LOCATION AND PROPERTY NAME

**Address:** 30878 NW Evergreen Wy  
**Historic Name:** River Mill Hydroelectric Project

**Assoc Addresses:** Estacada vcty, Clackamas County (97023)

**Location Description:** Less Than 1 Mile E Of Estacada On The Clackamas River

**Type:** Energy Facility

**NR status:** Individually Listed

**Date Listed:** 05/10/2001

**Elig Evaluation:** 1911

**Eligible Significance:**

**Elig Evaluation Date:** 05/10/2001

**Primary Orig Use:** Energy Facility

**Secondary Orig Use:** Utilitarian

**Primary Style:** Concrete: Other/Undetermined

**Secondary Style:** Plan Type:

**Type of Grouping:**

**Grouping/Association:** River Mill Hydroelectric Project

**Supplementary Information:**

**ArcGIS Information:**

**Resources Listed:**

**Groupings/Associations:** River Mill Hydroelectric Project

**SHPO Information for this Property:**

**Survey/Grouping Included In:** Clackamas County Historic Landmarks  
Clackamas River Hydroelectric Project

**Survey Type:** Survey & Inventory Project

**Date Listed:** 2001

**Date Completed:** 2003

**Farmstead/Cluster Name:** None

**Historic Name:** River Mill Hydroelectric Project

**Builder:** Puget Sound Bridge & Dredging

**Architect:** Ambursen, Nils F

**NR Status:**

**Date Listed:** 05/10/2001

**Location and Property Name:**

**NR Date Listed:** 05/10/2001

**Federal Tax Program:**

**Status:** Complete

**Start Date:**

**Compliance Date:**

**Number of Projects:** 106

**Project Description:**

**Architectural Property Description:**

**Architectural/Property Description:**

**Physical Description as Described in NR Nomination:**

The River Mill Hydroelectric Project is located on the Clackamas River, slightly less than a mile east of the city of Estacada, in Clackamas County, Oregon. Estacada, the sole incorporated city in the so-called “Upper Clackamas Valley,” was established in 1905. The development is located at 30878 NW Evergreen Way off River Mill Road, east of State Highway 211, and primarily located within the channel of the Clackamas River, a year-round river that begins in the mountainous area to the southeast and drains into the Willamette River near West Linn. The River Mill Hydroelectric Project consists of several related components, including the powerhouse, powerhouse dam, spillway dam, fish ladder and various in-stream features. A non-historic but associated recreational area is located on the eastern bank of the river, adjacent to the generation plant. River Mill was built between 1910 and 1911 at a cost of just over one million dollars. Puget Sound Bridge and Dredging Company, of Seattle, Washington, served as the general contractor and Sellers and Rippey, consulting engineers of Philadelphia, were in charge of the overall design. The spillway and powerhouse dams were designed by Nils Ambursen, of the Ambursen Hydraulic Construction Company of Boston, Massachusetts. Portland Railway Light & Power Company [PRL&P], the project developer, served as its own contractor for the installation of the generating equipment and through its various successors continues to own and operate the project today. The individual resources within the River Mill Hydroelectric Development, all built in 1910-1911 unless otherwise noted, are: Powerhouse Dam: Located on the east bank of the Clackamas River, the powerhouse dam is an Ambursen-type structure approximately 173 feet in length, supporting the power and gate houses. Overall height at the downstream face is approximately 86 feet. The hollow interior of the structure is composed of a series of poured-in-place buttresses spaced on 14 to 18-foot intervals, with horizontal supporting members and concrete slabs forming the up- and downstream faces. Interior finishes include the rough form marks and put-log holes remaining from the false work of construction and the interior is accessed via a narrow suspended walkway that runs the length of the dam. Two basic integral-bay variants exist, those with and those without penstocks, the massive 5-foot diameter, riveted-steel pipes that channel water from the forebay into the turbines. At the direction of the Federal Energy Regulatory Commission [FERC], the Powerhouse Dam is undergoing structural remediation to provide sufficient seismic capacity during a Maximum Credit Event. The Powerhouse Dam is counted as a contributing structure in Section 5. Powerhouse: The powerhouse is a large cast-concrete structure built above the powerhouse dam. A three-story, rectilinear-volume set perpendicularly across the river channel, the powerhouse is simply detailed with engaged, cast-stringcourse lines, sills, and cornice. Engaged columns and other architectural elements accent the design. The flat roof of the powerhouse is augmented by twin hipped skylights, roofed-in of non-historic standing-seam steel, c970s. The interior floor plan, holding the generation equipment, is lit by two banks of original, industrial-steel fixed and pivot-sash multi-pane windows. Engaged columns and a finely detailed cornice line, with arched parapet on the east, cap the volume. On the east elevation, facing the parking-access area, a bowed parapet is highlighted by an incised “1911” date block. The roof, hidden behind the parapet, is a shallow gable. Interior character is largely intact, with open steel trusses and a large gantry crane, concrete flooring, painted steel railings and similar industrial features. A spiral stairwell and open-screen elevator remain, providing access between levels. The Gate House, located upstream, behind the powerhouse and to the west and continuing from the Unloading House, is a multi-story, cast-concrete structure with simple detailing, including the same metal windows and modest cast decoration of the remainder of the project. The interior is dominated by the five large steel rack and pinion-head gate assemblies, below an open steel truss roofing system. An outside deck provides access and operation of the trash racks and removal system, to clean the upriver forebay. The Gate House/Unloading House is counted as a single contributing structure in Section 5. Fish Ladder: The Fish Ladder is a...
square-sided concrete structure that rises from the downstream elevation through a series of elevated “switchback” turns to allow upstream migrants to bypass the River Mill Dam. The ladder is box-shaped in section with an open, wire-mesh-protected top. The ladder was originally built in 1911-13 as an element of the original development. It has been serially modified to improve its function, the most recent major repair occurred in 1971, but retains high integrity to its historic appearance and character. The Fish Ladder is counted as a contributing structure in Section 5. Spillway Dam: Along with the powerhouse, the River Mill spillway dam forms the dominant visual focal point of the park, and is recognized as the premier example of Ambursen’s hydraulic engineering. A hollow slab dam, it is approximately 73 feet in height. A 54-foot wide non-overflow section divides the spillway dam from the powerhouse dam. Designed by Nils F. Ambursen, of the Ambursen Hydraulic Construction Company, the inventor of the slab and buttress or "Ambursen" dam, the River Mill dam consists of twenty-two cast concrete buttresses (varying in width from 15 inches to 72 inches, depending on location). Of 18-foot square size, they rise from a foundation of 10-foot spans between Buttresses A and B. Cast-concrete slab sections form both faces of the spillway, with interior cast-concrete corbels and lateral cast-concrete struts providing additional support. A narrow cast-concrete walkway, with steel guard rails, runs longitudinally the entire width of the dam, piercing each buttress via a chamfer-edged opening. The walkway terminates at the west bank, where a small ladder rises to an access tower. Spaces between the buttresses (bays) are essentially open to bedrock, above and below the suspended walkway, creating an essentially open interior core, the key characteristic and advantage of the Ambursen design. Various structural alterations, of the severity level of the original design and the system for the original design character and the associations which make it a significant resource in the Clackamas region. AS DESCRIBED IN THE NATIONAL REGISTER NOMINATION: The River Mill Hydroelectric Project is operated by Portland General Electric and continues its historic use as an electrical generation facility as a part of Federal Energy Regulatory Commission [FERC] Project License No. 2195. Well-maintained and generally unmodified in any significant way since its construction, the River Mill Hydroelectric Project is designed so that the powerhouse and related facilities, will be solidified using a modified concrete infill strategy that will largely reduce the present open character of the Ambursen design. On the spillway dam, however, a diaphragm wall and reinforced concrete pilaster system has been designed that will correct the present structural issues while retaining to the greatest degree feasible the open interior character of the Ambursen form, including the longitudinal walkway, and open bays. As a part of the rehabilitation program, in conjunction with the seismic correction to the dams themselves, the historic River Mill Powerhouse will be substantially renovated and restored as detailed below, including a return to the historic exterior gray tones, window and glazing restoration, and exterior masonry repair. Completion of the proposed rehabilitation of the River Mill Hydroelectric Project will result in a thoroughly renovated facility that both meets current functional and safety requirements while clearly relating its original design character and the associations which make it a significant resource in the Clackamas region.

HISTORY
(Chronological, descriptive history of the property from its construction through at least the historic period - preferably to the present)

AS DESCRIBED IN THE NATIONAL REGISTER NOMINATION: The River Mill Hydroelectric Project, built in 1911 by the Portland Railway Light and Power Company, consists of an assemblage of concrete industrial structures spanning the channel of the Clackamas River in the vicinity of Estacada, Oregon. In continuous operation as a hydroelectric generation facility since construction, the River Mill Hydroelectric Project retains high integrity and effectively relates its original construction and the associations for which it is significant under Criteria “A” and “C” for listing in the National Register of Historic Places. The River Mill Hydroelectric Project, completed in 1911 by the Portland Railway Light and Power Company, consists of an assemblage of concrete industrial structures spanning the channel of the Clackamas River in the vicinity of Estacada, Oregon. In continuous use for its original function as a hydroelectric generation facility since construction, the River Mill Hydroelectric Project has experienced modest alteration and improvement related to improved safety and operational requirements. The project retains very high integrity of materials, craftsmanship, feeling of the facility, and character of the form, Nils F. Ambursen. The project consists of an assemblage of concrete industrial structures spanning the channel of the Clackamas River in the vicinity of Estacada, Oregon. In continuous use for its original function as a hydroelectric generation facility since construction, the River Mill Hydroelectric Project has experienced modest alteration and improvement related to improved safety and operational requirements. The project retains very high integrity of materials, craftsmanship, feeling of the facility, and character of the form, Nils F. Ambursen.
the countryside, at least for the first fifteen years of the new century, represented convenience, adventure, and freedom. Trolleys did what machines should do - they efficiently provided those services to its riders and customers.) The company, which owned substantial lands in the region, sought to increase settlement and development. (This initial generation facility on the Clackamas was first known as "Cazadero," then re-designated...)

Completed in 1907, the railway line to Cazadero was electrified and service to the Clackamas Valley area was dramatically improved, spurring increased excursion and tourist fares to the community as early as 1902, building ridership and freight traffic in anticipation of the construction of its power plant. In the early years of the 20th century, the Portland Water Power Company established the new city of Estacada as the terminus of its wood-burning steam railway line running east from Portland and was offering low-cost rail fares to the community. "Not only did [the Exposition] 'place Portland on the map,' so to speak, but it achieved the mouth of Eagle Creek, "...where an island with riffles made shallower water," (Dillon: cl936). Cyclically replaced and improved following flooding and increasing use, this...
that would eventually become the River Mill Hydroelectric Development. The construction of this facility, to be the company's second on the Clackamas River, would augment the Faraday development at Cadazero and help meet the ever-increasing demand for power being placed on the company's system. "The railway company will proceed at once with the development of the water power plant on the property acquired near its Cadazero plant and expects to have it in operation by September 1, 1911. [According to B. F. Joselyn, President of the Portland Railway Light & Power Company], "It is possible that the dam to be erected at the Estacada, or Morris site, will be the last construction, a departure in dam building. On my trip East, I went to Ellsworth, Maine and inspected a handsome concrete dam in use at that point and found it to be giving perfect satisfaction and its cost materially less than that of a solid concrete dam." (Oregonian,3-December-1909) Nils F. Ambursen design for a slab and buttress or "hollow" dam at Ellsworth, Maine for the Bar Harbor Paper Company was completed in 1907. (National Dam Inventory, 10 #ME00026) Built as Josepho anticipated of hollow "flat slab and buttress," commonly termed the River Mill Dam, a description of the new design was published in the November 1903 Engineering News Record. "The article created such widespread interest amongst engineers and others that I found it necessary to organize the Ambursen Construction Company." (Ambursen, 1934) Joining forces with William L. Church, a Professor of Civil Engineering at LeHigh University and formerly a partner in Westinghouse, Church, Kerr and Company, Ambursen filed a patent on the new dam that bears his name. "While with the Ambursen Company, I held the position of vice-president, Chief Engineer, and was in full charge of all engineering and construction... No other contracts could be executed without my approval." During its existence under the original partners from late 1903 through 1917, the Ambursen company built more than 100 dams in North America and the design gained a substantial reputation. In 1917, following his invention of a system of steel forms for building construction, Ambursen left the firm and established the Uni-Form Company, soon purchased by Blaw Knox of Pittsburgh, Pennsylvania. In 1922, Ambursen returned to private practice, consulting on the design of hydroelectric facilities for a wide variety of clients. These included the Puget Sound Bridge and Dredging Company of Seattle, Washington; the San Giorgio Dam and Reservoir for the Puerto Rico Power Company, 1922. (See S. W. Stewart, President, Ambursen Hydroelectric Construction Company, "Copy of Recommendation" 12-August-1931 Nils F. Ambursen died in Washington D.C. at 81 years of age in January 1958. According to information compiled by Mr. Ambursen in 1934 under the heading "Partial List of Construction Projects with which N. F. Ambursen has been identified," he was involved with projects ranging from a storage lake in British Columbia to a hydroelectric facility for the Puerto Rico Light and Power Company. The bulk of Ambursen's work, however, was located in the Pacific Northwest and, particularly in the northeastern states of Maine, New York and New Hampshire. The River Mill Dam is the oldest, and apparently sole surviving, of the three identified Ambursen projects in the United States built west of the Rocky Mountains. (The others are a hydro-electric facility for the Big Horn Power Company in Shoshone, Wyoming and an irrigation dam for the La Pelle Reservoir and Ditch Company in Douglas Wyoming. Neither appear to survive. It should be noted that while not directly identified with Ambursen, at least one "slab and buttress" hydroelectric dam in the western United States is identified in FEMA's National Dam Inventory is listed as pre-dating River Mill; the low-head 1907 Shoshone Falls Dam in Jerome County, Idaho. (See National Dam Inventory, NID #ID000559) There are a total of 79 slab and buttress hydroelectric dams, or less than one-half of one percent, within the 75,000+ identified dams in the United States.)

**RESEARCH INFORMATION**

**Title Records**
- Census Records
- Property Tax Records
- SHPO Files
- State Archives
- State Library
- Local Histories
- Interviews
- Historic Photographs

**Local Library:**
- University Library
- Other Repository
- National Register nomination

**Bibliography:**


Oregon Historic Preservation Office