

Tule River Hydroelectric Complex
California State Highway 190 at North Fork
of Middle Fork of Tule River
Springville vicinity
Tulare County
California

HAER No. CA-48

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
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HISTORIC AMERICAN ENGINEERING RECORD

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Tule River Hydroelectric Complex

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Location: On California State Highway 190, along the canyons of the North Fork of the Middle Fork of the Tule River
Springville vicinity, Tulare County, California

UTM and Quad references are given below for points encompassing the resource, running clockwise from southwest to northeast:

UTM: 11.336450.4000350
Quad: Springville, California, 15'

UTM: 11.342700.4103250
Quad: Springville, California, 15'

UTM: 11.351200.4007300
Quad: Camp Nelson, California, 15'

UTM: 11.351250.4004750
Quad: Camp Nelson, California, 15'

UTM: 11.342650.4001000
Quad: Springville, California, 15'

UTM: 11.337000.3998200
Quad: Springville, California, 15'

Date of Construction: 1902-1914

Present Use: Hydroelectric power generation

Significance: The Tule River Hydroelectric Complex is associated with events that have made a significant contribution to the broad patterns of local history: the development of hydroelectric power which made possible the successful expansion of irrigated agriculture in the southern San Joaquin Valley, and in Tulare County, in particular. It is associated with the lives of persons significant in our past: A. G. Wishon was directly and indirectly associated with the three power companies involved, through his founding efforts with Mt. Whitney Power Company and his later retributive efforts against that company, through his development of San Joaquin Light and Power Company, and through his attempted use of ties to Tulare County Power Company against Mt. Whitney Power Company. The plants and their

attendant structures and facilities are all typical of construction methods of the first decade of the 20th century. The Tule River Hydroelectric Complex was determined eligible for the National Register of Historic Places on January 22, 1982, under Criteria A, B, and C.

Historian:

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HISTORY

The first years of the 20th century saw a proliferation in the development of electric power companies in California. Though these early companies have largely been subsumed by such large entities as the Pacific Gas and Electric Company and the Southern California Edison Company, they were still relatively small, originally designed to serve the needs or development of fairly limited geographical areas. Some never reached fruition. Three such companies were the San Joaquin Light and Power Company, the Mt Whitney Power Company, and the Tulare County Power Company.

The development of electric service in this area of the southern San Joaquin Valley in the last years of the nineteenth century and the first years of the twentieth century was both fostered by, and vital to, agricultural development.

In 1899, Albert Graves Wishon founded the Mt. Whitney Power Company, headquartered in Visalia. The company's plant was located at the junction of the South and Middle Forks of the Kaweah River. With Wishon as manager, the company began to promote the use of electric pumps for agriculture. When local farmers proved too slow in replacing their steam or gasoline-powered pumps with electric models, Wishon sold the electric models to them on credit and extended the company's lines commensurate with sales. When, in 1902, increasing business led Wishon to propose a second hydroelectric plant on the Kaweah River, opposition from company directors forced him out of company management. However, this move proved to be a mistake, for Wishon's subsequent efforts prevented further growth of Mt. Whitney Power Company.

The same year that saw Wishon forced out of Mt. Whitney Power Company also found him selecting the Tule River site for a new development. Seeking financing in Los Angeles, Wishon was offered the position of manager of the San Joaquin Power Company, the Fresno Water Works, and the Fresno streetcar lines by lumber magnate William G. Kerckhoff and engineer Allan C. Balch. With the position came the contract and financing to construct a hydroelectric plant on the Tule River.

In order to undertake the project, it was necessary for a road to be built from Springville to the construction area, a distance of about 20 miles. This road followed the route of what was probably the first pack trail into the Camp Wishon area, built in 1891 by John J. Doyle as access to his homestead. Wishon began to acquire right-of-way, starting road construction in 1903 and completing it in late 1904 or early 1905. In one instance during right-of-way acquisition, a rancher asked for as much money for the right-of-way as his entire ranch was worth. Wishon, who had worked in real estate in Tulare, bought the entire ranch, established his retention of road and right-of-way, and sold the remainder of the ranch for the same price he had paid, thus gaining that section of right-of-way at no cost.

When the ranch owned by John Doyle was reached and acquired, Wishon had assured himself of the necessary timber supply for the project. As soon as the road had been completed to Doyle's

Camp, Wishon brought in a sawmill to supply lumber for flume and dam forms, aqueducts, tunnel shoring, bridges, and all camp buildings. This area is now Doyle Springs Resort.

With the completion of the sawmill, crews began work on the twenty-six tunnels necessary to carry water from the headworks at Hossack Meadow trail, down to the penstocks above the powerhouse. This work, mostly in hard rock, was accomplished mainly by hand, and progressed very slowly. With tunnel dimensions of only 4 by 7 feet, only two men were able to work at one time at drilling the tunnel face. Debris from the tunnels was used as aggregate in the concrete used to line the tunnels and ditches.

This early work went quite slow. With no bridge to cross the river, and no road on the other side, all materials (lumber, powder, cement, pipe, food, etc.) had to be packed in on horses and mules, after being delivered to Camp 1 (Doyle's Ranch) by wagon from Springville.

Concreting began in 1908, beginning at the headworks, under the direction of Rolf R. Newman who had worked under concrete pioneer Ernest L. Ransome. Newman installed the concrete mixer at the lower end of Tunnel 3. Cement, hauled by wagon from the railhead at Porterville to Camp 1, reached the mixer site by horse and mule. Water came from Ross Creek through a mile of two-inch iron pipe. The concrete was hauled uphill and downhill from the mixer in small iron cars carried on rails laid through the tunnels, with the cars moved by hand at this time.

By June 1912, 12 of the 26 tunnels had been completed, when orders came to rush the work. Central supply and commissary for the project were still located at Camp 1. The Southern Pacific rail line had been extended from Porterville to Springville, shortening the wagon haul for supplies. Work above Camp 1, however, still required packing materials about 2 miles, and forthcoming activity would soon increase this distance to five miles by trail. Clearly, a change was needed if work was to rapidly progress.

As a solution, Wishon bridged the river at Camp 1 and extended the road for two-and-one-half miles, completing this extension in the Spring of 1913. Camp 4 then became the supply depot and commissary. Electricity became available on the project at about this time, providing power for electric rock drills, concrete mixers, rock crushers, a blacksmith shop, air compressor, tunnel blowers, and all camp buildings and tunnel lighting. With these aids to speed up work, Tunnel 11, the longest at 1,900 feet, was finally completed. By this time, two concrete mixers were in use at Tunnels 12 and 25. A small locomotive was powered by a one-cylinder, two-and-one-half horsepower gasoline engine taken from the old concrete mixer at Tunnel 3. Using friction drive, the locomotive was not reversible, so tiny turntables were installed at each end of its run. The locomotive made seven round-trips a day, carrying a load of 1,600 pounds.

By 1913, the project had employed 250 men. Many of the hard rock miners were Slavonians, and some came from the mines at Tonapah, Nevada.

The powerhouse was sited approximately 17 feet above mean low water. Measuring 40 feet 6 inches by 65 feet 4 inches, and 33 feet from floor to eaves, it was built of steel and concrete. The

large glazed area provided ample light and ventilation. Construction of the powerhouse late in the project set the stage for some of the most taxing drayage.

Completion of the powerhouse saw the need to haul the heavy generating equipment from the railhead at Springville to the powerhouse site, a distance of eight miles. Two of these pieces weighed 30,000 pounds each, and four others weighed 22,000 pounds each. Teamsters Charles Scott and George Button had the task of transporting this equipment over the crooked mountain road. The heaviest pieces each required a four-day haul. The freight wagons were drawn by up to 22 horses, hitched at the rear as well as at the front. Even so, it was often necessary to aid the animals by means of block and tack, a method known as "blocking." The most trying pull occurred at the bridge at the powerhouse, where, in order to avoid overloading the bridge with the weight of the horses as well as the weight of the load, it was necessary to "block" the wagon across. Once on the other side, a crane used in the construction of the powerhouse assisted the horses in the final pull.

Other project statistics included:

- * Total tunnel length of 16,960 feet
- * 3,000 feet of penstock, three and one-half feet in diameter at intake and three feet in diameter at outlet
- * Penstock with one-quarter-inch walls at intake and seven-eighths-inch walls at outlet, and drops 1,500 feet
- * Plant capacity of 6,400 kwh, with a 70,000-volt line passing down Frazier Valley past Strathmore, where it ties in today with the Pacific Gas and Electric main line.

The powerhouse began operation on January 21, 1914.

That same year also saw the Mt. Whitney Power Company's powerhouse on the Tule River begin operating, using tailwater from the San Joaquin Light and Power Company powerhouse, augmented by water from a diversion dam on the South Fork of the Middle Fork of the Tule River, and flumed to this lower powerhouse site. However, Wishon's upstream position and earlier acquisition of water rights gave him a clear advantage. At the same time, a third company entered the picture. In 1910, a group of Los Angeles and Visalia businessmen incorporated the Tulare County Power Company. Their first generative efforts were provided by a steam-powered plant in Lindsay. In 1912, they sought a Certificate of Public Convenience to build a hydroelectric plant on the Tule River. In this effort, they were supported by Wishon's San Joaquin Light and Power Company, which had agreed to sell them supplementary water, and were opposed by Mt. Whitney Power Company, which claimed unfair competitive practices. By this time, Mt. Whitney's directors were undoubtedly beginning to see the potential of Wishon's efforts. With construction underway since

1908 on the Tulare County hydro plant, hearings were held before the California Railroad Commission in 1912, and the certificate was granted. By this time, Tulare County Power had completed its dam of stone and rubble masonry with concrete facing, head gate, and 700 feet of ditch, lined with stone masonry. About 2,800 more feet of ditch has been excavated, and leveling for the ditch had been completed for a total of about 9,800 feet total for the dam. The powerhouse was to have been near Globe, below the junction of the Middle and North Forks of the Tule River. Time, however, proved critical and, after entering bonded indebtedness to complete the Tule River plant, the recession of 1914 and the demands of World War I conspired against the newcomers. The plant was never completed, and the company was dissolved in 1920.

Wishon's efforts against Mt. Whitney Power were not stilled during the construction of his power plant. He continued his electric service sales efforts during this period, with the result that he was able to run the lines of San Joaquin Light and Power Company across the north end of Tulare County. This prevented expansion of Mt. Whitney Power in that direction. His subsequent acquisition of power companies in Bakersfield allowed construction of lines to Bakersfield by way of Taft, blocking Mt. Whitney's expansion to the south. Wishon's efforts achieved success in 1914, when his former opposition was forced into corporate dissolution soon after completion of their Tule River plant. Although the Tulare County Power Company never completed its plant, Wishon was still able to sell water to the former Mt. Whitney plant.

Beginning in the 1920s, a series of stock transfers led to the acquisition of San Joaquin Light and Power by Pacific Gas and Electric, although it operated as a separate subsidiary until 1939.

DESCRIPTION

The Tule River Hydroelectric Complex is comprised of the former plants and facilities of the San Joaquin Light and Power Company, the Mt. Whitney Power Company, and the Tulare County Power Company, lying generally along the North Fork of the Middle Fork of the Tule River and the Middle Fork of the Tule River, extending roughly from Camp Wishon on the North Fork of the Middle Fork of the Tule River to Springville on the Middle Fork of the Tule River. The Request for Determination of Eligibility discussed the description as follows:

Facilities near Camp Wishon include a small diversion dam, canal, screen and gauging structures, beginning of a subterranean aqueduct, a bridge, a house, and two cabins. The remains of David L. Wishon, brother of Albert G. Wishon, are buried next to the house. The facilities are well-maintained, and the setting has not seen intrusion by other construction. There are no unusual architectural features.

At Doyle Springs, the features consist of a small concrete dam, a pump structure and a buttressed pipeline leading uphill to the aqueduct. The original wire-wrapped wooden pipe has been replaced by steel pipe, but all other features appear to be original.

The subterranean aqueduct is a shallow, covered waterway that follows natural contours rather than going by direct tunnels through the ridge. The terrain is so steep and rough that it is difficult to visualize the magnitude of this task without visiting the site.

The San Joaquin Light and Power Company (currently owned by Pacific Gas and Electric Company) powerhouse facilities consist of the powerhouse, penstock, surge tank, work buildings, houses, rock walls, and the small bridge whose replacement initiated this recordation project. The site containing these facilities has been carved out of a steel mountainside, making necessary the rock retaining walls and stairways. Three of the original houses at the site have been removed in previous years, with two remaining. The remaining houses and other structures, of vernacular design, appear to be well-maintained. Intrusion here has consisted primarily of highway protection devices (guard rail and fencing), maintenance items, such as gas pumps, required for plant operation.

Small diversion dams direct water from both the North Fork and South Fork of the Middle Fork of the Tule River into a long flume and siphon system leading to the Mt. Whitney Power Company powerhouse (owned today by Southern California Edison Company). The dams, constructed of stone and concrete, are not large and are not intended to impound water. They serve only as a means to divert and gauge water flows. The flume is constructed of wood trusses, supporting a steel trough of semi-circular contour. It follows a nearly level contour and appears to climb the canyon walls as the river falls away to the west. The flume ends in a small forebay which feeds the penstock to the Mt. Whitney Power Company powerhouse.

These dam and flume facilities are essentially in the same locations they were constructed. Part of the flume has been converted to a siphon above Coffee Camp and maintenance work has altered the materials in much of the rest. As viewed from the road (State Highway 190), however, the setting and feeling of association with the past remain unchanged.

The Mt. Whitney Power Company powerhouse enclave consists of two main buildings, an auxiliary building and a residence. A rock wall, similar in design to those at the San Joaquin Light and Power Company powerhouse, runs along the driveway. The structures are in good condition with no outside intrusion. A simple, concrete-lined ditch returns water to the Middle Fork of the Tule River, just below the Tulare County Power Company dam.

A rock and concrete dam and diversion structure remain from the uncompleted Tulare County Power Company project. Both are in fair condition, considering the devastating floods that have occurred since their construction.

The ditch leading from the diversion dam is lined with rock for a few hundred feet, and is now partially filled or covered. Beyond this point, the ditch is recognizable only as a

horizontal trace across the hillside, ending on a ridge near the eastern end of Springville, California.

Along State Highway 190, between Springville and the San Joaquin Light and Power Company powerhouse, the road has seen minor realignment and widening, with remnants of original alignment visible on some curves. The county road, from the powerhouse to Camp Wishon, appears to be virtually unaltered, with its narrow width supported in many places by rock masonry retaining walls; it has a sharply winding alignment. Its principal alteration is in the form of pavement.

Near this road, about one mile above the powerhouse on the North Fork of the Middle Fork of the Tule River, is a small gauging station. The original bridge at this location has been destroyed and replaced by a railroad flat car span. The remaining abutments and gauging facilities have been altered by patching and reconstruction.

A. G. WISHON

Albert Graves Wishon was born in Relfe, Missouri, on November 6, 1858. His family had been prominent in North Carolina, and his grandfather had been among the first western emigrants from that state, settling in St. Louis. Wishon gained his education at the Missouri School of Mines, a branch of the University of Missouri. On October 5, 1881, he married Henrietta Emory of St. James, Missouri. Wishon's early employment was in the mercantile business, first with the firm of Adler, Goldman & Company of St. Louis (1878-1881) and, later, in his own firm in St. James (1881-1887). Following this, the Missouri Pacific Railroad employed him in their Bridge and Building Department (1887-1889). Joining thousands of others, he and Henrietta left Missouri for California and its "Boom of the Eighties."

That celebrated "boom" ended at about the time Wishon arrived in 1889, and taking up residence in Tulare, he went to work for the San Joaquin Lumber Company (1889-1891), and later worked as cashier and bookkeeper for the Tulare County Bank (1891-1893). With the continuing development of the southern San Joaquin Valley, Wishon decided to return to self-employment and, from 1898-1902, he began his efforts in the electric power business in Visalia. It was during this period that he fully developed his promotion of the area, stressing pump irrigation as the agricultural future of the southern San Joaquin Valley.

His first extensive irrigation project was the building of the Exeter Ditch, which carried water from the Kaweah River above Lemon Cove to Lindsay. The immediate result of this project was the successful development of citrus production in the area, with Wishon selling some of his land--at a tidy profit--for citrus farming. He followed this project by organizing the Mt. Whitney Power Company (as cited in the HISTORY section of this report), pioneering electrical pumping for California agriculture. The company distributed power to Tulare, Visalia, Exeter, Porterville, and Lindsay. During the latter part of 1902, he explored the Tule River area by horseback, seeking potential hydroelectric generating sites. This trip led directly to the San Joaquin Light and Power Company project discussed above.

In 1904, Wishon organized the Fresno Traction Company, for what was to be a stillborn project. His aim was to build an electric railroad from Fresno to Yosemite, by way of Fish Camp, terminating at Wawona. Though it never reached fruition, this project again demonstrates Wishon's visionary abilities (one can only imagine the worth of such a railroad were it to exist in this day of automobile impacts on Yosemite National Park).

Among Wishon's other business titles were:

President, Midland Counties Public Service Corporation
President, Bakersfield and Kern Electric Railway
Vice President, Lerdo Land Company
Director and Treasurer, Wishon-Watson Company
Director, Visalia Manufacturing Company
Director, Great Western Power Company

A Republican, his club memberships included the Commercial Club, the Rotary, the University Club, the Sequoia Club of Fresno, and the California Club of Los Angeles.

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