NPS Form 10-900
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APR 07 2009

NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

328

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name: Salmon Falls Dam

other name/site number: 83-17897

2. Location

street & number Three Creek Highway [ ] not for publication

city or town Rogerson [X] vicinity

state IDAHO code ID county Twin Falls code 083 zip code 83301

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this [X] nomination [ ] request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property [X] meets [ ] does not meet the National Register Criteria. I recommend that this property be considered significant [ ] nationally [ ] statewide [X] locally. ([ ] See continuation sheet for additional comments.)

Kenneth C. Reid — April 3, 2009

Signature of certifying official/Title — Date
Kenneth C. Reid, Ph. D. – Deputy SHPO

State or Federal agency and bureau

In my opinion, the property [ ] meets [ ] does not meet the National Register criteria ([ ] See continuation sheet for additional comments).

Signature of certifying official/Title — Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that the property is:

- [X] entered in the National Register.
  - [ ] See continuation sheet.
- [ ] determined eligible for the National Register
  - [ ] See continuation sheet.
- [ ] determined not eligible for the National Register
- [ ] removed from the National Register
- [ ] other (explain): ____________

Signature of Keeper — Date of Action: 5/15/2009

5. Classification

Ownership of Property
(Check as many boxes as apply)

[X] private
[ ] public - local
[ ] public - State
[ ] public - Federal

Category of Property
(Check only one box)

[ ] building
[ ] district
[ ] site
[X] structure
[ ] object

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
1	0	buildings
	0	sites
7	0	structures
	0	objects
8	0	Total

Name of related multiple property listing
"N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously (Enter **listed in the National Register**

0

6. Function or Use

Historic Functions
(Enter categories from instructions)
AGRICULTURE / SUBSISTENCE:
Irrigation Facility
INDUSTRY / Waterworks

Current Functions
(Enter categories from instructions)
AGRICULTURE / SUBSISTENCE:
Irrigation Facility
INDUSTRY / Waterworks

7. Description

Architectural Classification
(Enter categories from instructions)
OTHER / Concrete Arch Dam

Materials
(Enter categories from instructions)
foundation Concrete
walls Concrete
roof
other Basalt blocks

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets)

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

[X] **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.

[ ] **B** Property is associated with the lives of persons significant in our past.

[X] **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

[ ] **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply)

Property is:

[ ] **A** owned by a religious institution or used for religious purposes.

[ ] **B** removed from its original location.

[ ] **C** a birthplace or a grave.

[ ] **D** a cemetery.

[ ] **E** a reconstructed building, object, or structure.

[ ] **F** a commemorative property

[ ] **G** less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

Agriculture

Engineering

Exploration / Settlement

Period of Significance

1908-1911

Significant Dates

Significant Person
(Complete if Criterion B is marked above)

Cultural Affiliation

Architect/builder

Wiley, Andrew. J.

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

[ ] preliminary determination of individual listing (36 CFR 67) has been requested.
[ ] previously listed in the National Register
[ ] previously determined eligible by the National Register
[ ] designated a National Historic Landmark
[ ] recorded by Historic American Buildings Survey # ________
[ ] recorded by Historic American Engineering Record # ________

Primary location of additional data:

[X] State Historical Preservation Office
[ ] Other State agency
[X] Federal agency
[ ] Local government
[ ] University
[X] Other
Name of repository: Salmon River Canal Co.

10. Geographical Data

Acreage of Property Approximately 40 acres

UTM References
(Place additional UTM references on a continuation sheet).

	Zone	Easting	Northing		Zone	Easting	Northing
1	11	6/8/6/8/0/0	4/6/7/7/5/4/0	2	11	6/8/6/9/8/0	4/6/7/7/5/4/0
3	11	6/8/6/9/8/0/	4/6/7/6/2/6/0	4	11	6/8/7/2/6/0/	4/6/7/5/6/4/0
5	11	6/8/7/0/0/0/	4/6/7/5/5/0/0	6	11	6/8/6/7/0/0	4/6/7/6/2/6/0

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.) [X] See continuation sheet

11. Form Prepared By

name/title Dale M. Gray
organization Frontier Historical Consultants date March 30, 2008
street & number 24265 River Road telephone (208) 834-3061
city or town Grand View state Idaho zip code 83624

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items.)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name/title Salmon River Canal Co., Ltd
street & number 2700 Highway 93 telephone (208) 655-4220
city or town Twin Falls state ID zip code 83301-0656

7. Description

Narrative Description
Salmon Falls dam is a concrete arch dam that was completed in 1911. Located on Salmon Falls Creek in Twin Falls County, the dam is 223.5 feet from foundation to parapet. At its base it is 119 feet thick while at the top of the dam it is only 15 feet thick. The arch of the dam has a radius of 225 feet with a deflection angle of 118.53 degrees. As a result, the arch, as measured along the centerline of the roadway on top of the dam, is 450 feet. At the base, the dam is 210 feet wide. The dam contains 150,000 cubic yards of concrete along with many tons of imbedded basalt rock. Three-foot high parapet guard walls run along the outside edges of the roadway. These parapets are in part supported by concrete brackets. The surface of the guard walls is degraded and sections have been reconditioned with a veneer of concrete. Historic photographs clearly show this spalling as early as 1913. The veneer of the dam's face and back also have deteriorated cosmetically revealing the concrete and basalt matrix. A seepage on the lower face of the dam mentioned in the early histories appears to have been sealed through efforts of the irrigation company (Skinner 1990; J. Lanting 1991b). On the east side of the dam is the vestigial remains of a stairway used by workers accessing the project. Immediately above the east end of the dam on the canyon rim is an irregular slab of concrete with sockets that once contained wood beam. This location corresponds to that of the concrete mixing plant and cableway delivery terminal. An eyebolt anchoring the system is still in place (M. Lanting 1990).

Following is a list of the 1 contributing building and 7 contributing structures:

Building:
1) Control House

Structures: (Arranged from south to north / water flow):
1) Concrete Arch Dam
2) Tunnel #1 (Including inlet structure and underground bronze valves)
3) Open Cut / Check Basin
4) Spill way
5) Control Gate
6) Tunnel #2
7) 700 feet of Canal

Above the dam on the east side is a small concrete Control House. It is connected by a 92-foot deep nearly vertical shaft to three bronze water valves mounted in a tunnel. These valves are 200 feet from the portal of the tunnel. The concrete cast building measures 20 x 28 feet and is oriented at 350 degrees. The building's one-foot-thick walls rise 14 feet to modest concrete cornices. Wall corners are beveled. The flared, hipped-roof has recently been covered with metal roofing. The building originally featured 16-light, fixed sash windows with concrete sills. These windows have been covered with plywood and many of the sills have physically deteriorated. The structure has two windows each on the north and south sides and one on the west side. The entrance, a vertical tongue-and-groove door with double "X" batten, is on the east side. Above the door are a panel-covered transom and an exterior entry light. While the interior could not be seen, it was originally equipped with four control mechanisms to open, adjust or close the water gates below at the bottom of the shaft. The controls can be activated through either hand cranks or a central power system. The power controls may have been replaced with modern equivalents as evidenced by the small box transformer located on the southeast corner of the building. Portions of the surface of the south, east and west walls have deteriorated, revealing the concrete and basalt

7. Description

Narrative Description
matrix that compose the walls. Undamaged portions of the walls show that 10-inch milled planks were typically used for the forms throughout the project (Wiley 1911; Skinner 1990).

The historic core of the project contains two tunnels, check basin, spill way and an open cut. The Tunnel No. 1 is 1,305 feet long from inlet to outlet portal. The concrete inlet structure is immediately east of the dam in the canyon wall, about 90 feet below the lip. The 12-foot high curved concrete structure has a series of vertical bars to act as a trash screen. Two hundred feet northeast of the inlet is the outlet gate mechanism. Four 10-foot high bronze gates are fed by four 40-inch diameter riveted steel pipes. Each gate is connected by an 82-foot long shaft to a control wheel located above in the Control House. Below the gates, the tunnel is 12-feet in diameter and lined with concrete. The exit portal is diagonally buttressed and is similar in design to railroad portals. The tunnel delivers water to the open cut (Wiley 1911).

The 1810-foot long open cut is 60 feet deep on the south end and 12 feet deep where it enters the spill way area to the north. The floor of the cut is 24 feet wide. In the post World-War II era, the cut was lined on the bottom and lower slopes with concrete. Imprints of rubber "zip-tread" tires were observed in the concrete. Because wire mesh was not used, the floor has broken up and no longer functions as a barrier to water seepage.

On the north end of the open cut is a 425-foot long lined concrete canal with a flat 24-foot wide floor and diagonal concrete walls that rise 12-feet high on the east side. On the west side is a concrete spillway that originally featured a 12-foot wide apron slab above a run-off channel leading down to Salmon Falls Creek. In the modern era, the spillway has been reinforced with a 3-foot high, 1-foot thick stub wall, and the apron slab has been rebuilt and extended out to 30 feet. The imprints of "Vibram" boot soles and plastic sheeting indicate that it probably was rebuilt after its only use during the 1984 spring run off.

On the north end of the spillway is the control or emergency gate. The 18-foot high curved gate is constructed of horizontal wood planks set in a curved slot on either side. The gate is supported in back on both sides by a fan shaped support structure that revolves on braced pivot points set in to the concrete side walls. Above the gate is a cast-iron wench constructed by Walker Manufacturing of Denver, Colorado. The wench was built with reduction gears that allow the gate to be raised and lowered using a side-mounted hand crank. One frame member of this original mechanism has cracked, but it is still functional. The wench is connected to the gate by a single center-mounted cable. Gravity is used to lower the gate. The entire structure appears to be original and little altered other than weathering of the wood slats and the crack in the brace.

Immediately behind the control gate is Tunnel #2. This 2,310-foot long tunnel is 11 feet wide with a flat concrete floor. The floors contain parallel rust stains consistent with direct contact with tram rails. The concrete walls are ten feet high. About half of the length has a barrel arch concrete ceiling with a center apex 12 feet above the floor. Vertical shaft were observed periodically in areas without ceilings. These shafts varied from one to 6 feet in diameters and showed evidence of concrete splashed on their sides. Near the center of the tunnel is a framed escape shaft. At the buttressed concrete outlet portal a small cave above the portal has been covered with hand-stacked and mortared rocks. Inside the now broken wall was observed a cribbed wood shaft splashed with concrete. This shaft corresponds to areas in the tunnel below containing a concrete arch ceiling. A second such shaft was observed in a low area several hundred feet south along the line of the tunnel (Wiley 1911; Skinner 1990).

7. Description

Narrative Description

Beyond the exit portal of Tunnel #2 is a 700-foot long concrete lined canal segment. The canal has a deteriorated 12-foot wide concrete floor and vertical walls blending to diagonal walls. Beyond the end of this section is modern concrete-lined canal. The modern distribution system contains about 37 miles of main canal, 300 miles of open laterals and 27 miles of pipelines with 492 farm turnouts. The distribution system is not included in the nomination (IDWR 2008).

The dam impounds a reservoir of 230,650 acre feet which includes 48,000 feet of "dead storage" below the inlet level. The dam drains an area of 1,610 square miles (IDWR 2008).

Statement of Archaeological Potential

Archaeological surveys have been conducted around the Salmon Falls Dam site as part of the Section 106 process. These surveys found few surface artifacts, a fact attributed to post-construction clean-up (apparently a common characteristic of Andrew Wiley projects) and modern recreation development. In addition, subsurface artifacts are unlikely as the area soils are shallow with significant basalt intrusion. Potential for further archaeological discovery seems limited.

8. Statement of Significance

Narrative Statement of Significance

The Salmon Falls Dam is eligible for the National Register of Historic Places at the local level, under Criterion A in the areas of Agriculture and Exploration and Settlement. The Salmon Falls Dam and its associated structure are part of the Salmon River Tract, a Carey Act undertaking, and thus are the major contributors to the subsequent settlement and development of Twin Falls County south of the Twin Falls Tract. Twin Falls County, and much of southern Idaho, are what they are today because of Carey Act projects which provided for the construction of dams, thereby allowing the agricultural development of arid western lands to be irrigated by impounded waters.

The Salmon Falls Dam is also eligible for the National Register at the local level, under Criterion C, for its engineering values and as the work of a master, Andrew J. Wiley, who became a widely respected engineer of dams. Wiley's eye for pleasing, yet highly functional, design is evident in the curvature of the dam and the brackets below the raised roadway parapets. The curvature is continued in the inlet grate to Tunnel #1, which has a large concrete opening into which out-curved bars are formed to keep debris from entering the tunnel. Another reflection of the dam's curvature is seen in the Spillway Gate at the inlet to Tunnel #2, where the large outwardly curved mechanical frame is finished with boards (fan gate). While the curves have engineering function and make use of water pressure to help make tight contact, they also carry forward Wiley's use of the curve in the Salmon Falls Dam. While it is a matter of topography that the open cut is also curved, the visual effect cannot have been lost on the designer. The completed structures flow elegantly and offer a distinctive and artistic statement when viewed against the dark rugged canyon walls of the site's setting. The dam construction used highly evolved material-handling systems where excavated basalt blocks and rubble were trammed and lifted to a crusher and concrete mixing plants. Then the same tram carts would carry the concrete mix either to be used in the dam or to line the irrigation tunnels. As a result, no motion or materials were wasted. Large basalt block were lifted by cranes and placed into the single unit pour. The innovative use of basalt blocks served a three-fold purpose. In an era prior to the use of reinforcing bars to strengthen structures, the basalt blocks served to help tie the structure together. Because the curing of massive pours of concrete creates structurally-damaging heat, the basalt acted as heat sinks protect the curing concrete. The use of basalt, both as large blocks and reduced rubble, was also economically desirable as it greatly reduced the quantity of concrete mix that had to be bought and transported to the remote construction site. The Salmon Falls Dam embodies the work of master engineer Andrew J. Wiley, and contains several important engineering innovations.

<u>History of Salmon Falls Dam</u>:

Salmon Falls Dam was constructed to store irrigation water for public lands obtained under the Carey Act (technically, the Desert Land Act of 1894), which authorized the President of the United States to transfer up to one million acres of arid land to each of the reclamation states with public lands; the states then could sell the lands in 160 acre lots to the farmers who would be served by canal companies under arrangements approved by the state reclamation engineer (ISHS 1971).

At the time of its construction, the Salmon Falls Dam was said to be the largest dam of its type in the United States (J. Lanting 1991b; M. Lanting 1990). The dam was financed by James S. and W. S. Kuhn, Associates of Pittsburgh, Pennsylvannia, with the American Water Works and Guarantee Company also from Pittsburgh. Other notable persons involved with the origins of the dam were H. L. Hollister, I. B. Perrine, and the Trowbridge and Niver Corporation (J. Lanting 1991b). The dam was designed by A. J. Wiley, who was instrumental as a team member in designing the extensive southern Idaho irrigation system.

8. Statement of Significance

Narrative Statement of Significance (continued)

The Snake River plain of southern Idaho was one of the more successful project areas benefiting from the Carey Act. Extensive irrigation systems extending outward north and south of the Snake River were successfully developed by the Twin Falls Land and Water Company, which financed and constructed the Milner Dam and Southside Canal System and a portion of the Northside project. The project was led by Twin Falls pioneer and visionary Ira B. Perrine, along with Frank Buhl and Peter Kimberly. When Buhl and Kimberly bowed out of the corporation, they were replaced by the Trowbridge and Niver Corporation, which bankrolled the projects. In April 1907, the rights to finance the project were sold to James S. and W. S. Kuhn, Associates with the American Water Works and Guarantee Company of Pittsburgh. The agent of the Pittsburgh interests was H. L. Hollister, who worked closely with Perrine on a number of projects such as the Shoshone Falls Water Power Company, and the Hollister-Perrine Salmon River Orchard Company. Hollister and Perrine, along with the Kuhns formed the Twin Falls North Side Land and Water Company in 1907 (Skinner 1990).

On August 12, 1907, the Twin Falls North Side Land and Water Company proposed a reservoir and gravity irrigation system called the Salmon Tract. The 128,000-acre tract would be supplied by the Salmon Falls Creek in southern Twin Falls County, Idaho, which would provide 400,000 acre-feet of water per year. Key to this proposal was a concrete dam constructed at the "Narrows" and the development of an adjacent townsite to be named Hollister. A storage dam in the upper Salmon Falls Creek in Nevada was also proposed but never built. In January 1908, the federal government awarded the Twin Falls North Side Land and Water Company a segregation of 125,979.29 acres in the Salmon Tract under its subsidiary, The Twin Falls Salmon River Land and Water Company. This company was formally incorporated on April 9, 1908. On April 30, 1908, a contract was signed with the State of Idaho for the company to construct a dam 220 feet high and 550 feet in length that would be large enough to serve the segregated acres. The contract was signed by Governor Gooding, W. S. Kuhn and A. E. Dubois (Skinner 1990; Bennett 2005).

The dam construction contract was awarded to another Kuhn corporation, Kuhn Waterworks. Future settlers H. C. Van Ausden, George White, F. Jewett, John Lind, S. H. Chase and B. J. Bradley were listed as incorporators. The project was designed by A. J. Wiley with F. C. Home in charge of construction. Home was assisted by Arch M. Gilbert and Robert J. Newell. Paul Schnell was office and maintenance supervisor and C. B. Smith was the chief engineer of the canal system. He was later succeeded by E. B. Darlington (Skinner 1990).

The Salmon Tract was opened to settlement on June 1, 1908, and 70,000 acres were entered within three days. The Oregon Short Line Railroad began building a spur line to the new town of Hollister and rushed its construction in order to have the line finished for the townsite opening day, October 2, 1909. Two special trains were run to the townsite for the sale of town lots. The railhead was later extended to Rogerson to facilitate the delivery of construction materials to the dam site. Steam traction engines were used to pull wagon trains of materials from the railhead to the work site. Prior to the construction of the railroad to Hollister and Rogerson, these traction engines had to travel all the way from Twin Falls, with a round trip of 64 miles taking from 12-14 hours. Once the railroad tracks reached Rogerson, the trip was only eight miles to the dam. It is estimated that the traction engine wagon trains carried over 600 railroad cars of cement to the several mixing plants along the canyon rim. (Owen 1990; Skinner 1990; M. Lanting 1990).

8. Statement of Significance

Narrative Statement of Significance (continued)

Dam construction began in 1909. The initial site testing was supervised by the State of Idaho, and then the work was turned over to Kuhn Waterworks. One of their first tasks was to build a bridge about half a mile south of the dam to facilitate the movement of men and materials from one side of the canyon to the other. A unique inverted suspension bridge was built at a cost of $3,000. The 300-foot-long bridge was said to be the only one of its kind in the world. In 1912, after the dam was completed, the bridge was removed and its materials salvaged.

The company also built a construction camp on the east side of the project. The camp included offices, dormitories, bunk houses, houses for officials, horse barns and corrals. A telephone line directly linked the camp with Twin Falls (Skinner 1990).

The dam was constructed in the "Narrows" of Salmon Falls Creek. The location was selected by Alex McPherson and E. J. Hays. The east side is composed of Banbury Basalt while the west side of the canyon is relatively newer Snake River Basalt. Historic photos show the excavation reached bedrock by May 25, 1909. Additional basalt was quarried from the west wall of the canyon below the dam and carried to the mixing plant in emptied concrete buckets. For both dam construction and tunnel excavation, buckets of concrete would return to the mixing plant filled with basalt rubble from the excavations. Examination of concrete used in the dam and valve building show that the basalt was crushed down to 3-inch minus and added to the concrete mix, then sent out to the dam and tunnels. Historic accounts state that large basalt blocks were also added to the mix. A historic photograph taken on June 23, 1910, shows the dam with 3-4 foot high forms on the face and back. Between the forms is a single unit pour filled with a jumble of large basalt blocks imbedded in a matrix of concrete. This large volume of basalt would serve both to conserve concrete and to cool the concrete as it cured (M. Lanting 1990; Skinner 1990).

An elevator was constructed on the east rim of the canyon to lower men and equipment to the inlet portal of Tunnel #2. Historic photos show a small stair and walkway leading to the tunnel mouth and a large waste pile of material below the mouth in the canyon. If traditional mining techniques were used, they would have excavated horizontally to the future location of the control valves and then upward in a shaft to the surface, with waste material being hauled to mouth of the tunnel and dumped. After the shaft was completed and a hoist installed, waste materials from tunneling and excavating were hauled up the shaft for use in the concrete plant.

The concrete mixing plant was constructed on the east side of the canyon, where clean river sand and gravel were mixed with crushed rock and cement to form the concrete. The plant ran around the clock in all weather and delivered the concrete in buckets to any location on the dam using a cableway system stretched across the canyon. Indeed, a problem with water seeping through the dam's north face was linked to the use of frozen concrete during extreme winter weather. The cableway was supplemented by three steam hoists built on concrete towers in the midst of the dam and a railed tramway that stretched across the dam to carry basalt rubble from the quarry, to be hoisted to the crushing plant. The tramway and hoists would have been used to precisely place large basalt blocks into the form. A flume was left open at the bottom of the dam to allow Salmon Falls Creek to pass through the structure. This was filled in early June 1910, and the reservoir behind the dam began to fill even as the dam was constructed. Work proceeded rapidly and in early December 1910, Engineer Home announced that the tunnel was within 40 feet of the check basin. On December 30, 1910, he declared the dam and waterway complete. Further work was required to complete the road and parapet on top of the dam -- the first such road in America. By April 14, 1911, water had entered the feeder tunnel. Water from Salmon Falls Dam first reached Hollister on May 26, 1911. First irrigation from the system began on June 6, 1911. The project was completed at a cost of $3,600,000 (M. Lanting 1990; Skinner 1990).

8. Statement of Significance

Narrative Statement of Significance (continued)

The dam is supplied by a watershed estimated at 1,900 square miles with an average annual precipitation of between nine and ten inches (M. Lanting 1990). This is far less than the initial estimates in the original proposal. Indeed, the original estimates were not documented prior to the construction of the dam. After one year of operation, it became apparent that not as much water was flowing in the dam as anticipated and that a great deal of water was being lost through cracks in the basalt in the reservoir and the check basin. To make the economic picture even more dire, land sales were far less than expected. In 1911, there were only 6,000 irrigated acres in production. In February 1912, the Twin Falls Salmon River Company contracted with Hollister and Perrine to make personal efforts to sell tracts, but after one month the men broke the contract and formed their own company with no ties to the Kuhns. Still, land sales lagged with only 12,000 irrigated acres in production in 1912. The American Water Works and Guarantee Company of Pittsburgh went bankrupt in 1913, ending the Kuhns' financial backing of the project. To add to the problems, it was demonstrated that due to the porous soil, only 40 percent of the water leaving the tunnel reached the fields. The watershed was then re-estimated and found to contain 90,000 acre-feet instead of the original estimate of 400,000 feet (Skinner 1990).

In December 1914, the Twin Falls Salmon River Land and Water Company requested that the State of Idaho accept the 1908 contract as complete. In reply, the State insisted that the required water be delivered. This triggered a six-year legal battle that culminated in patent refusals and acreage cuts. When the State Land Board refused to act on the company's request, the matter moved to federal courts. At one point in 1915, the company's records along with its chief officers "disappeared." Once they were relocated, the legal action moved forward with settlers filing suits to claim that the company had misrepresented the land's irrigability. The State of Idaho finally declared the 1908 contract complete on January 8, 1920. As a result, 60,050.80 shares of water were released from the project. Later that same year, 27,082.37 acres were withdrawn from the project, leaving 32,968.43 patented acres. The Twin Falls Salmon River Land and Water Company forfeited on November 30, 1925, and the system was taken over by its subscribers who formed the Salmon River Canal Company to operate the system (Hollister Herald 1915; Skinner 1990).

Since that time, the Salmon River Canal Company has realigned its canals and worked to reduce water loss in the canal. As a result of lining the canals, the system now delivers 70 percent of the water that leaves the tunnel. An estimated 300 miles of canal are maintained by the company. The reservoir has only been full three times since the dam was constructed. The reservoir filled for the first time in 1921 and again in 1975. In 1984, the spillway was used for the first time when 70,000 acre feet of excess water was released down Salmon Falls Creek (M. Lanting 1990).

Andrew J. Wiley

Andrew J. Wiley, one of Idaho's leading civil engineers, designed the elegantly-curved concrete arch dam at the Narrows of Salmon Falls Creek. Wiley, born and educated in Delaware, was the valedictorian for the University of Delaware class of 1879. One of his first jobs was in Idaho working in the Snake River Gold mines near Twin Falls. By 1884, he was working on a comprehensive irrigation project for southwest Idaho with Arthur Foote near Barber, Idaho, a few miles to the east of Boise. There Foote, Wiley, and fellow engineer C. J. Strike conducted scientific testing to create quality concrete using local materials. Working with Foote in 1894, he worked on determining location and preliminary designs for the first hydroelectric dam on Idaho's Snake River at Swan Falls. The dam would provide power for energy-hungry mines in the Owyhee Mountains. When financing fell through, Foote left the project. In 1896, Col. William H. Dewey and the Trade Dollar Mining Company began backing the

8. Statement of Significance

Narrative Statement of Significance (continued)

Swan Falls project with A. J. Wiley as designer and construction engineer. The Swan Falls Dam was placed on the National Register of Historic Places in 1976. In 1902, Wiley and Walter G. Filer completed preliminary engineering on a dam for the Twin Falls Tract development. Both men are credited with the design of Milner Dam, which was placed on the National Register of Historic Places in 1986. Concurrently, Wiley began working with the U. S. Reclamation Service (now U. S. Bureau of Reclamation) to locate a site for the hydroelectric plant at Minidoka Dam. This structure was placed on the National Register of Historic Places in 1974. In later years, Wiley became a consulting engineer. In 1928, he was appointed by the Secretary of the Interior to work for the U.S. Reclamation Service to inspect all of the dams in the Minidoka Project to assure they did not contain any of the deficiencies that caused the failure of the St. Francis Dam in the Santa Clara Valley in California. He also began working internationally, consulting on the design of dams in Southeast Asia. In addition, he was a consultant on the design of Boulder (now Hoover) Dam in Nevada. In the 1930s, Wiley was one of three civil engineers who alerted their profession to safety concerns caused by water pressure on dams. A. J. Wiley is considered one of the premier dam designers of the late 19th and early 20th century. The Salmon Falls Dam is a culmination of Wiley's early engineering training and experience and served as a prototype for the many high concrete arch dams that followed (Huntley 1982; Monroe 1983; Rosholt and Ansell 1989; ISHS n. d; 1973;1985; Stene 1997; Jackson 2002; 2003; Bennett 2005).

Integrity:

The Salmon Falls Dam has excellent integrity. The appearance of the dam and associated features are virtually unchanged from the mid-1910s. The removal of the structures of the construction camp soon after the completion of the dam was part of the designed construction process and was consistent with A. J. Wiley's concept of clean lines. The dam, particularly the face and parapet, Control House and canals have experienced some spalling of the exterior finish. This process appears to be superficial and is clearly visible in photographs dating from as early as the opening day celebration in 1914. Because this minor deterioration dates almost from the construction era, it is does not diminish the cultural integrity of the site. Other minor changes include new metal roofing placed on the control house in 2007 to replace the deteriorated 90-year-old roof. In 1984, heavy spring run-off resulted in the spill way being used for the first time. Because of the action of the water, the spillway apron had to be rebuilt. The rebuilt apron was constructed of compatible concrete. In all, the dam and its associated features are little changed from their appearance from as early as 1914 and still serve their original function. The site retains unusually high values of setting, design, feeling, association, materials, location, and workmanship.

Summary:

The Salmon Falls Dam is locally significant under Criteria A & C in the areas of Agriculture, Exploration/Settlement, and Engineering. Completed as part of the substantial private/public initiative (Carey Act) to develop arid western lands into productive agricultural districts during the late 19th and early 20th century, the 1911 Salmon Falls complex is an excellent example of early 20th century concrete dam and irrigation system engineering. The work of noted dam engineer Andrew J. Wiley, the dam and irrigation complex greatly enhanced the agricultural productivity and development potential of nearby lands in the arid Snake River plains.

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10. Geographical Data

Verbal Boundary Description:

The site consists of Irrigation related features built between 1909 and 1911 in Township 15 South, Range 15 East. The project is in the eastern half of Section 7 and the northeast quarter of Section 18 and found within points 1-6 on the Salmon Butte, ID, USGS Quadrangle map specified above. The nominated area encompassed within the U.T.M. Coordinates consists of the physical resources documented within the narrative and an area to each side of these resources approximately 100 feet wide (approximately 40 acres, total) that represents the immediate setting sufficient to understand the engineering technology as it was adapted to the surrounding terrain and the functional operations of the system.

Boundary Justification

Salmon Falls Dam is a an irregular-shaped group of features dating to the 1908-1911 era that historically served as part of an irrigation system storing and delivering irrigation waters to the Salmon River Canal Company users. These features include the concrete arch dam, control house, Tunnel #1 with its inlet and outlet portals, a 60-foot deep open cut, a concrete spillway, an emergency control gate, Tunnel #2 along with its inlet, outlet portals and emergency escape shaft and the 700-foot long segment of lined canal dating from original construction. The NRHP boundary ends here, as beyond this section begins a modern concrete-lined canal.

PHOTOGRAPH IDENTIFICATION LOG

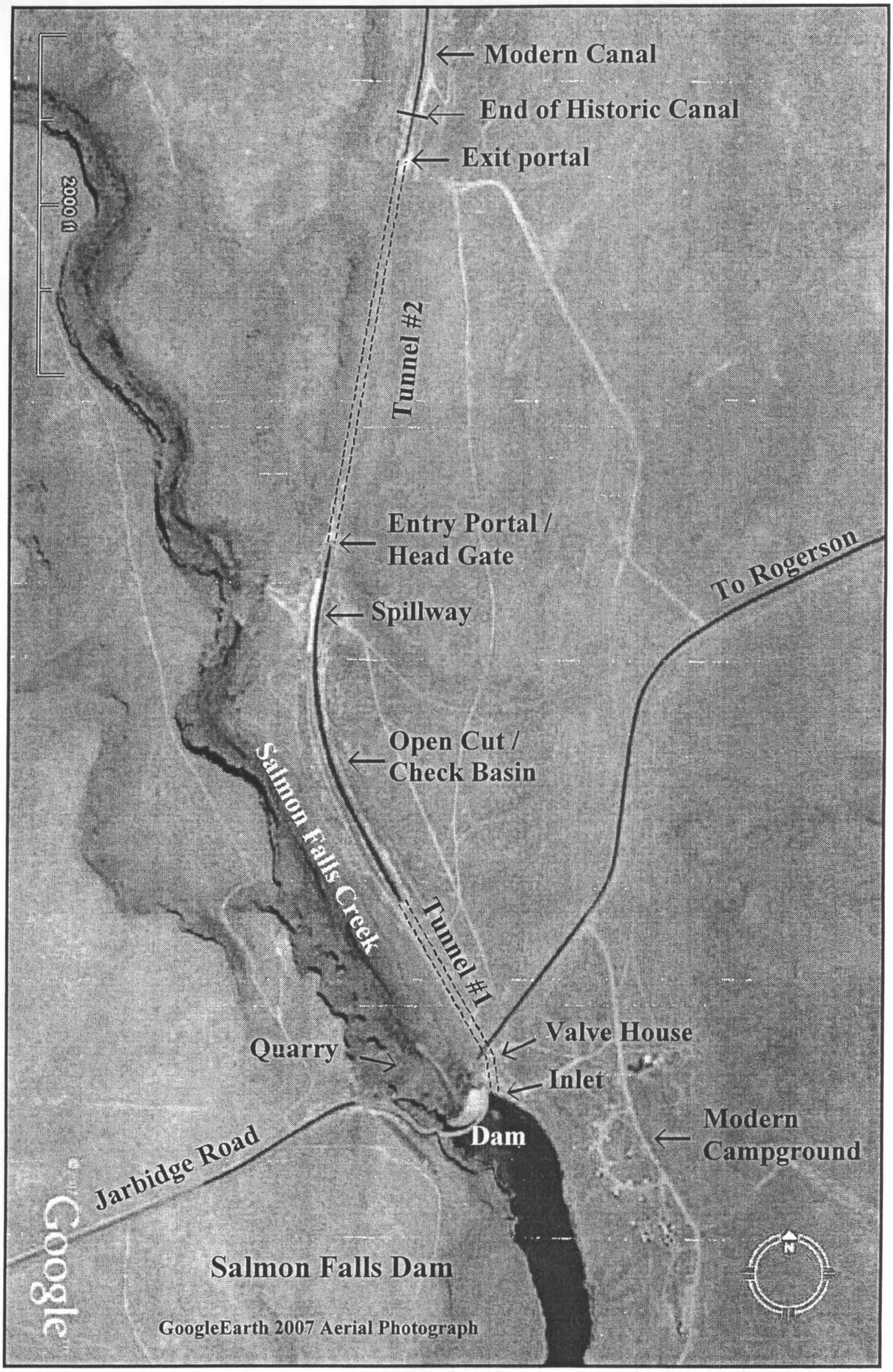
PHOTOGRAPHER: Dale Gray
PROPERTY: Salmon Falls Dam
LOCATION: Twin Falls County, Idaho
DATE: Photos taken March 11, 2008

Photos taken with a Nikon 8800 QuickPix 8 megapixel camera (except for scans of plans).

Photos were printed on HP Premium Paper Plus, using an HP Photo 8450 Photosmart printer with archival HP Vivera inks (95, 99 and 100 cartridges).

Digital Photos: Electronic Image File Archive Gold CD submitted to NPS. Also on file at Idaho SHPO.

Photo 1 of 13	Dam and Reservoir	Looking NNW
Photo 2 of 13	Dam Face	Looking SE
Photo 3 of 13	Dam Parapet	Looking SW
Photo 4 of 13	Control House	Looking S
Photo 5 of 13	Control House	Looking N
Photo 6 of 13	Control Gate & Tunnel	Looking NE
Photo 7 of 13	Tunnel #1 Exit Portal	Looking SW
Photo 8 of 13	Tunnel #2 Exit Portal	Looking SW
Photo 9 of 13	Spillway	Looking SW
Photo 10 of 13	Check Basin & Tunnel Gate	Looking NE
Photo 11 of 13	Plan, Profile, Cross Section & Details of Dam dated 1911	
Photo 12 of 13	General Plan of Controlling Works dated 1909	
Photo 13 of 13	Profile Alignment & Sections of Outlet Canal in Tunnel & Open Cut dated 1911	


Modern Canal
End of Historic Canal
Exit portal
2000 ft
Tunnel #2
Entry Portal / Head Gate
To Rogerson
Spillway
Open Cut / Check Basin
Salmon Falls Creek
Tunnel #1
Valve House
Quarry
Inlet
Modern Campground
Dam
Jarbidge Road
Google
Salmon Falls Dam
GoogleEarth 2007 Aerial Photograph