Directors for the Avondale Irrigation District took time to consider the changes Reclamation proposed for the district. Reclamation suggested that the pump house be remodeled with equipment with a capacity of 4,500 gallons per minute at a dynamic head of 167 feet. The pumping plant would pump water from Hayden Lake into a twenty-four inch welded steel pipe which would decrease to twelve inches at the highest part of the district. Reclamation suggested that the main supply line traverse the district at its center, and have the laterals branch off in opposite directions every quarter mile. They proposed using welded steel pipelines treated with coal-tar enamel on the inside, and coated with asphalt and double-wrapped with asbestos on the outside.<sup>15</sup> After reviewing this plan, the Avondale Irrigation District also requested rehabilitation assistance from the Government. Early in 1953, each of the three districts submitted their own separate reconstruction plans to Congress. Reclamation agreed to proceed with the work on the basis of separate projects, the districts believing that pushing for the one larger development might cause delays with Congress in appropriating funds.<sup>16</sup>

### **Project Authorization**

As a result of the frequent service failures within the Avondale Project, the request for appropriation did not go through regular Reclamation or Executive Channels. The district was able to obtain direct Congressional action due to the emergency nature of the requirement. Construction and emergency rehabilitation of the Avondale Project was authorized by the Interior Appropriations Act for fiscal year 1954, dated July 31, 1953 (67 Stat. 261).<sup>17</sup>

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14. "Project History: Rathdrum Prairie Project," (Hayden Lake Unit) 1956, 4-6.

15. "Project History," 1955-1963, 5-6.

16. Water and Power, *Project Data*, 17.

17. "Project History," 1955-1963, 4-5; Water and Power, *Project Data*, 17.

Because of later problems with the irrigation system, Congress authorized further rehabilitation of the project under the 1955 appropriation act of July 1, 1954 (68 Stat. 365); and again under Public Law 87-298, 87<sup>th</sup> Congress, 1<sup>st</sup> Session (75 Stat. 588), which was approved September 22, 1961. Rehabilitation work included replacement of the district's laterals, lining of the interiors of the discharge pipelines, and any other work required in replacement, modification, or improvement of the district's facilities.<sup>18</sup>

### **Construction History**

The condition of the district's irrigation system which led to rehabilitation by Reclamation included, frequent interruptions in service caused by leaks and their repair; the increasing cost of emergency repairs; and the resultant problems of inadequate water deliveries. None of the district's original facilities could be used in the improvement program due to their obsolescence, deteriorated condition, and inadequate capacity.<sup>19</sup>

The rehabilitation contract called for construction of a new pumping plant; installation of new pumping equipment; installation of a new twenty-four inch diameter steel intake pipeline; and installation of a twenty-four inch diameter steel discharge line from the pumping plant to a 50,000 gallon elevated steel reservoir. The contract also called for installation of approximately ten miles of buried steel pipelines, ranging from four to sixteen inches in diameter, as well as several laterals and turnouts.<sup>20</sup> The Government awarded this contract to Intermountain Company, on May 13, 1954. The contractor acknowledged notice to proceed on May 18, 1954, and began work on June 10, 1954. The contractor encountered no problems during the

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18. Water and Power, *Project Data*, 17. "Project History," 1955-1963, 15.

19. *Ibid.*, 5-6.

20. *Ibid.*, 29.

construction period. Construction of the irrigation works was completed on April 14, 1955; and the contractor finished the elevated steel tank on May 7, 1955.<sup>21</sup>

### **Post-Construction History**

The district faced its first problems with the rehabilitated system soon after completion of construction. The distribution pipelines for the Hayden Lake Irrigation District of the Rathdrum Prairie Project, the Dalton Gardens Project, and the Avondale Project, were all installed by the same contractor, under the same contract; thus, the pipelines in all three systems were of the same type, and subject to the same problems. During construction, the contractor did not paint the inside of the steel reservoirs, and used bare steel pipe for the distribution system. On October 8, 1957, Reclamation conducted its biennial exam of the inside of the 150,000 gallon storage tank on the Dalton Gardens Project. Inspectors observed large amounts of rust encrusting the sidewalls and flaking off onto the tank's floor. Reclamation took note of these conditions, and requested that the inside of the storage tanks in all three districts be painted. The storage tank in the Hayden Lake Unit was painted by Reclamation prior to turning maintenance operations over to the irrigation district. However, Reclamation was unsuccessful in its efforts to get the Dalton Gardens and Avondale Irrigation Districts to paint their tanks.<sup>22</sup>

At the same time, Reclamation requested that all three irrigation districts send them any samples of used pipe the districts had available so that the pipe could be inspected. In December of 1958, the Dalton Gardens Irrigation District sent Reclamation's Regional Office a two foot section of four inch steel pipe, and two badly corroded discs which were taken from their system. The results of testing the samples led to a field survey and lab study of the corrosion problem. These studies required the assistance of the specialists and facilities in Reclamation's Denver

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21. Ibid.

22. "Project History," 1955-1963, 7.



Office. The studies continued through Reclamation's biennial exam of the Dalton Gardens Project, which was held from October 17-19, 1959. During this exam, Reclamation uncovered 50 feet of the district's four inch pipeline. They discovered severe corrosion and perforations. This alerted Reclamation that all three irrigation districts faced serious problems with their distribution systems; and that corrective measures were required as soon as possible.<sup>23</sup>

The corrective measures required were dependent on the enactment of the necessary authorization, which was approved by Congress on September 22, 1961.<sup>24</sup> Rehabilitation of the distribution systems for all three districts was divided into two contracts. The rehabilitation plan for the Avondale Project included mortar lining the interior of the existing discharge pipeline; replacement of nine and one-half miles of corroded bare steel pipeline with corrosion-resistant pipe; and modifying the district's existing facilities as needed.<sup>25</sup>

The contract for cement-mortar lining and subsequent sterilization of the district's discharge lines was granted to Raymond International, Incorporated, on August 21, 1962. The contractor acknowledged notice to proceed on September 19, 1962, having 180 days to complete their contract. Work began when the contractor moved equipment onto the site and began interior cleaning of the discharge line. The contractor encountered no delays during construction, and completed work on November 26, 1962.<sup>26</sup>

Snelson Plumbing and Heating, Incorporated, received the contract for replacement of the corroded steel pipeline, and modifying the district's sprinkler hookups and other accessories, on July 5, 1962. The contractor acknowledged notice to proceed July 16, 1962, setting the

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23. Ibid.

24. Ibid.

25. Ibid., 15.

26. Department of the Interior, Bureau of Reclamation, "Project Histories: Dalton Gardens Project," 1955-1963, 13 (hereafter referred to as "Project History: Dalton Gardens Project" followed by the year and page).

contract's completion date for July 15, 1964. All work progressed smoothly, and the contractor completed the contract in June of 1963, more than one year ahead of schedule.<sup>27</sup>

The Avondale Irrigation District modified the pumping plant in the late 1960s and early 1970s. In 1966, the level of Hayden Lake fell to its lowest level in decades, causing problems for the district's irrigation pumps. Both pumps primed and started satisfactorily, but when the check valve was opened the pumps lost prime and would not pump water. Investigation into the problem indicated that the suction head had become too great for the pumps to operate satisfactorily. Initially it looked as though the combination of the low lake level and increased friction loss in the intake line was what was causing the trouble. Investigators recommended that the intake line be cleaned as a means of solving the problem. However, further investigation showed that the suction problem with the pumps was being caused by a hole, which once repaired, solved the district's problem. At this time district officials began considering the possibility of obtaining water from an underground aquifer rather than the lake because of the problem with the pumps, the lake level, and an increasing problem with Hayden Lake's pollution level,<sup>28</sup>

In 1971 to 1972, the district made more modifications to the pumping plant units. The first change was installation of new motor control equipment for the pumping units. At this time the district also installed a new pump for supplying winter farmstead water. The new pump had a capacity of 550 g.p.m., and was driven by a 35 horsepower motor.<sup>29</sup>

In the late 1970s, a court decree in Idaho, stated that the level of Hayden Lake was not to be allowed to fall below 2,230 feet. This decree, combined with the district's previous concerns about Hayden Lake, prompted the Avondale Irrigation District to develop three wells to tap into

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27. Ibid., 13, 57-58.

28. "Project History," 1967-1968, 4; "Project History," 1969-1970, 5.

29. "Project History," 1971-1972, 3.

an underground aquifer and change the source of its water supply.<sup>30</sup> In addition to the three wells, the district laid 7,700 linear feet of asbestos-cement pipe from the wells to the equalizing tank. Each of the wells had its own pumping unit, providing the district with a total capacity of twelve cfs. The facilities were completed and placed into operation in 1977. The district provided the funds for construction, and granted the construction contracts to Norm's Plumbing and Heating, which installed the new wells and connected them to the distribution line; to Crest Homes, which erected the pump house; to Dickerson Pump and Irrigation, which installed the three pumps; and to Electro-Power Corporation, who installed the pump controls.<sup>31</sup>

Since 1977 the irrigation system has operated satisfactorily, and the district has needed to perform only standard maintenance operations.<sup>32</sup>

### **Settlement of Project Lands**

Project lands were settled by private owners prior to, and during construction of the original project works. Consequently, no lands were withdrawn for future settlement, and Reclamation's involvement in the project did not affect settlement.<sup>33</sup>

### **Project Benefits and Uses of Project Water**

A large share of the farm tracts within the Avondale Project range from one to ten acres of land. Most of the farms on project lands provide food for owner consumption, with occasional surplus for outside markets. The majority of Avondale families receive the largest share of their household income from full or part-time employment away from the farm. A few farms are large enough to support themselves. However, over the years the Avondale area has

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30. Water and Power, *Project Data*, 15.

31. Ibid., "Project History," 1979-1980, iii; "Project History," 1977-1978, iii.

32. Water and Power, *Project Data*, 15, 17; "Project History," 1983-1984, 1-25.

33. "Project History," 1955-1963, 1-5.

become more of a residential, and less of a farm community. Therefore, the water system has become continually more valuable as a source for domestic water.<sup>34</sup>

Production of fruit crops was the initial enterprise on project farms; however, as time passed a shift to other crops took place. The main reason for this shift stemmed from competition from other areas better suited for fruit production. Presently, most commercial farms produce pasture and hay crops; although, those farm units large enough to do so, produce specialty cash crops such as small fruits and vegetables.<sup>35</sup>

### **Conclusion**

Agriculture, forest industries, aluminum, the railroad, and tourist trade all contribute to the economic well being of the project area.<sup>36</sup> Without Reclamation's rehabilitation of the project this list would not include agricultural industry. Rehabilitation of the Avondale Project kept the district's water users from facing the complete collapse of their water works, and ultimately the end of most of their agricultural capabilities. Today, the rehabilitated distribution system still provides the Avondale Project with irrigation and domestic water supplies.

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34. Ibid., 4; Water and Power, *Project Data*, 15, 17.

35. "Project History," 1955-1963, 4; Water and Power, *Project Data*, 17.

36. "Project History," 1955-1963, 4.

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