Yale Hydroelectric Project
FERC Project No. P-2071

Application for Non-Capacity License Amendment

PACIFICORP
A BERKSHIRE HATHAWAY ENERGY COMPANY

May 2023

Yale Hydroelectric Project
(FERC No. P-2071)

APPLICATION FOR NON-CAPACITY LICENSE AMENDMENT

This application for license amendment for the Yale Hydroelectric Project (FERC No. P-2071) consists of the following volumes:

Volume I

Initial Statement
Exhibit A – Project Description
Exhibit C – Project Installation and Proposed Schedule
Exhibit D – Costs and Financing
Exhibit R – Recreation Facility Drawings

Volume II

Exhibit E – Environmental Report

Volume III

Exhibit F – Vicinity and Preliminary Design Drawings (**CUI//CEII** – Not for Public Release)

Volume IV

Cultural Resources Summary for the Yale Project (**CUI//PRIV** – Not for Public Release)

VOLUME I

INITIAL STATEMENT

Yale Hydroelectric Project
(FERC No. P-2071)

BEFORE THE
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

YALE HYDROELECTRIC PROJECT
FERC PROJECT NO. P-2071

APPLICATION FOR NON-CAPACITY AMENDMENT OF LICENSE
FOR A MAJOR PROJECT - EXISTING DAM

INITIAL STATEMENT

(Pursuant to 18 CFR § 4.201)

1. PacifiCorp (PacifiCorp, Licensee, or Applicant) applies to the Federal Energy Regulatory Commission (FERC or Commission) for a non-capacity amendment of the license for the Yale Project (Project) as described in the enclosed exhibits.

2. The exact name, business address, and telephone number of the Applicant are:

   PacifiCorp
   825 N.E. Multnomah St., Suite 1800
   Portland, Oregon 97232

   The exact name and business address of each person authorized to act as agents for the Applicant in this application are:

   Todd Olson
   Director of Compliance, Renewable Resources
   PacifiCorp
   825 N.E. Multnomah St., Suite 1800
   Portland, OR 97232
   (503) 813-6657
   todd.olson@pacificorp.com

3. The Applicant is a domestic corporation organized under the laws of the State of Oregon and is owner and Licensee for the Yale Hydroelectric Project designated as (FERC No. P-2071) in the records of the Federal Energy Regulatory Commission, original license issued on October 29, 1956. The Commission issued a new license for the Project on June 26, 2008.

4. The amendment of license proposed and the reason(s) why the proposed changes are necessary:

New Information Regarding Dam Safety

The results from the 2020 field and laboratory program updated the material characterization for the Saddle Dam. Further model calibration and results of the deformation model indicate crest deformation and potential cracking of the embankment during a large seismic event. To mitigate against these potential results from a large seismic event, PacifiCorp will complete modifications to the Yale Saddle Dam in support of dam safety objectives.

Requested License Amendment

PacifiCorp seeks a non-capacity amendment to the Yale Project License (FERC No. P-2071) to complete the installation of a rock filter / drain berm to the downstream face of the existing Saddle Dam and add a downstream toe drain and centralized drainage swale to monitor any seepage from Saddle Dam. Modifications will add surfacing material to the crest of the embankment dam extending from the toe of the dam approximately 50 feet into the existing recreation site parking lot. The parking lot will be reshaped to maintain pre-project parking capacity. The project will also add rock armament to the upstream face of the dam. Temporary access or storage sites installed during the construction phase will be removed and site area restored. Any permanent recreation site feature removed for construction will be rebuilt or restored to original conditions.

Amendment is necessary to complete construction actions in a timely manner.

Required Exhibits

For this non-capacity amendment, consistent with the requirements of 18 CFR § 4.201(c), only those exhibits applicable to the proposed changes necessary to implement dam safety actions at Yale Saddle Dam are provided.

Exhibit A - Project Description – Enclosed within Volume I

Exhibit B - Project Operations – The non-capacity amendment proposed in this application will have no impact on Project operations and, accordingly, Exhibit B is not provided.

Exhibit C - Project Installation and Proposed Schedule – Enclosed within Volume I

Exhibit D - Costs and Financing – Enclosed within Volume I

Exhibit E - Environmental Report – Enclosed within Volume II

Exhibit F - Project Drawings – Enclosed within Volume III

Exhibit R – Recreation Facility Drawings – Enclosed within Volume I

(i) The statutory or regulatory requirements of the state in which the project would be located that affect the project as proposed with respect to bed and banks and the appropriation, diversion, and use of water for power purposes are:

- National Historic Preservation Act Section 106 Consultation – Washington Department of Archaeology and Historic Preservation
- In-water Work Protection Plan Approval (requirement of Clean Water Act Section 401 Permit)– Washington Department of Ecology
- General Construction Stormwater Permit – Washington Department of Ecology
- Hydraulic Project Approval – Washington Department of Fish and Wildlife
- Shoreline Substantial Development Permit – Cowlitz County
- SEPA Determination (DNS) – Cowlitz County
- Grading Permit – Cowlitz County
- Clean Water Act Section 404 Nationwide Permit – US Army Corps of Engineers
- Endangered Species Act Section 7 Consultation – US Fish and Wildlife Service and National Marine Fisheries Service

(ii) The steps which the applicant has taken or plans to take to comply with each of the laws cited above are:

PacifiCorp will consult with and apply for appropriate modifications, amendments, or new authorizations per the permit needs and from the entities as presented in prior section 4(i). The full list of permits required to construct will be developed upon final design. PacifiCorp will obtain all necessary permits and authorizations prior to construction.

SUBSCRIPTION

This Application for License Amendment for the Yale Project, FERC Project No. P-2071 is executed in the State of Oregon, County of Multnomah, by Todd Olson, Director of Compliance Renewable Resources, PacifiCorp, 825 NE Multnomah St., Suite 1800, Portland, Oregon, 97232, who, being duly sworn, deposes and says that the contents of this application are true to the best of his/her knowledge or belief and that he/she is authorized to execute this application on behalf of PacifiCorp.

The undersigned has signed his application this 31st day of May, 2023.

Todd Olson
Director of Compliance, PacifiCorp Renewable Resources

VERIFICATION

Subscribed and sworn to before me, a Notary Public of the State of Oregon this 31st day of May, 2023.

Notary Public – Heather Barnard

OFFICIAL STAMP
HEATHER BARNARD
NOTARY PUBLIC-OREGON
COMMISSION NO. 1023393
MY COMMISSION EXPIRES APRIL 05, 2026

My Commission Expires April 5, 2026

EXHIBIT A – PROJECT DESCRIPTION

Yale Hydroelectric Project
(FERC No. P-2071)

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Note to reader – This document revises the current Yale Hydroelectric Project Exhibit A on file with the Federal Energy Regulatory Commission. All proposed revisions are identified in track changes.

A.1.0 Introduction

In compliance with the Code of Federal Regulations (18 CFR, Parts 4 and 16), PacifiCorp Energy applied to the Federal Energy Regulatory Commission (FERC) to re-license the Yale Hydroelectric Project, FERC Project No. P-2071, which PacifiCorp Energy currently owns and operates, on the North Fork Lewis River, in the State of Washington. The initial license for the Yale Project was issued on April 30, 1951 and expired on April 30, 2001. The current license, effective June 1, 2008, and expiring May 31, 2058, was issued under Order Issuing New License (123 FERC ¶62,257) on June 26, 2008. An Order on Rehearing (125 FERC ¶ 61,046) was issued October 16, 2008.

Exhibit A – Project Description

This Exhibit A is a description of the Yale Project. It includes the location, general configuration, physical composition, and dimensions of the project structures. The description also includes information on the turbine-generator unit, as well as appurtenant civil, mechanical, and electrical equipment.

Exhibit A is organized in five sections that follow the sequence of information requested in the CFRs. Following this introduction, the existing facilities are described in Section 2.0. In Section 3.0, proposed modifications are described. Section 4.0 contains a statement regarding lands of the United States within the project boundary. Section 5.0 contains reference cites.

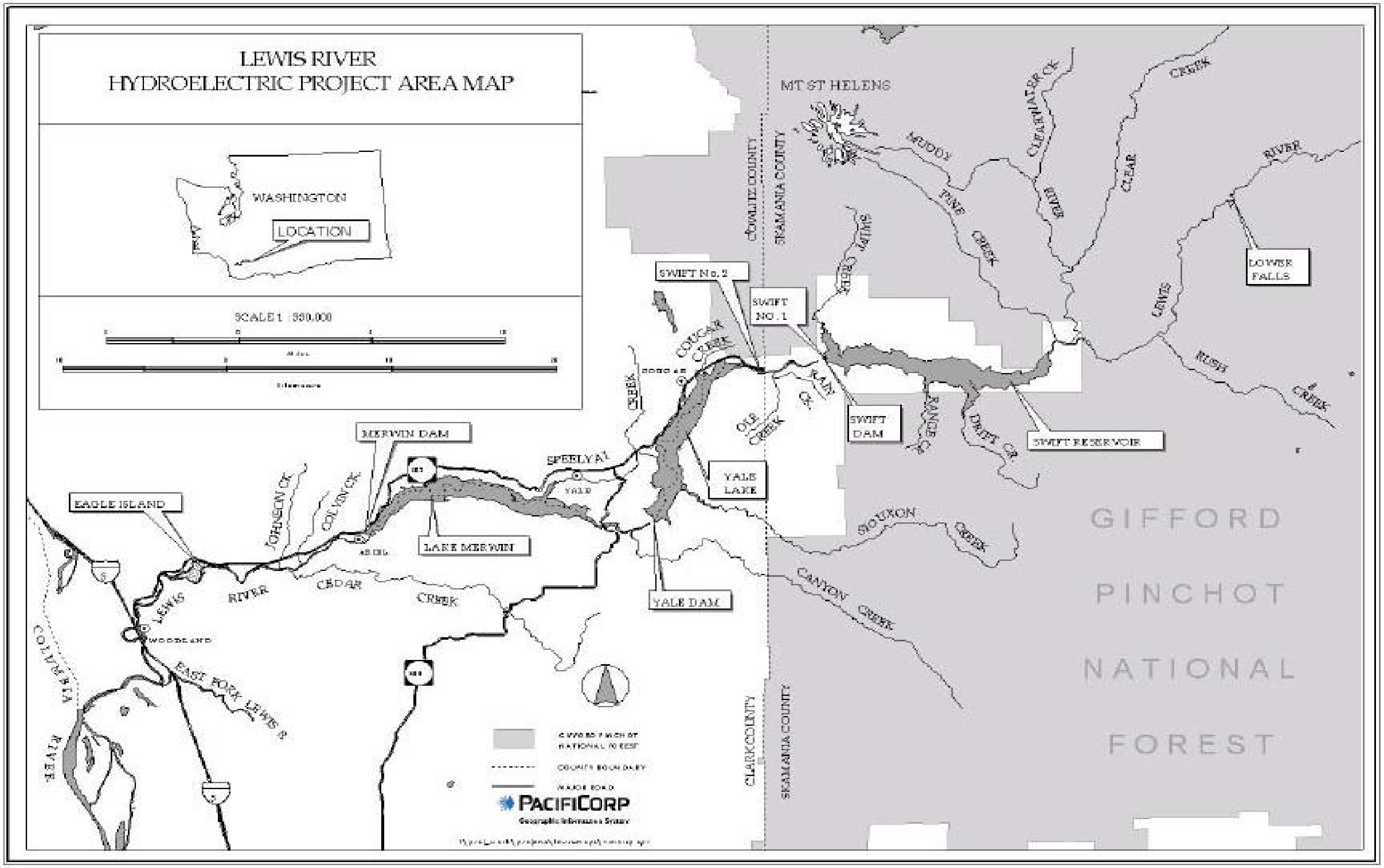

Figure A.1.0-1 Lewis River Hydroelectric Projects Area Map

A.2.0 Existing Structures

The Yale Hydroelectric Project is located on the North Fork Lewis River at the upstream end of Lake Merwin at river mile (RM) 34. The site is approximately 23 miles east of Woodland, Washington and 45 miles northeast of Portland, Oregon, about 35 miles upstream of the confluence of the North Fork Lewis River with the Columbia River. The Yale Project location within the North Fork Lewis River drainage basin is shown on Figure A.1.0-1.

The major components of the Yale Project include a reservoir, a main embankment dam, a low earth-fill Saddle Dam, a concrete chute-type spillway, and a 2-unit powerhouse. The significant project data are listed in Table A.2.0-1. A description of the civil, mechanical, and electrical systems for the major project components and their physical and operating conditions are as follows.

Table A.2.0-1 Yale Project Data

GENERAL		
Plant Name	Yale	
FERC Project No./License Expiration	2071/2001	
Location	Yale, Washington	
Stream Name	North Fork Lewis River	
Minimum Flow Requirement (cfs)	None	
Plant Data		
Plant Capacity, kW at 0.90 PF	134,000	
Number of Units	2	
Rated Net Head	240 feet	
Plant Discharge	9,640 cfs	
Average Annual Generation (Gross)	553,947 MWh (30-years 1958-1987)	
CIVIL SYSTEMS		
Reservoir		
Name	Yale Lake	
Drainage Area	596 square miles	
Maximum Storage Capacity @ El. 490 ft	402,000 ac-feet	
Usable Storage Capacity	190,000 ac-feet	
Maximum Normal Elevation	490.0 feet msl	
Normal Summer Operating Elevation	490.0-480.0 feet msl	
Normal Minimum Operating Elevation	470.0 feet msl	
Minimum Operating Elevation	430.0 feet msl	
Minimum of Record	435.65 feet msl (February 1957)	
Minimum Pool	430.0 feet msl	

Dams		
Name	Yale dam	Saddle dam
Type	Zoned embankment	Zoned embankment
Height	323 feet	40 feet
Length	1,500 feet	1,600 feet
Instrumentation	Crest monuments, Vee-notched weir,~~**Abutment**~~ piezometers	**Crest monuments,** ~~**Downstream**~~ piezometers
Diversion Tunnel		
Size	30-foot diameter horseshoe shaped	
Length	1,530 feet	
Liner Type	Concrete	
Other Features	Concrete plug at 1,276 feet from outlet	
Future Intake		
Location	81 feet north of diversion tunnel plug	
Features currently present	Circular cofferdam and rock formation grouting	
Cofferdam Outside Diameter	76 feet	
Cofferdam Top Elevation	431.3 feet msl	
Intake Structure		
Width	95 feet	
Length	38 feet	
Height	100 feet	
Intake Invert Elevation	400 feet msl	
Gates		
Number	2	
Type	Roller bulkhead	
Size	13.33 x 17 feet	
Hoist Capacity	100 tons	
Instrumentation (monitoring discontinued since 1997 Part 12) Inspection)	Tilt plates (2) Float wells	
Intake Fish Barrier Net		
Mesh Size	½ inch	
Length	700 feet	
Height	95 feet	
Penstocks		
Diameter	Varies-16 to 18.5 feet	
Length	1,111 feet (Unit 1) 1,206 feet (Unit 2)	
Liner Type	Unit 1	Unit 2
	Steel (985 feet) Concrete (126 feet)	Steel (1,093 feet) Concrete (113 feet)

Powerhouse		
Type	Semi-outdoor	
Width	151 feet	
Length	57 feet	
Draft Tube Gates		
Type	Slide	
Size	10’1.5" x 17’11"	
Gantry Crane		
Type	Outdoor	
Span	65 feet	
Main Hook Capacity	235 tons	
Auxiliary Hook Capacity	30 tons	
Draft Tube Gates Hoist Capacity	10 tons	
Spillway		
Type	Gated concrete ogee/chute	
Crest Length	195 feet	
Crest Elevation	460 feet msl	
Gates		
Number	5	
Type	Tainter	
Size	39 x 30 feet	
Fish Barrier Net	370 feet x 55 feet	½” mesh
Discharge Capacity	194,000 cfs (PMF) at pool elevation 501.2 feet	
Tailrace	Lake Merwin	
Plant Access Road		
Length	2.2 miles (from State Route 503)	
Surface Type	Asphalt/gravel	
Concrete bridge over spillway chute	110 foot span	
MECHANICAL SYSTEMS		
Turbine		
Unit Number	1	2
Manufacturer	S. Morgan Smith/ American Hydrorunner	S. Morgan Smith/American Hydrorunner
Turbine Capacity	73,300 kW at 240 feet	73,300 kW at 240 feet
Maximum Turbine Discharge	4,820 cfs at 240 feet	4,820 cfs at 240 feet
Maximum Turbine Output	86,800 kW at 240 feet	86,800 kW at 240 feet
Type	Vertical Francis	Vertical Francis
Speed (nameplate)	150 rpm	150 rpm
Runner Discharge Diameter	144 inches	144 inches
Wicket Gate Circle Diameter	173 inches	173 inches
Wicket Gate Height	32.25 inches	32.25 inches

Distributor Centerline Elevation	236.0 feet msl	236.0 feet msl
Draft Tube Type	High moody spreading- cone	High moody spreading- cone
Year Disassembled and Overhauled	1986 turbine overhaul 1996 turbine overhaul, runner replaced	1987 turbine overhaul 1995 turbine overhaul, runner replaced
Governor	Woodward cabinet	Woodward cabinet
Piezometer Taps		
Spiral Case Inlet	4-1/4" Orifices	4-1/4" Orifices
Winter-Kennedy	4-1/4" Orifices	4-1/4" Orifices
Lube Oil Systems	Turbine guide bearing Thrust/generator lower guide bearing Upper generator guide bearing	Turbine guide bearing Thrust/generator lower guide bearing Upper generator guide bearing
High-Pressure Lift System	Yes	Yes
Cooling and Service Water System	Generator cooling Thrust bearing cooling Seal water	Generator cooling Thrust bearing cooling Seal water
Draft Tube Depression System	Yes	Yes
Compressed Air System		
Compressors		
Number	2	
Manufacturer/Model No.	Gardner-Denver/WBE 1006	
Speed	870 rpm	
Number of Cylinders	2	
Motors		
Type	Induction	
Manufactured/Model	GE/5K 1445BX4	
Capacity	40 hp	
Speed	875 rpm	
Air Receivers		
Number	2	
Volume	110 cubic feet (each)	
Plant Drains and Dewatering System		
Plant Sump Dimensions, (LxWxH)	7.5’ x 13’ x 48’	
Sump Pumps		
Number/Type	1/Vertical	
Capacity	1,000 gpm	
Motor	25 hp	
Dewatering Pumps		
Number/Type	2/Vertical	
Capacity	5,000 gpm (each)	
Motor	125 hp	
Oil Separation Provisions	None	

Domestic Water and Sanitary Waste System		
Domestic Water	Chlorinated Service and Cooling Water	
Water Heater Number/Capacity	1-80 gallons 1-25 gallons	
Sanitary Waste Treatment	3,000 gallon septic holding tank	
Fire Detection and Protection		
Plant Fire Detection System	None	
Generator Fire Suppression System	Carbon dioxide (bottles removed)	
Plant Interior Fire Protection System	None	
Sire Fire Protection System	None	
HVAC System		
Heating		
Powerhouse	Rejected generator heat	
Control Room	Electric heater	
Ventilation		
Powerhouse	Natural circulation	
Generator Cover	Ventilation fans	
Air Conditioning		
Control Room	Window unit	
Lube Oil Filtration System		
Filter Type	Bowser Figure 7D Multi-compartment	
Oil Storage Tank Capacity	9,000 gallons	
ELECTRICAL SYSTEMS		
Generator		
Unit Number	1	2
Manufacturer	General Electric	General Electric
Rating		
kVA at 60 C	74,400	74,400
Power Factor	0.90	0.90
Insulation Class		
Stator	F	F
Field	B	B
Generator Capability		
kVA	74,400	74,400
kW at 0.90 PF	67,000	67,000
Temperature Rise, C, Stator	75	75
Temperature Rise, C, Field	80	80
Year Installed	1952	1952
Year Disassembled and Overhauled	1986-Rewind	1987-Rewind

Exciter		
Manufacturer	ABB Model Unitrol "P"	ABB Model Unitrol "P"
Static Excitation System	325 kW at 250 V dc	325 kW at 250 V dc
Bus Duct		
Type	Non-segregated	Non-segregated
Rating, amp/phase	4,000	4,000
Generator Breakers	SF6 (1992)	SF6 (1992)
Protective Relays	General Electric	
480 Volt System	Switchgear Station control centers Headgate load center Spillgate load center	
120 Volt System		
Transformers		
Type	Dry/Single Phase	
Voltage	480-120/240 volts	
Rating, kVA	37.5 (Powerhouse 2 total); 15 (Headgate); 15 (Spillways)	
Panelboards	120/240 V	
DC System		
Battery		
Number of Cells	60	
Voltage, V	125 dc	
Rating, amp-hr	240	
Number of Chargers	1 @ 50 amp 1 @ 25 amp	
Panelboard	120 V dc	
Emergency Generator		
Type	Propane Engine	
Voltage	480 volts	
Rating	100 kW	
Transformers		
Station Service Transformers		
Type	Oil-fill/three-phase	
Number	2	
Rating	1,750 kVA (Auxiliary No. 1) 3,750 kVA (Auxiliary No. 2)	
Voltage	13,800/480 volts	

Generator Step-up Transformers		
Number	4 (includes one spare)	
Type	Oil-filled/single/phase	
Rating	138,000 kVA	
Voltage	13,200/115,000 volts	
Manufacturer	General Electric	
Year Installed	1953	
Lighting	Incandescent and fluorescent lamps	
Plant Control and Instrumentation System	Landis and Gyr LG 6800 MODICON PLC	
Communication System	Analog Microwave	
Security	Fencing Locked gates and doors/video cameras	

A.2.1 Civil Systems

A.2.1.1 Reservoir

The reservoir formed by Yale Dam (Yale Lake) is approximately 10.5 miles long and has a surface area of 3,800 acres at elevation 490 feet msl, the normal maximum operating level of the reservoir. The reservoir's gross storage capacity at this elevation is 402,000 acre-feet with a usable storage capacity of 190,000 acre-feet. The drainage area for the reservoir is 596 square miles.

A.2.1.2 Dams

A.2.1.2.1 Yale Dam

The main dam for the project is a zoned embankment resting on bedrock **and alluvium** with a crest length of 1,305 feet and a maximum height of 323 feet. The embankment consists of an upstream sloping central impervious core supported by sandy gravel shells. The upstream surface slope of the dam is 2.5 horizontal to 1 vertical, and the downstream slope is 2 horizontal to 1 vertical. The dam crest is at elevation 503 feet msl. A concrete arch **retaining wall** section is provided at the downstream toe to limit the downstream extent of the dam and permit the powerhouse to be located approximately 150 feet closer to the intake. The arch section is 77 feet high and composed of concrete arch rings.

The instrumentation at the main dam monitors vertical crest movements, seepage flows, and piezometric pressures in the **embankment**~~left abutment~~. Twelve monuments along the crest of the dam are surveyed annually by PacifiCorp to monitor dam settlement. Yale Dam and left abutment seepage flows are measured at the vee-notched weir near the powerhouse. Five piezometers are **installed in the left abutment of the dam but are no longer monitored for piezometric levels.** ~~used to monitor the piezometric levels in the left abutment of the dam.~~

A.2.1.2.2 Saddle Dam

Saddle Dam is located about 0.25 mile north of the main dam on the right bank. This dam is constructed on **interbedded zones of silty sand to sand gravel (Alluvium), overlying silty gravelly sand (Colluvium) over volcanic breccia. The Saddle Dam** ~~a sandy clay~~ ~~layer~~

~~**overlaying an alternating sequence of sandy gravel, sandy clay, and sand and**~~ consists of a central impervious core with random fill in the outer shell sections. The saddle dam is 1,600 feet long with a maximum height of approximately 40 feet and 3 horizontal to 1 vertical side slopes. The dam crest is at elevation 503 feet msl. The upstream slope is protected from erosion by a 2 to 3-foot layer of riprap, while the downstream slope ~~**has a grass surface**~~ **is protected by rock that contains an embankment shell beyond the core, rock filter / drain berm, and a toe drain leading to a centralized drainage swale.**

The instrumentation at the Saddle Dam monitors vertical crest movements, and piezometric pressures in the embankment and downstream foundation soils.

A.2.1.3 Diversion Tunnel and Future Intake

A.2.1.3.1 Diversion Tunnel

To implement the construction of the main dam, river flows were diverted past the project through a concrete-lined, 30-foot-diameter, horseshoe-shaped tunnel beneath the right portion of the dam. The diversion tunnel is 1,530 feet long and excavated in rock approximately 90 feet below the base of Yale Dam.

The headworks of the tunnel include an approach channel, approximately 200-feet-long and 100-feet-wide, and a gated inlet structure for control of the river flow to the diversion tunnel during construction of the dam. The inlet structure is constructed of reinforced concrete, has an invert at elevation 245 feet msl, and contains two 16-foot-wide by 23-foot-high closure gates and two 4-foot-wide by 5-foot-high inlet bypass gates. The gated inlet structure section of the diversion tunnel transitions into the 30-foot-diameter, horseshoe-shaped diversion tunnel approximately 60 feet downstream of the tunnel entrance.

The main portion of the diversion tunnel is lined with concrete a minimum of 1 foot thick. The tunnel is plugged at the location of the dam’s grout curtain approximately 1,276 feet from the tunnel outlet with a 30-foot-long section of concrete. The rock formation along the tunnel upstream of the plug is also pressure grouted. The tunnel outlet discharges into an open channel adjacent to the end of the spillway concrete apron. The open channel is approximately 50 feet wide and 320 feet long and intersects the main river channel approximately 400 feet downstream from the powerhouse.

A.2.1.3.2 Future Intake

The original project construction included a circular foundation and cofferdam for potential expansion of the project in the future. The center of the future intake is approximately 81 feet from the centerline of the diversion tunnel near the tunnel plug.

The foundation and cofferdam are constructed of reinforced concrete and consist of a ring beam founded on rock with outside and inside diameters of 76 and 64 feet, respectively. The top of the ring beam is at elevation 380 feet msl. The ring beam supports a circular wall that forms the upper portion of the cofferdam. The circular wall has an outside diameter of 76 feet and varies in thickness from 12 to 18 inches. The top of the wall extends to elevation 431.3 feet msl, 1.3 feet above the reservoir’s low water level.

Construction for the future intake also included pressure grouting the rock formation below the cofferdam and between the cofferdam to an area downstream of the diversion tunnel plug. Grouting of the rock formation would control groundwater inflow during construction of the future intake structure and connecting tunnel to the existing diversion tunnel.

A.2.1.4 Intake Structure

A.2.1.4.1 Structure

The intake structure is on the left bank of the reservoir near the left abutment of the main dam crest. The intake structure is accessible from a bridge that extends from the plant access road to the structure. The vertical concrete and steel-framed structure is 95 feet wide and 38 feet long. Full height trashracks screen the flow to the turbines, and 2 roller bulkhead gates are provided for dewatering the 2 parallel penstocks constructed in the left abutment. The trashracks are composed of 10-foot by 8-foot steel-framed, removable panels with 2.5-inch by 3/8-inch bars spaced on four-inch centers. The concrete deck of the intake structure is at elevation 500 feet msl and is designed for a 150 pound/square foot live load or an H-20 truck load. The two 17-foot by 13.33-foot rectangular openings to the penstocks at the bottom of the structure have an invert at elevation 400 feet msl, which is 90 feet below reservoir's maximum operating level. An access well and air inlet are also provided downstream of each gate.

~~Instrumentation at the intake structure allows monitoring of structure movement and reservoir levels. Two tilt plates are installed on the structure to record any deflections which may occur. Float wells are also installed at the intake structure to measure the reservoir level and the differential head across the trashracks. The recorded water levels are wired to the Yale powerhouse control room for observation by the plant operators.~~ **The intake structure is equipped with instrumentation to measure the reservoir elevation. The water elevations are monitored real time and can be observed remotely by both operations and engineering staff.** No mechanical trash cleaning equipment is installed at the intake structure.

A.2.1.4.2 Gates and Hoists

The intake structure is equipped with two 13.33-foot wide by 17-foot high roller bulkhead gates. The gates are constructed with structural steel members filled with concrete for ballast. The gates are hoist-operated and are used to dewater the penstocks for inspection and maintenance purposes. When the gates are not closed, they are suspended directly above the penstock openings.

The intake structure bulkhead gates are raised and lowered with 100-ton hoists driven by 20 hp motors at a speed of 2 fpm. Each hoist system is designed for outdoor service and is supported from a fixed, structural steel-framed gantry located at each gate slot approximately 30 feet above the intake structure deck. Hoist operation can be controlled locally or remotely from the powerhouse. The hoists have recently been rehabilitated and are in good working condition. The intake structure gate and hoist systems are designed to operate under full unbalanced conditions with the reservoir water level at elevation 490 feet msl.

A.2.1.4.3 Intake Fish Barrier Net

A fish barrier net with ½-inch mesh is located upstream of the intake to reduce entrainment of federally listed fish in the flow through the powerhouse. The net spans approximately 700 feet from a rock anchor on the reservoir bank upstream of the left abutment to a cast-in-place concrete anchor on the crest of the dam. The height of the net is 95 feet near the center of the span. The bottom of the net is weighted by a steel chain and is anchored by six 3,600-pound concrete blocks spaced 50 feet apart. The net is supported by foam-filled floats and is fixed in position.

A.2.1.5 Penstocks

Water is delivered from the reservoir **via intake structure** to the generating units via two penstocks originating at the intake structure and terminating at the turbine spiral cases in the powerhouse. The penstock for Unit 1 is 1,111 feet long, while the penstock for Unit 2 is 1,206 feet long.

The penstocks for the Unit 1 and 2 turbines **are** lined with a 16-foot-diameter steel liner which extended upstream for 282 feet and 247 feet, respectively. The remainder of each penstock is concrete-lined with an internal diameter of 18.5 feet. The steel liners were subsequently extended in both penstocks, and the length of the Unit 1 penstock steel liner is 985 feet, while the steel liner for Unit 2 is 1,093 feet. The diameter of the steel liners varies between 16 and 18 feet with the majority of the extension having an 18-foot-diameter.

The centerline elevations for the penstocks are 409.25 feet at the intake and 236 feet at the powerhouse. The penstocks are horizontal at the intake and extend about 100 feet before dropping at a 9% grade for about 650 feet (measured horizontally). The penstocks then slope at a 52% grade for about 225 feet (measured horizontally) to connect to a 200-foot horizontal section which terminates at the turbine spiral case.

The penstocks are accessible through an 8-foot-high by 10-foot-wide by 110-foot-long access tunnel located at about the midpoint of each penstock. The access tunnel entrance is located on the left abutment immediately downstream of the dam at elevation 340 feet msl. The tunnel is accessible from the powerhouse by a road that crosses the downstream slope of the dam.

A.2.1.6 Powerhouse

A.2.1.6.1 Structure

The powerhouse is parallel to the river on the left bank immediately downstream of the concrete arch which forms the toe of the dam. The concrete, semi-outdoor type structure is 151 feet long and 57 feet wide and houses 2 turbine generator units.

The design and construction of the powerhouse included provisions for the future addition of two similar units downstream. The foundation for the future addition was completed up to elevation 205 feet msl during initial construction.

The turbine floor (elevation 244 feet msl) provides access to the turbine pit and to the lower powerhouse galleries that access the penstocks and draft tubes. The turbine floor also provides space for the turbine generator auxiliary systems including cooling water, compressed air receivers and piping, and station drainage. The powerhouse operating floor (elevation 257 feet msl) is at ground level and provides access to the generators and control room. The operating floor level also includes the governor, motor control center, air compressors, and draft tube depression system controls as well as toilet and locker room facilities and a laydown area for unit maintenance. The roof (elevation 274.5 feet msl) contains hatches for the outdoor gantry crane to access the laydown area, turbine generator units, and the turbine floor level.

The powerhouse is provided with draft tube gates for dewatering the turbine water passageways. The draft tube gates are 10.125 feet high by 17.9 feet wide and are raised and lowered by the gantry crane hoist. The draft tube gates weigh approximately 13,000 pounds each and are designed to be installed or removed under balanced water conditions. Under normal turbine operating conditions, a 20,000-pound concrete cover beam is placed over the slots to seal the draft tube, and the draft tube gates are dogged off above the draft tube for storage.

A.2.1.6.2 Gantry Crane

The powerhouse facility includes an outdoor type, traveling gantry crane for unit maintenance and raising and lowering the draft tube gates. The crane spans 65 feet across the powerhouse and has main and auxiliary hook capacities of 235 and 30 tons, respectively. A 10-ton hoist is also provided on the downstream end for handling the draft tube gates and concrete draft tube slot cover beams. Crane rails, approximately 195 feet long, allow the gantry crane to travel the full length of the powerhouse and the adjacent unloading area.

A.2.1.7 Spillway

A.2.1.7.1 Structure

The gated spillway is located at the right abutment of the main embankment dam. The spillway comprises three distinct sections (from upstream to downstream): an approximately 73-foot-long, gated, five-bay ogee crested control section; an approximately 349-foot-long transition section (spillway Station 0+51.26 to 4+00), and an approximately 660-foot-long chute section (spillway Station 4+00 to 10+60). The transition and chute sections are concrete-lined. There is a short concrete gravity non-overflow section to the right of the gated spillway structure that connects the gated spillway structure to the right valley abutment. The gated spillway ogee section is a mass concrete structure with a crest at Elevation 460 and is slightly arched at an 800-foot radius with a cross-canyon width of approximately 254 feet, and upstream-downstream base length of approximately 73 feet (normal to the spillway crest centerline). ~~The concrete gravity, chute type spillway adjoins the right abutment of Yale Dam. The spillway is 1,650 feet long. The length of the spillway is comprised of a 400-foot ogee and transition section, a 650-foot rectangular concrete chute~~. **The concrete chute section is** on a 10% grade. **Beyond the spillway chute section, spillway flows are discharged through an exposed rock channel for approximately 540 feet before entering into the original river channel approximately 600 feet downstream of the powerhouse.** ~~and a 600-foot section of exposed bedrock. The concrete gravity ogee section has a crest at elevation 460 feet msl. The spillway discharges into the river about 1,200 feet downstream of the powerhouse. The downstream section of the spillway is formed in the exposed bedrock and is used for energy dissipation.~~

An upper spillway bridge provides access to the dam and powerhouse. The bridge is a steel-framed structure with a reinforced concrete deck and is supported by the spillway piers. The bridge is approximately 250 feet long with a deck at elevation 502.75 feet msl and is currently posted as having a 20-ton limit. The design loads used for the bridge were based on 1 of the following conditions:

Lorain MS-254 W Crane Unit loaded with 10 kips on a 30-foot boom at a 20-foot radius; or H-20 Highway Loading, 1 truck on any span, with a 30 percent impact included.

The lower spillway bridge constructed in 1998 provides the primary access to the powerhouse and can also be used to access the dam. The bridge is a prestressed concrete girder structure supported on concrete foundations on the right and left side of the spillway.

A.2.1.7.2 Gates and Hoists

The spillway is equipped with five 39-foot-wide and 30-foot-high motor-operated Tainter gates. Each gate is controlled by a 5 hp motor and is powered from the station service power supply. The spillway gates can be controlled locally or remotely from the Yale powerhouse or the Merwin Control Center. A propane engine type generator, set rated at 60 kW, is installed in a small building adjacent to the spillway to automatically start and provide power for gate operation if the station service power supply is interrupted.

A.2.1.7.3 Spillway Fish Barrier Net

A barrier net is located upstream of the spillway to reduce entrainment of federally listed fish during low-volume spill flows. The net spans the spillway from a rock anchor on the reservoir bank upstream of the right abutment to near the end of a concrete training wall at the left of the spillway. The net is secured to the reservoir bottom by drilled and grouted rock anchors spaced at 25 feet. The net is supported by floats that are supplied by air from a compressor rated at 10 cubic feet per minute located in the spillway control building on the dam. The net is normally maintained in the raised position and it is designed to pass flows up to 6,000 cubic feet per second. At higher flows, the air is released from the floats to lower the net to a submerged position. The valves controlling the supply of air to the net can be operated ~~**remotely from the Merwin Control Center or**~~ locally at the spillway.

A.2.1.8 Tailrace

The powerhouse tailrace is **in the very** ~~**formed by the**~~ upper reach of Lake Merwin. The **downstream** channel is approximately 3 miles long before it opens up into the main body of Lake Merwin. The Merwin dam and powerhouse are approximately 14.5 miles downstream of the Yale powerhouse.

The tailrace channel is naturally rock lined and approximately trapezoidal in shape. The invert of the channel at the powerhouse is about 208 feet and water flows from east to west. The draft tube discharge enters the tailrace perpendicular to the tailrace. At the maximum tailwater level for 2 unit operation under normal conditions, the tailrace water surface is about 210 feet across and the depth is approximately 32 feet.

A.2.1.9 Plant Access Road

The Yale Project is located about 2.2 miles east of State Highway 503. A new access road and bridge crossing the lower end of the spillway chute were constructed in 1998. The access road to the project is paved for a distance of about 1.7 miles from the highway and the remaining portion is gravel surfaced. The gravel surface is scheduled to be chip- sealed in 1999. The original powerhouse access road crosses the spillway bridge and main dam crest, wound around the hill above the powerhouse, and approaches the powerhouse from the downstream side.~~**; it is barricaded and no longer in service.**~~ Access to the powerhouse is **also** ~~**currently**~~ provided on the **right** downstream face of the main dam and begins in the vicinity of the spillway bridge. This route was formerly used as emergency access to reach the powerhouse and spillway gates. A gravel surfaced parking area is provided at the powerhouse for employees and visitors.

Access to the Saddle Dam is provided by a second 0.75-mile-long paved road branching off the project access road at a point approximately 1 mile from State Highway 503.

A.2.2 Major Mechanical Systems

A.2.2.1 Turbine

The Yale powerhouse contains 2 vertical Francis turbines, manufactured by S. Morgan Smith Company and installed in 1953.

The original rating of the turbines was 80,500 hp at 250-foot net head and 150 rpm. The Unit No. 2 and No. 1 turbine runners were replaced in 1995 and 1996, respectively. Runner replacement increased each turbine's capacity to 73,300 kW (98,250 hp) at a net head of 240 feet. Unit speed remains the same at 150 rpm.

The Unit No. 2 turbine-generator set has a peak efficiency of 89.1 percent at 73 MW (82 percent wicket gate position). This is an increase in unit efficiency of 7.1 percent over the previous runner at the respective maximum efficiency point. In addition, the maximum output of the unit increased by 17.5 MW (an increase of 27.2 percent) from 64.3 MW to 81.8 MW. The ability to pass additional flow through the unit increased from 4,239 cfs to 4,820 cfs (at a net head of 240 feet) at maximum wicket gate opening. The new turbine runner exceeds both the manufacturer's contractually guaranteed turbine output and the turbine efficiency guarantees.

A formal acceptance test was not performed on Unit No. 1 following installation of the new runner. A comparison of the 2 identical runners was made by observing the gate position, outputs, and flows of both units during operation. In this manner it was confirmed that both runners are identical and are performing with similar capabilities and efficiencies. Performance tests have been conducted on Yale Unit No. 2 to determine the actual performance of the replacement runner during commissioning of the unit.

Each turbine is provided with a carbon steel spiral case and elbow moody draft tube, both with **personnel**~~**man**~~ doors for maintenance access. The turbine distributor includes the cast steel stay ring having 20 vanes, 20 cast carbon steel wicket gates, embedded fabricated steel discharge ring, carbon steel fabricated head cover, gate ring, and gate mechanism operated by 2 double-acting servomotors. A shell type oil-lubricated guide bearing and mechanical packing box are supported on the head cover. The turbines are designed to operate in air with the draft tube depressed as a synchronous condenser or motor and are provided with piping and systems for runner seal cooling water. Each turbine pit is provided with a gravity drain through a stay vane to drain leakage water to the station sump.

A.2.2.2 Governor

A Woodward cabinet actuator style mechanical hydraulic governor is provided to serve Units 1 and 2. Governor systems for both units are housed in a single cabinet between the 2 units. The governor systems are normally operated as one common system but can be operated as separate systems. Two 150-gpm horizontal rotary gear type hydraulic pumps driven by 40-hp motors maintain pressure in two 900-gallon pressure tanks. Nominal system pressure is 300 psi. A permanent magnet generator (PMG) mounted on top of the generator provides the speed signal to the governor. Trip and reset speeds are 187 rpm and 157 rpm, respectively (per Woodward drawings). A speed switch which closes at 30 rpm is also located in the PMG, and a second speed switch is used to lock out the creep detection circuits.

The governor is provided with the following controls and instruments:

Controls	Instruments
Speed droop control	Tachometer
Gate limit control	Air brake pressure gauge
Speed adjust control	Oil pressure gauge
Air brake control	Gate limit and position indicator
Transfer valve	Speed adjust position indicator
Isolating valve	Isolating valve indicator
Oil pump echelon	Oil level gauge
Oil pump continuous/intermittent	
Creep detector	

A manually operated water-driven emergency oil pump can be used to close the turbine wicket gates in the event of loss of oil pressure.

A.2.3 Major Electrical Systems

A.2.3.1 Generator

The Yale generators were manufactured by General Electric and installed in 1953. Each generator was originally rated at 60,000 kVA, 13,200 V, 60º C maximum temperature rise and was capable of 115% continuous overload to 69,000 kVA. The generator rotors and stators were originally constructed with Class B insulation, which insulation has a limiting temperature rise of 80 C. The generator stators have been rewound with Class F coil insulation, and are rated at 74,400 kVA at 60 C. The limiting temperature rise for the stator Class F insulation is 75º C. A generator heat run test conducted in 1991 indicated that the 80º C field temperature limit is reached at a generator output of 80,000 kVA, while the stator temperature at 80,000 kVA is approximately 50º C. Therefore, the generator output is limited to 80,000 kVA by the existing field windings, although the stator windings have additional capability. Based on the heat run test, the generator can be operated up to the following output levels without exceeding the temperature limits:

kVA	Power Factor	kW
80,000	1.00	80,000
80,000	0.95	76,000
80,000	0.90	72,000

The Yale generators are vertical, recirculating, air-cooled units with single-pass water coolers.

A.2.3.2 Exciter and Automatic Voltage Regulator

The main and pilot exciters and the automatic voltage regulators, manufactured by General Electric, were installed in 1953. They were replaced in 1996 and 1995, respectively, with ABB 325 kW at 250 Vdc Excitation Systems.

These systems have automatic voltage regulators and power system stabilizers. The maintenance schedule for the automatic voltage regulator is the same as that for the exciters.

The non-segregated phase bus duct was manufactured by General Electric and was installed in 1953. It is rated at 3,000 amperes per bus.

The plant is equipped with 2 runs of 3,000-ampere bus duct. The non-segregated phase bus duct is in good condition. A section of bus duct was open during a recent site inspection. The bus duct enclosure was free of debris, and the exposed section of bus duct appeared to be in good condition. This bus duct was upgraded with the new turbine runner to 4,000 amperes.

The original oil-filled generator breakers were replaced in 1992 with new SF6 breakers manufactured by ABB and rated at 4,000 amperes, 13.8 kV. The new breakers are operating satisfactorily.

A.2.3.3 Transmission Line

The Yale Project includes a single 115 kilovolt (kV) primary transmission line that extends 10.5 miles to connect the Yale substation with an interconnected transmission system near the Merwin plant (Figure A.2.3-1).

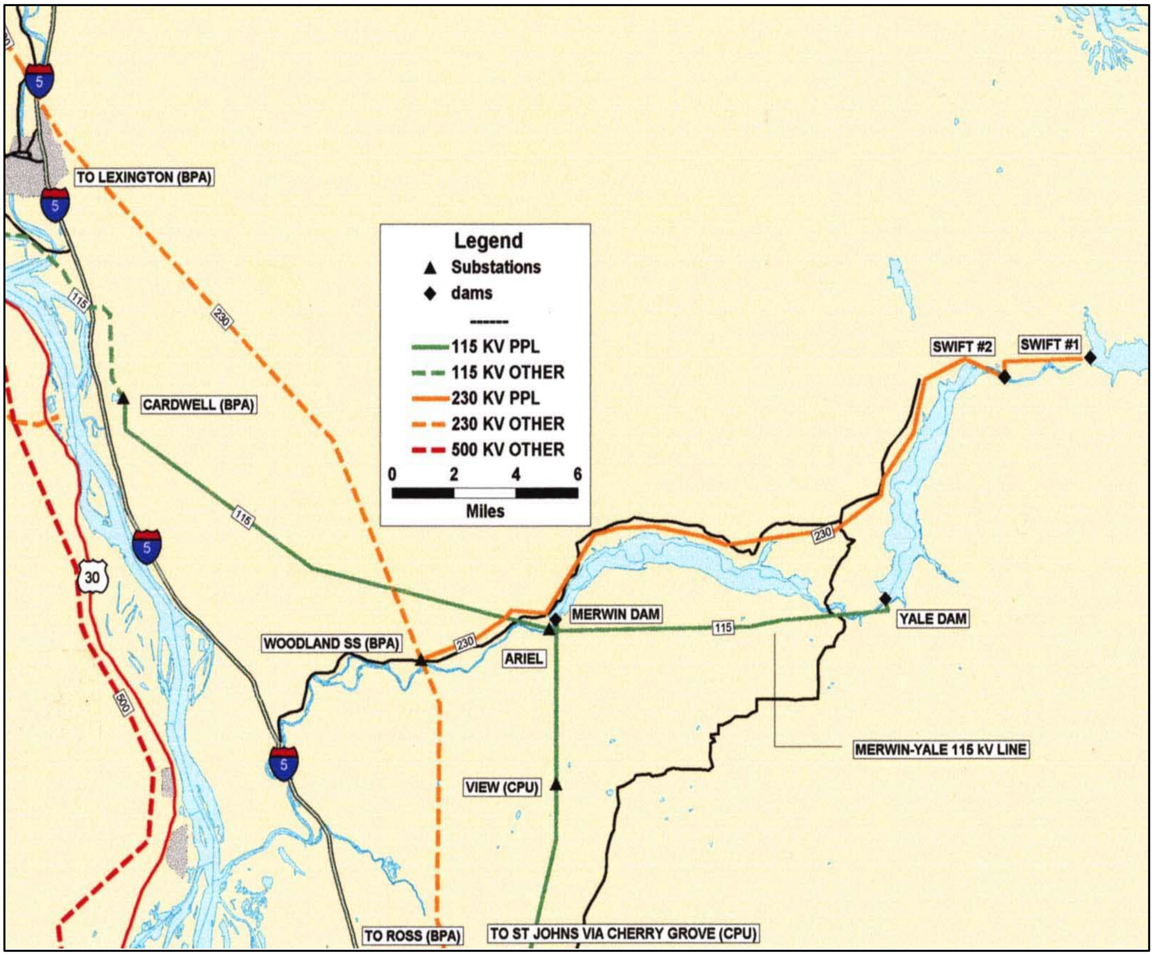

Figure A.2.3-1 Yale Project Transmission Line

A.3.0 Proposed Changes to Project Facilities

~~PacifiCorp has studied the feasibility of upgrading the existing project auxiliary equipment and systems to improve plant reliability, operation, and safety. Several upgrades have been made since 1995, following completion of the resource utilization study (Black & Veatch 1995). These upgrades are listed in Table C.2.0-2 of Exhibit C. No additional changes to major project facilities which would affect plant output are currently being considered.~~ At this time, PacifiCorp is not proposing any major modifications or upgrades. However, the Company will continue to evaluate the potential for project upgrades and modifications as future market and other conditions change to ensure the most cost-effective, efficient and environmentally balanced use of the water resources available.

A.4.0 Lands of the United States

Federal lands (public lands and reservations of the United States) within the Yale Project boundary total 202.9 acres. Of those acres, 38.7 acres are managed by the Bureau of Land Management (BLM); this includes approximately 2.4 acres that are occupied by Project transmission lines. The remaining 164.2 acres are lands that are managed by the State of Washington and Clark County, subject to Section 24 of the Federal Power Act. Federal lands are identified as:

- Part of the NW 1/4 of the NE 1/4 of Section 32, Township 6N Range 4E, WM, totaling 38.7 acres (BLM; 2.4 acres of transmission line and 36.3 acres of non-transmission line)
- Part of the NE 1/4 of Section 21, Township 6N Range 4E, WM, totaling 111.8 acres (Clark Co., Section 24)
- Part of the E 1/2 of the SE 1/4 of Section 34, Township 7N Range 4E, WM, totaling 52.4 acres (State of Washington, Section 24)

A.5.0 Literature Cited

~~**Black & Veatch 1995. Resource Utilization Study. Yale Hydroelectric Project (FERC No. P-2071). Prepared for PacifiCorp, Portland, Oregon.**~~

EXHIBIT C – PROJECT INSTALLATION AND PROPOSED SCHEDULE

Yale Hydroelectric Project
(FERC No. P-2071)

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List of Tables

C.1.0 Introduction

This Exhibit C identifies project installation and proposed schedule. Because PacifiCorp seeks a non-capacity amendment and consistent with 18 CFR 4.201(c), only the information impacted by the proposed amendment is included.

C.2.0 Construction History

C.2.1 General Description

The Yale Hydroelectric Project is one of three PacifiCorp projects located on the North Fork of the Lewis River, approximately 28 miles east of Woodland, Washington and 53 miles northeast of Portland, Oregon. The Project site is 34 miles upstream of the confluence of the North Fork Lewis River with the Columbia River. The Yale Project is one of four facilities on the Lewis River. The other three projects are Swift No. 1 (FERC Project No. 2111), Swift No. 2 (FERC Project No. 2213) and Merwin (FERC Project No. 935). The Merwin Hydroelectric Project is located at RM 19.5, the Swift Hydroelectric Project No. 2 is located at RM 44, and the Swift Hydroelectric Project No. 1 is located at RM 47. Swift No. 1, Yale and Merwin are owned and operated by PacifiCorp. Swift No. 2 is owned by the Cowlitz County Public Utility District No 1 (Cowlitz PUD) and maintained and operated by PacifiCorp under contract.

C.2.2 Historical Overview

Investigation of the power production potential of the Lewis River date back to at least 1909 and site explorations were started as early as 1914. Northwestern Electric Company, a predecessor of Pacific Power and Light (PP&L), obtained a preliminary permit from the Federal Power Commission (FPC) to investigate the Yale Project site in 1922. In late 1928, Northwestern Electric Company filed an expanded application for a preliminary permit with the FPC to investigate a comprehensive development of four sites on the Lewis River: Ariel, Basket, Swift and Muddy Creek. Three of the 4 projects have been constructed and are now known as, respectively, Merwin, Yale, and Swift No. 1 and Swift No. 2 (initially proposed as a single project). The fourth project, Muddy, is no longer being considered for development.

C.3.0 Proposed Changes to Project Facilities

As part of this application for license amendment, PacifiCorp will complete the installation of a rock filter / drain berm to the downstream face of the existing Saddle Dam and add a downstream toe drain and centralized drainage swale to monitor any seepage from Saddle Dam. Modifications will extend the toe of the dam approximately 50 feet into the existing recreation site parking lot. The parking lot will be reshaped to maintain pre-project parking capacity. The project will also add maintenance rip rap to the upstream face of the dam. Any ADA features, temporary access or storage sites installed during the construction phase will be removed and or restored to original conditions.

Facility design, permitting and construction are key components of the project each needing the appropriate amount of time to complete. Table C.3.0-1 provides the proposed schedule of development and construction for the Yale Saddle Dam Remediation Project.

Table C.3.0-1. Proposed Schedule of Development and Construction of Yale Saddle Dam Remediation Project

Item	**Date**
Design	Complete August 2023
Permitting	Complete March 2024
Procure Contractor	May 2024
Fabrication of rock materials	August 2024
Construction of facility	September 2024 through March 2026
Project Completion/In Service	April 2026

EXHIBIT D – COSTS AND FINANCING

Yale Hydroelectric Project
(FERC No. P-2071)

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List of Tables

D.1.0 Introduction

This Exhibit D is a statement of costs and financing. Because PacifiCorp seeks a non-capacity amendment and consistent with 18 CFR 4.201(c), only the information impacted by the proposed amendment is included. The cost of implementing the project identified in the amendment will not materially affect the value of project power.

D.2.0 Capital and O&M Costs of Proposed Project Modifications and Resource Enhancement Measures (18 CFR 4.51(e)(3)-(4))

The non-capacity amendment seeks approval of activities related to the installation of a rock filter / drain berm to the downstream face of the existing Saddle Dam and add a downstream toe drain and centralized drainage swale to monitor any seepage from Saddle Dam. Modifications will extend the toe of the dam 50 feet into the existing recreation site parking lot. The parking lot will be reshaped to maintain pre-project parking capacity. All ADA features will be rebuilt or retained. The project will also add maintenance rip rap to the upstream face of the dam.

Implementation will require project modifications. Detailed information regarding these project modifications are included in Exhibits E, F and R.

The estimated capital and O&M cost of all Yale Hydroelectric Project license non-power resource enhancements for the upcoming 36-year period is $223,793,000.

D.3.0 Annual Costs of the Project

The estimated levelized annual cost of operating the Yale Hydroelectric Project including completion of the proposed project is presented in Table D.3.0-1.

Table D.3.0-1. Estimated Annual Cost of Yale Future Project Operations over a 36-year Period.

Description	Levelized Annual Cost (in thousands)*
CONTINUING OPERATIONS	
Sunk Costs	
Net Investment of $53 M	
Cost of Capital	$2,025
Income and Property Taxes	652
Depreciation and Amortization	1,355
Total Fixed Cost	$4,032
Capital	
Planned Investment of $556 M	
Cost of Capital	$10,298
Income and Property Taxes	3,877
Depreciation and Amortization	9,388
Total Fixed Cost	$23,563

Description	**Levelized Annual Cost (in thousands)***
O&M	
Operations and Maintenance of $146 M	$3,515
Subtotal	$31,110
IMPLEMENTATION COSTS	
Capital	
Planned Investment of $225 M	
Cost of Capital	$4,886
Income and Property Taxes	1,841
Depreciation and Amortization	4,098
Total Fixed Cost	$10,825
Lost Generation During Construction/Yr.	$0
Operations and Maintenance of $63 M	$1,506
Subtotal	$12,331
TOTAL	**$43,441**

* Based on a 36-year analysis with inflation

D.4.0 Sources and Extent of Financing and Annual Revenues

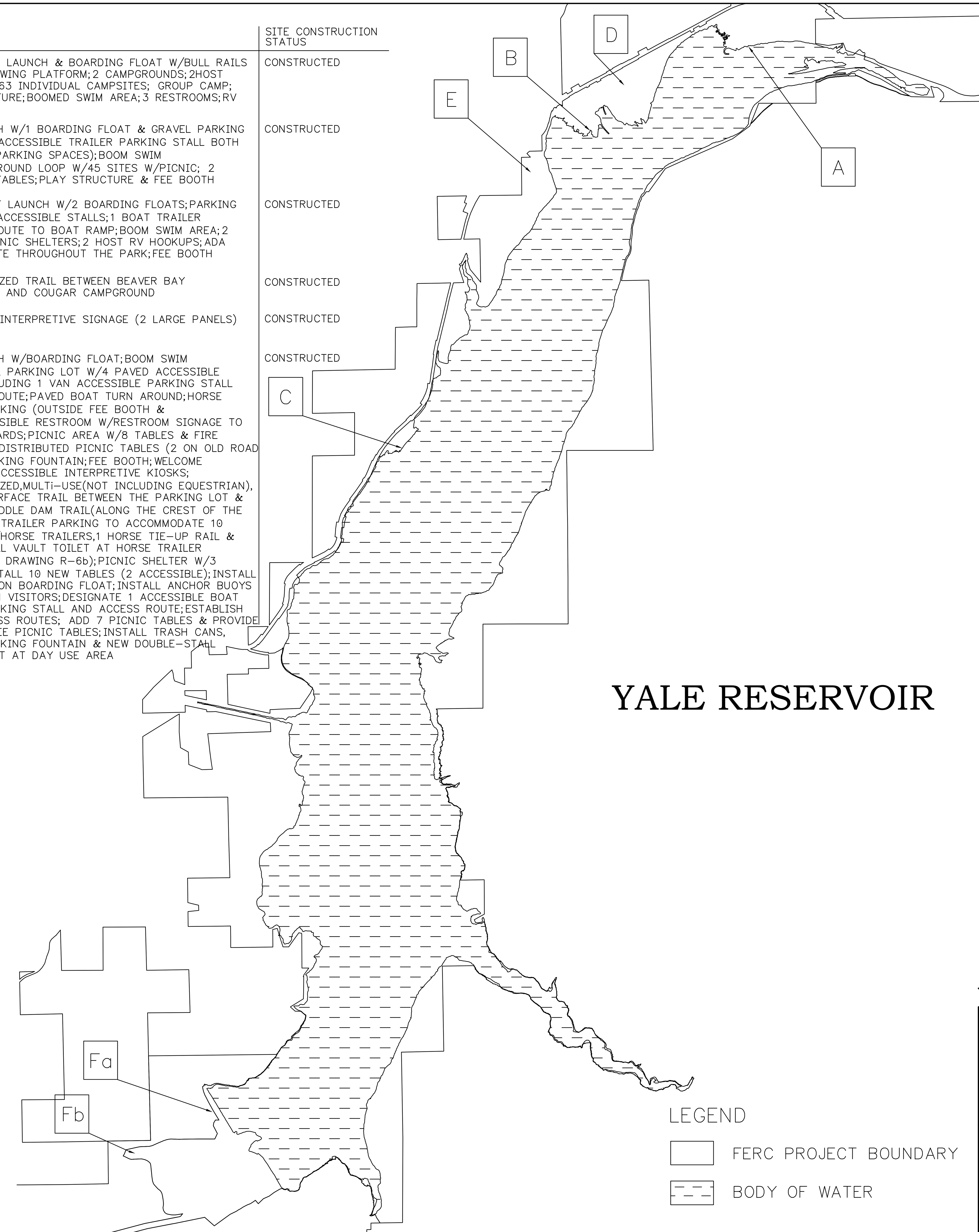
PacifiCorp has the resources for financing and sufficient annual revenues to provide for the current capital needs associated with the continued operation of the Yale Hydroelectric Project and those needs associated with the license amendment. If additional financing is necessary, the capital will be financed using the company's traditional sources of debt and common equity.

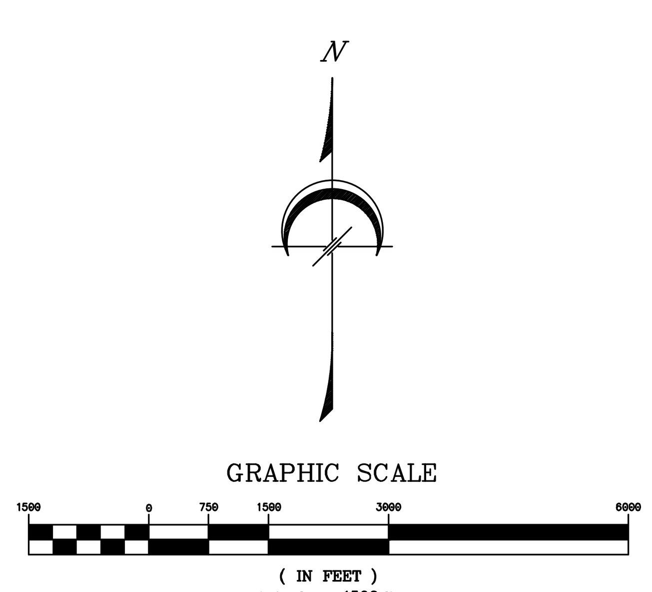
Annual financial information is provided in PacifiCorp's annual report to shareholders and in FERC Form 1.

EXHIBIT R – RECREATION FACILITY DRAWINGS

Yale Hydroelectric Project
(FERC No. P-2071)

IDENTIFICATION SITE	DRAWING NUMBER	RECREATION SITE NAME	RECREATION FACILITIES	SITE CONSTRUCTION STATUS
A	R-1	BEAVER BAY CAMPGROUND	1 LANE BOAT LAUNCH & BOARDING FLOAT W/BULL RAILS WETLAND VIEWING PLATFORM; 2 CAMPGROUNDS; 2HOST CAMP SITES; 63 INDIVIDUAL CAMPSITES; GROUP CAMP; PLAY STRUCTURE; BOOMED SWIM AREA; 3 RESTROOMS; RV DUMP	CONSTRUCTED
B	R-2	COUGAR PARK & CAMPGROUND	BOAT LAUNCH W/1 BOARDING FLOAT & GRAVEL PARKING LOT (1 ADA ACCESSIBLE TRAILER PARKING STALL BOTH ARE PAVED PARKING SPACES); BOOM SWIM AREA; CAMPGROUND LOOP W/45 SITES W/PICNIC; 2 RESTROOMS; TABLES; PLAY STRUCTURE & FEE BOOTH	CONSTRUCTED
C	R-3	YALE PARK	4 LANE BOAT LAUNCH W/2 BOARDING FLOATS; PARKING W/2 PAVED ACCESSIBLE STALLS; 1 BOAT TRAILER W/ACCESS ROUTE TO BOAT RAMP; BOOM SWIM AREA; 2 DAY USE PICNIC SHELTERS; 2 HOST RV HOOKUPS; ADA ACCESS ROUTE THROUGHOUT THE PARK; FEE BOOTH	CONSTRUCTED
D	R-4	BEAVER BAY TRAIL	NON-MOTORIZED TRAIL BETWEEN BEAVER BAY CAMPGROUND AND COUGAR CAMPGROUND	CONSTRUCTED
E	R-5	YALE VISITOR INFORMATION FACILITY	KIOSK WITH INTERPRETIVE SIGNAGE (2 LARGE PANELS)	CONSTRUCTED
F	R-6a & R-6b	SADDLE DAM PARK & SADDLE DAM EQUESTRIAN PARK	BOAT LAUNCH W/BOARDING FLOAT; BOOM SWIM AREA; GRAVEL PARKING LOT W/4 PAVED ACCESSIBLE STALLS INCLUDING 1 VAN ACCESSIBLE PARKING STALL W/ACCESS ROUTE; PAVED BOAT TURN AROUND; HORSE TRAILER PARKING (OUTSIDE FEE BOOTH & GATE); ACCESSIBLE RESTROOM W/RESTROOM SIGNAGE TO ANSI STANDARDS; PICNIC AREA W/8 TABLES & FIRE PITS; OTHER DISTRIBUTED PICNIC TABLES (2 ON OLD ROAD GRADE); DRINKING FOUNTAIN; FEE BOOTH; WELCOME KIOSK; ADA ACCESSIBLE INTERPRETIVE KIOSKS; NON-MOTORIZED, MULTI-USE(NOT INCLUDING EQUESTRIAN), NATURAL SURFACE TRAIL BETWEEN THE PARKING LOT & EXISTING SADDLE DAM TRAIL(ALONG THE CREST OF THE DAM); HORSE TRAILER PARKING TO ACCOMMODATE 10 VEHICLES W/HORSE TRAILERS, 1 HORSE TIE-UP RAIL & SINGLE-STALL VAULT TOILET AT HORSE TRAILER PARKING(SEE DRAWING R-6b); PICNIC SHELTER W/3 TABLES; INSTALL 10 NEW TABLES (2 ACCESSIBLE); INSTALL BULL RAILS ON BOARDING FLOAT; INSTALL ANCHOR BUOYS FOR BOAT IN VISITORS; DESIGNATE 1 ACCESSIBLE BOAT TRAILER PARKING STALL AND ACCESS ROUTE; ESTABLISH OTHER ACCESS ROUTES; ADD 7 PICNIC TABLES & PROVIDE BARRIER-FREE PICNIC TABLES; INSTALL TRASH CANS, GRILLS, DRINKING FOUNTAIN & NEW DOUBLE-STALL VAULT TOILET AT DAY USE AREA	CONSTRUCTED





LEGEND

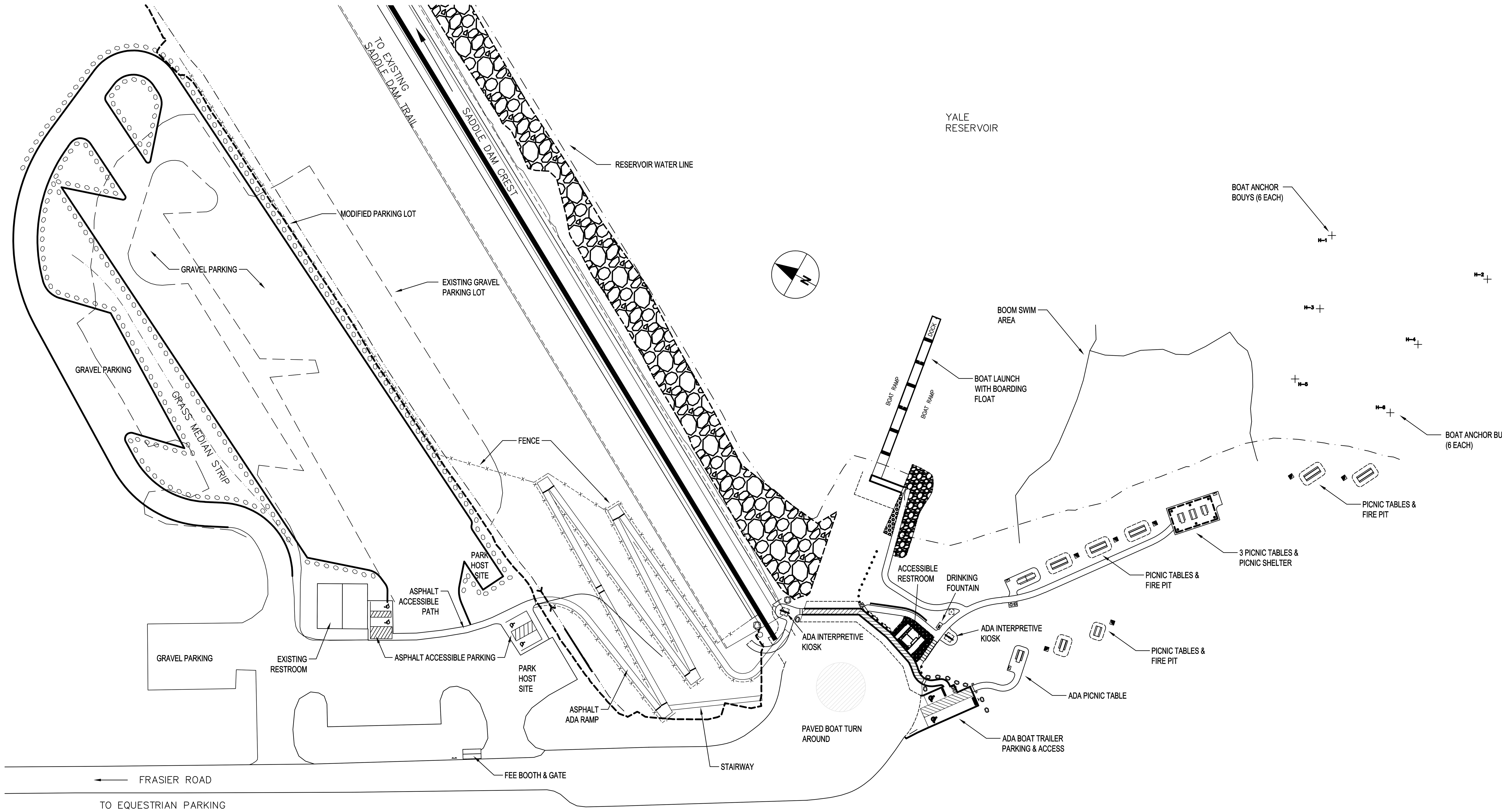
FERC PROJECT BOUNDARY

BODY OF WATER

RECREATION R — REV. 0

YALE HYDROELECTRIC PROJECT FERC NO. P-2071
ASBUILT SITE PLAN OF RECREATION FACILITIES
YALE RESERVOIR
BEAVER BAY CAMPGROUND, COUGAR PARK & CAMPGROUND, YALE PARK & SADDLE DAM PARK

COVER PAGE



RECREATION SITE NAME	RECREATION FACILITIES	SITE CONSTRUCTION STATUS
SADDLE DAM PARK	BOAT LAUNCH W/BOARDING FLOAT W/BULL RAILS; BOOMED SWIM AREA; GRAVEL PARKING LOT W/4 PAVED ACCESSIBLE STALLS INCLUDING 1 VAN ACCESSIBLE PARKING STALL W/ACCESS ROUTE; PAVED BOAT TURN AROUND; HORSE TRAILER PARKING (SEE DRAWING R-6b) (OUTSIDE FEE BOOTH & GATE); ACCESSIBLE RESTROOM W/RESTROOM SIGNAGE TO ANSI STANDARDS; PICNIC AREA W/15 TABLES (2 ACCESSIBLE) & FIRE PITS; OTHER DISTRIBUTED PICNIC TABLES (2 ON OLD ROAD GRADE); DRINKING FOUNTAIN; FEE BOOTH; WELCOME KIOSK; ADA ACCESSIBLE INTERPRETIVE KIOSKS; NON-MOTORIZED, MULTI-USE (NOT INCLUDING EQUESTRIAN), NATURAL SURFACE TRAIL BETWEEN THE PARKING LOT & EXISTING SADDLE DAM TRAIL (ALONG THE CREST OF THE DAM); PICNIC SHELTER W/3 TABLES; ANCHOR BUOYS FOR BOAT IN VISITORS; 1 ACCESSIBLE BOAT TRAILER STALL W/ACCESS ROUTE AND DOUBLE-STALL VAULT TOILET AT DAY USE AREA	CONSTRUCTED

PACIFICORP

RECREATION R-13b REV. 0

YALE HYDROELECTRIC PROJECT FERC NO. P-2071
ASBUILT SITE PLAN OF RECREATION FACILITIES
SADDLE DAM PARK

40' 0 40' 80'
SCALE IN FEET