Final
Historic Resources Study Report
for
Prairie Creek Fish Hatchery
Redwood National and State Parks
Humboldt County, California

Prepared by

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Submitted to

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MANAGEMENT SUMMARY

In conjunction with the transfer of Prairie Creek Fish Hatchery (PCFH) by the State of California to Redwood National and State Parks, the National Park Service (NPS) requested that Mountain Anthropological Research (MAR) prepare a National Register of Historic Places (NRHP) evaluation of the PCFH facilities as part of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Tasks

The purpose of this project was to determine the eligibility of PCFH for inclusion on the NRHP. Project tasks included:

Task 1: site visit to document the existing historic buildings, structures, and landscape;

Task 2: site specific and background research and interviews;

Task 3: preparation of a preliminary letter report; and

Task 4: a recommendation on the eligibility of PCFH for inclusion on the NRHP; preparation of NRHP nomination form; and preparation of a Historic Resources Study Report.

Findings

Summary of Evaluation

PCFH appears to be eligible as a district to the NRHP under criterion A at the State level of significance. The period of significance is 1936 to 1946. PCFH is significant as one of only three fish hatcheries known to both survive among 150 hatcheries built in California from 1871 to 1946 and to still possess integrity. PCFH was among the last built before a major state program of modernization and mechanization begun in 1947. Although built in the 1930s, it has more in common with 19th-century hatchery facilities than it does with those built after 1946. Attributes it shares with earlier hatcheries were its small size, localized region of release, design to hatch and release fingerlings, purpose to stock streams rather than mitigate dam construction, provision of housing for workers, dependence on simple technology with minimal need for power, and funding through fishing licenses and related fees.

Boundary Definition and Justification

The boundaries of the PCFH historic district are those of the 6.2-acre parcel on the east side of U.S. Highway 101. This parcel contains all the surviving components of the PCFH facility during the period of significance (1936 to 1946). Within the boundaries of the historic district, there are both contributing and noncontributing features.

East of the 6.2 acre parcel, the pipeline, the upper dam, and the pond behind the dam are no longer in existence. Therefore, the curvilinear right-of-way and the footprint of the upper dam are excluded from the boundaries of the district.

Contributors and Noncontributors

The following table provides the list of contributing and noncontributing features in the PCFH historic district.

Names	Date of Construction	Contributor	Noncontributor
Hatchery	1936	X	
Superintendent's House	1936	X	
Assistant's House	1936	X	
Sidewalk south of houses	ca.1936-1943	X	
Garage-Shop	1936	X	
Shed	1936	X	
Pipeline Crossing	1936	X	
Five Round, Concrete Tanks	ca.1936-1943	X	
Aeration Tower	ca.1962-1965		X
Raised, Rectangular, Concrete Tank	ca.1973		X
PG&E Pole	ca. 1962		X
Dedication Pond and associated retaining walls	ca.1962		X
Lower Dam	1969-1971		X
Footbridge, Fence, Picnic Table (Visitor Facilities)	after 1968		X

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METHODOLOGY

The following describes the tasks and related methodology utilized during the course of this project.

Task 1: Site Meeting and Field Survey

The initial site meeting for this project was on 11 July 1996 at the Prairie Creek Fish Hatchery (PCFH) and was attended by Ann King Smith (NPS), Michael Corbett (Project Architectural Historian), and Denise Bradley (Project Landscape Historian). Following this meeting, a field survey was conducted by Mr. Corbett and Ms. Bradley. Field notes, photographs (35mm black and white prints and 35mm color slides), and field sketches were made of the buildings, structures, and landscape features that are a part of the PCFH complex.

Task 2: Site Specific Research, Background Research, and Interviews

Site specific research on operations and buildings at PCFH was conducted at the following repositories: files and records in the Arcata office of Redwood National Park; Humboldt County Recorder; Humboldt County Assessor; Humboldt County Department of Public Works, Natural Resources Division; Humboldt County Historical Society archives; Humboldt County Library, Eureka; California State Library; California State Archives; File room (vault) of the State Architect; California Department of Water Resources Library; Bancroft Library and Map Room at the University of California at Berkeley. The following sources were particularly valuable and provided information on the construction, facilities, and operations of PCFH: *Biennial Reports* (California Department of Natural Resources, Division of Fish and Game 1929-1965); Application to Appropriate Unappropriated Water prepared by the Division of Fish and Game (California, Department of Public Works Division of Water Resources 1935a); annual progress reports prepared by the Division of Fish and Game during the construction of PCFH (California, Department of Public Works Division of Water Resources 1936-1939); and the tri-annual reports prepared by the Division/Department of Fish and Game on the operations at PCFH (California, Department of Public Works Division of Water Resources 1943-1955). The following maps were valuable in determining the location and layout of facilities at PCFH: map showing the hatchery site leased from Hammond & Little River Redwood Company, Limited [surveyed 27-30 May 1935; drawn 11 June 1935] (California Department of Natural Resources, Division of Fish and Game 1935); survey conducted by Arthur Elam prior to the construction of the permanent facilities at PCFH (Arthur Elam 1935); and the record or the survey of the property prior to the sale to Humboldt County in 1962 (Larson & MacMillan 1962).

Interviews were conducted with individuals who have lived and/or worked at PCFH or had knowledge of fish hatchery operations. Persons interviewed included: Florine Buchert, who lived at PCFH in the 1940s; Thelma Hufford, who writes a column in *The Union* and is familiar with local history; William Laidlaw, who lived at PCFH in the 1940s; Glen Nash, who worked on the construction of the buildings at PCFH in 1928 and 1935; Stu Russell, Humboldt County, Board of Supervisors, Administrative Office; Joanne Sanders, who along with her husband lived and

worked at PCFH from 1971 to 1994; Steve D. Sanders, former Superintendent of PCFH from 1971 to 1994; Glen Smedley, who lived at PCFH between 1943 to 1949; Don Tuttle, local historian at the Humboldt County Department of Natural Resources; and Bob Will, who worked at PCFH in 1955 and now works at Rowdy Creek Fish Hatchery. Interviews were conducted with personnel from each of the five regions within the California Department of Fish and Game (DFG) to obtain information on other hatcheries within the state system and the significance of PCFH. Persons interviewed included: Bob Corn, DFG Region 1; Bruce Barngrover, DFG Region 2; Royce Gunter, DFG Region 3; Roger Ellis, DFG Region 4; Mike Haynie, DFG Region 5; and Mas Yamahita, DFG Inland Fisheries Division.

Comments on the draft NRHP registration form were received from Glen Smedly and Steve Sanders. Comments on the draft NRHP registration form and draft historic resources study report were received from NPS staff.

Background research in order to provide historic contexts for evaluating the significance of the PCFH was conducted at the following repositories: Water Resources Center Archives, Doe Library, and Biosciences Library at the University of California at Berkeley; and University of California at Davis Map Room. The National Archives, Pacific Sierra Branch, San Bruno was contacted for information related to the Civilian Conservation Corps but no information was found. Historic contexts included the local setting and history; Prairie Creek Station (Experimental); Prairie Creek Fish Hatchery; fish culture in California; and the architecture, facilities, and landscapes of fish hatcheries. Of particular value were several articles on fish culture and fish hatcheries including "History of Fish Planting in California" in *California Fish and Game* (Shebley 1927) and *Fish Bulletin 150: A History of California's Fish Hatcheries, 1870-1960* (Leitritz 1970).

Task 3: Preliminary Letter Report

The findings of these first two tasks and a preliminary NRHP evaluation were submitted in a letter report in September 1996.

Task 4: NRHP Registration Form and Historic Resources Study Report

The information gathered during Tasks 1 and 2 was used to prepare the NRHP evaluation of PCFH.

The first step in this evaluation was to learn if other fish hatcheries had been listed or determined eligible to the National Register of Historic Places (NRHP). The Historical Resources Inventory of the Office of Historic Preservation (OHP) included the status of only one fish hatchery - the Brookdale Hatchery in Santa Cruz County (Thomas 1996). A copy of the inventory form (DPR 523 Rev. 11/85) provided by OHP stated that one round concrete pool and one building - a remodeled "cabin" - survived from the facility and that the hatchery buildings were gone. The entire facility was described in only a few lines. It had lost integrity and its NRHP status was

6, "not eligible" (Bamburg 1986). In addition, in 1988 the upper dam of PCFH was evaluated and found to be ineligible. At that time it was evaluated as an individual structure and not as a part of PCFH (Shoup 1988).

Another potential source of information about the NRHP status of fish hatcheries was the Department of Fish and Game (DFG). While DFG has not evaluated individual hatcheries and has not begun an inventory of any hatcheries, officials are aware that Mt. Shasta Hatchery (1881), the oldest in the system, and perhaps Hot Creek Hatchery (1931) were of historical interest (Barngrover 1996; Guther 1996; Ellis 1996; Corn 1996; Haynie 1996; Yamashita 1996).

In addition, DFG is considering preparing an evaluation of Mt. Whitney Hatchery (1917), which is of architectural interest (Haynie 1996). Of the 24 remaining hatcheries now operated by DFG, conversations with DFG officials including the five regional directors (Yamashita 1996; Barngrover 1996; Guther 1996; Ellis 1996; Corn 1996; Haynie 1996), and others knowledgeable about fish hatcheries in California (Will 1996; Hendrickson 1996) indicated that all had been built or substantially modernized since the 1950s. A few older buildings survive in some of these hatcheries, but it appears that the facilities, considered as whole complexes of buildings and water systems, had all lost integrity.

A third source, *Aquaculture in the United States: A Historical Summary* (1996) by Robert Stickney was useful in providing information related to the historic context of hatcheries in California.

This evaluation of PCFH focused on two areas of potential significance, discussed in reference to *National Register Bulletin 15*. PCFH was evaluated for its significance and integrity under criteria A and C. Under criterion A, PCFH could possibly be significant for its association with a pattern of events, either in relation to the efforts of the Department of Fish and Game (DFG) and its predecessors, or in relation to the economic development or social life of Humboldt County. Under criterion C, PCFH could be eligible if it "embodies the distinctive characteristics of a type, period, or method of construction" or "represents a significant and distinguishable entity whose components may lack individual distinction," as an example of a fish hatchery complex.

Personnel

Elena Nilsson (M.A. Anthropology, California State University, Los Angeles) was the project manager. She ensured that all contract requirements were met, monitored costs and scheduling, coordinated with NPS, and provided quality control.

Michael Corbett (Ph.D. candidate, Architectural History, University of California at Berkeley) was the architectural historian for this project. He has over 22 years experience in the documentation and evaluation of historic properties and meets the Secretary of the Interior's standards for architectural historians and historians. Mr. Corbett conducted the site survey relative to the structures; took photographs; conducted site specific and background research; and

wrote the historic context, description, and evaluation of PCFH for the NRHP registration form.

Denise Bradley, ASLA, (MLA, Landscape Architecture, 1986, Louisiana State University) was the landscape historian for this project. Ms. Bradley has 10 years experience in the documentation of historic landscapes. She meets the Secretary of the Interior's standards for historians and landscape architects. She conducted the site survey relative to the landscape features; assisted in the research; assisted Mr. Corbett in the evaluation of PCFH as it related to site development and the various landscape elements; and coordinated the preparation of the NRHP form. She prepared the historic resources report.

DESCRIPTION

Summary

Prairie Creek Fish Hatchery (PCFH) is located on the east side of U.S. Highway 101 about three miles north of Orick in Humboldt County (See Figure 1). It is in a mountainous and heavily forested area within Redwood National and State Parks. The property is on Lost Man Creek just above its confluence with Prairie Creek. The hatchery originally consisted of a 6.2-acre parcel with a main hatchery building, four houses, a garage-shop, a shed, and outdoor water tanks; a 3000-foot linear right-of-way for a 12-inch pipeline; and an 800-foot long reservoir created by a rock dam. Today the boundaries of the PCFH historic district are those of the 6.2-acre parcel. Within the boundaries are the main Hatchery, two houses, the garage-shop, the shed, water tanks, and the pipeline stream crossing, which is all that remains of the pipeline. The dam and reservoir were removed in 1989. Despite diminished integrity of design, workmanship, materials, and feeling that is associated primarily with the loss of the pipeline and reservoir, there remains a high degree of integrity among the buildings and other features of the hatchery. Whereas the pipeline and reservoir were upstream, away from the highway and hidden in the forest, the features which survive are highly visible and strongly convey the significance of the property. The buildings which survive are well-built, but modest, plain, wood-frame structures, designed by the California Division of Architecture (See Photo 1). The reinforced concrete outdoor water tanks, the pipeline crossing, and the troughs and tanks inside the main Hatchery still covey the function of the facility. (Note: The facilities or group of buildings are referred to as a "hatchery". The main building of PCFH is referred to as the "Hatchery".)

The major components of the PCFH consist of the plan and circulation; buildings and structures; water supply system and fish ponds; and landscape features. These are described as follows.

Plan and Circulation

Prairie Creek Fish Hatchery (PCFH) is located about four miles north of Orick, California in Humboldt County. PCFH is located just above the conjunction of Lost Man Creek with Prairie Creek, in a mountainous and heavily forested area.

As it was built in 1936, the facility was in three parts: 1) an L-shaped, 6.2-acre parcel on the east side of U.S. Highway 101 on which were built the PCFH buildings; 2) right-of-way of unspecified width for a 12-inch pipeline stretching approximately 3,000 feet in a curvilinear alignment eastward from the 6.2-acre parcel to a dam on Lost Man Creek; and 3) the water source on Lost Man Creek, consisting of a dam measuring 175 feet long and four feet wide at its extreme points, and a reservoir which backed up as much as 800 feet. A substantial amount of the whole system including portions of each of these three parts remain in place today.

The 6.2-acre parcel is in an L-plan consisting of a generally rectangular area (170 feet by about 900 feet) with an east-west orientation, and a small panhandle (150 by 200 feet) south of the east end. The north side of this parcel is steeply sloped. Lost Man Creek flows across the southern

half of the eastern two thirds of the parcel, entering the parcel across the east border and exiting across the southern boundary on its way to Prairie Creek. The topography of the area is such that the few buildable sites are on the narrow alluvial flat lands along the creeks. The seven original buildings of PCFH (hatchery, four houses, garage-shop, and shed) were built close to Lost Man Creek, with six of them at the southwest corner of the 6.2-acre parcel on the north side of the creek, between the creek and U.S. 101, and the seventh, a cabin, on the south side of Lost Man Creek. In addition, the pipeline stream crossing over Lost Man Creek remains a fragment of the once continuous pipeline that stretched to the east beyond the 6.2-acre parcel.

The six buildings were in a U-plan with the mouth of the U open to U.S. 101 on the west. The north side of the U was formed by the Hatchery building, the south side by three houses (two of which survive), and the east end by the garage-shop building, with a shed behind it. The entrance to PCFH was from U.S. 101 into the mouth of the U. The shape of the unpaved driveway was like a running track, with straight sides and curved ends, so that traffic could move in a circular direction. In addition, the straight side on the south continued in a straight line past the north ends of the three houses and the south ends of the garage-shop and the shed to a dead end on the north bank of Lost Man Creek. This original 6.2-acre parcel and the features built on it between 1936 and 1946 form the PCFH historic district.

In the 1960s, following the sale of PCFH by the state to Humboldt County, the facilities at PCFH were expanded into an area south of the 6.2-acre parcel. However, no record was found of an official annexing of this area. During this period, the circulation system was altered when the circular driveway was removed from its original location. A new entrance driveway to PCFH was built south of the houses, outside the boundaries of the 6.2-acre parcel. This is the current entry and driveway and is paved with asphalt. The driveway extends onto the property; the area between the Hatchery, garage, and shed and houses is paved and is used as a parking lot or work area. Other additions to the facilities in this new area include two pump houses, two earthen ponds, a footbridge across Lost Man Creek, a fish ladder, and a carved redwood salmon named Indomitable. The additional area of land south of the 6.2-acre parcel and the features located in this area were not part of the historical operations at PCFH during its period of significance (1936-1946) and are not within the boundaries of the historic district. These features are described following the description of the features of the historic district.

Buildings and Structures

At the time the survey was made in July 1996, the windows and doors of the buildings had been nailed shut with plywood. The doors were opened temporarily for the purposes of the survey, but the windows remained shut. All the buildings were originally whitewashed, but since 1981, have been dark red with cream colored trim. In addition to the existing buildings described below, two others have been demolished and a mobile home has been removed. A bachelor's cabin built in 1928 for the Prairie Creek Station (experimental), on the south side of Lost Man Creek, was demolished about 1967. The third house, built in 1936, was demolished about 1972. A mobile home moved to a concrete pad on the east side of the shed was sold and moved away about 1992.

Water Supply and Fish Ponds

Much of the original water supply system has been destroyed or removed. The original dam, now referred to as the upper dam, was largely removed in 1988. When the dam was removed, so were the intake, the fish ladder, and the pond behind it, which backed up about 800 feet. Fragments of the wing walls which anchored the dam to the banks of Lost Man Creek are still in place. Most of the pipeline, except the stream crossing, described below, are gone. The pipeline lay falling apart and unused on the ground during most of the 1960s, and washed away in a flood in 1971-1972. The original filtration tank was removed about 1962-65. The domestic water supply system was taken apart and the original domestic water tank was reused inside the hatchery. Other structures which were added after 1955, including an electric weir, two mechanical weirs, and two silt fences have since been removed. A pond, levee, and culvert from 1967 to 1970 are silted up and overgrown with plants. Two pump houses and interior features of the hatchery are described, below, as part of the buildings in which they are housed.

Landscape Features

No visual or written record of the landscape of PCFH during its period of significance (1936 to 1946) was found. Descriptions of the landscape provided by people who lived there during this period provided the record of this aspect of the hatchery facility. The entrance to PCFH was from U.S. Highway 101 and was located between the Hatchery and the Superintendent's house. In the center of the driveway were dahlias, a stand of second growth redwoods, and a flagpole with a cross bar for two flags. South of the houses was a concrete sidewalk that remains in place today. It is not known if there were other sidewalks or when the existing sidewalks were built. South of the sidewalk were located clotheslines and a garden. Today, this area is the location of the gravel-lined, rectangular ponds. The tri-annual water licensee reports mention lawns; rhododendrons grew on the property; and at the north end of the garage-shop Cecil Bruner roses grew over the remains of a large tree stump. The landscape during the period of significance was rural in character.

Today, except for the lawn and concrete sidewalk located to the south of the two houses, the landscape features and ornamental plants appear to have been put in place after the period of significance. The driveway was moved to its present location in the early 1960s and is now paved with asphalt. In the place of the original driveway, an ornamental fish pond was built in ca. 1962. This rectangular pond is faced with irregular cut stone laid in concrete mortar. Also at this same time, entry porches and low, retaining walls for planting beds were built of the same materials and added to the Hatchery. Plant materials around the Hatchery (including rhododendrons on the south side, evergreen hedge on the west side, and lilies and ferns on the north side) most likely date from the early 1960s or 1970s. (The evergreen hedge, lilies, and ferns were planted by Steve Sanders.) Today, although the setting of the facility remains rural, there has been an increase in the area of the property that is paved. There were no major paved areas during the period of significance. The resulting loss of lawn area and space devoted to gardens has altered the character of the property.

Other plant materials include: a holly, roses, and ferns on the front (north) side of the superintendent's house; an evergreen shrub and ferns on the front (north) side of the assistant's house; roses and blackberries growing along the east side of the driveway next to the fence; blackberries growing outside the fence along U.S. Highway 101 right-of-way; a hedge along the west side of the raised, concrete tanks, a row of trees planted along the fence on the western side of the property; and a red plum tree located just inside the entry gate. (Steve Sanders planted the red plum and trees along the western side of the property.) All of these plant materials appear to have been planted, or in the case of the blackberries grew, after the period of significance; all appear to have been planted separately; and they were not planted as part of a plan.

Description of the Historic District

Contributors

Hatchery (1936). The Hatchery is a rectangular, gable-roofed building measuring 41 by 130 feet and oriented east-west. It is a wood-frame structure with 5½ by 6 inch posts which rest on a foundation of concrete posts, and which support braced English trusses (Urquhart 1950:401). The vertical members of the trusses are round steel bars; the diagonal members are wood. The members of the trusses are fastened together and to the posts by steel bolts. The trusses support a gable roof with overhanging eaves and paneled soffits. The roof is clad in corrugated metal except for one fiberglass panel on the north side. Between the posts of the side walls, and in the end walls, are stud frames, to which is attached 7-inch wide, V-groove siding. Generally, between every other pair of studs is a two-over-two double-hung window. Vents at the tops of the gables provide for air circulation. The Hatchery is entered through doors in the centers of the east end and the north and south sides, and at the south end of the west wall. The side doors are replacements of hollow core construction. The east end door is paneled. Outside the east end of the building is a shed-roofed lean-to, covering a "Harmon Cooler" refrigerator installed in the 1970s.

Inside, the two easternmost bays are partitioned and the seven remaining bays are open. Above the partitioned spaces is a loft. The partitioned area is divided by a central corridor, with a food preparation area on the north side; and a shop, office, and bathroom on the south side. The food preparation area, where liver was ground, includes a storage cooler and a concrete floor tank with a faucet and drain. The shop has built-in shelves and a metal chimney or vent pipe. The office opens not into the corridor, but into the main hatchery space. Knob and tube fixtures indicate that electricity was provided early in the life of this building.

The remainder of the Hatchery interior is a column-free space, open through the trusses to the underside of the roof. During the period of state operation, from 1936 to 1955, there were 80 troughs in the building. Troughs are narrow open flumes which step down from north to south, in which the eggs are hatched and the fish start to grow. Today there are six pairs of redwood troughs at the west end, fed water by a flume along the north wall. Each trough steps down at the center. Between the troughs and the partitioned area are two sunken rectangular tanks of

reinforced concrete; four round redwood tanks; and metal racks with plastic incubator trays (installed after 1971). The floor in this area is a raised wood deck added because of water damage to the original floor below (Will 1996) (See Photos 2 and 3).

Superintendent's House (1936). The westernmost of three original houses was originally designated the superintendent's house and was slightly larger than the others. It is a rectangular building (26 feet 3 inches by 38 feet 6 inches) oriented north-south, with a small back porch abutting the southern boundary of the parcel and a front porch (12 feet by 7 feet 6 inches) facing the open space where the circular drive had been. It is a stud-frame structure on a foundation of concrete posts. The walls are clad in 7-inch V-groove siding. The gable roof has overhanging eaves with paneled soffits. The roof is clad in asphalt shingles. The interior is lit by wood double-hung windows (one over one), except the upstairs window which is aluminum. There are attic vents at the tops of the gables. Entrances at the front and rear are paneled wood doors with glass upper panels.

The house is entered from the front porch directly into the living room. The living room and rear kitchen occupy the west side of the house. On the east side, there is a bedroom in each corner with a short corridor and a bathroom in between. A stair in the northeast corner bedroom leads up to an attic bedroom. Interior finishes originally included wood baseboards and cornice moldings, and wood battens between paperboard wall panels. Original finishes are intact in the corridor and the southeast bedroom, as is most of the standard manufactured hardware. Heat is provided by a wood stove (which replaced an early stove about 1971) in the living room, vented through a metal flue to a brick chimney on the roof. Electricity and plumbing were originally provided. The bathroom is partially remodeled, but retains some original tile and fixtures. The northeast bedroom, living room, and kitchen have been refinished. The attic bedroom was finished about 1943.

In appearance, the house is a simple bungalow by virtue of its massing and the pitch of its gable roof, echoed in its porches. Otherwise, it is undecorated.

The fencing on the south side of the house was not an original part of the structure and was added in the 1970s or 1980s (See Photo 4).

Assistant's House (1936). This is the easternmost of the two houses standing today, but was originally the middle of three houses. It is a generally rectangular building (26 feet 3 inches by 34 feet 6 inches) with a two foot extension of the kitchen, a small back porch facing the southern boundary of the parcel, and a front porch facing the open space where the circular driveway originally ran. It is a stud-frame structure on a foundation of concrete posts, with walls clad in 7-inch V-groove siding. The gable roof and transverse gabled kitchen bay have overhanging eaves and are clad in asphalt shingles. The interior is lit by wood, double-hung windows (one over one). There are attic vents at the tops of the gables. Entrances at the front and rear are paneled wood doors with glass upper panels (See Photo 5).

The house is entered from the front porch into the living room. The living room and kitchen occupy the west side of the house. On the east side, there is a bedroom in each corner with a short corridor and a bathroom in between. A stair in the southeast corner bedroom leads upstairs to an attic bedroom. Interior finishes originally included wood baseboards and cornice moldings, wood battens between paperboard wall panels, and standard manufactured hardware. Original finishes are generally intact in the kitchen, corridor, bathroom, and southeast bedroom. Living room and northeast bedroom finishes have been remodeled. Heat is provided by a wood stove (which replaced an earlier stove about 1971) in the living room which is vented through a steel pipe to a brick chimney on the roof. Electricity and plumbing were originally provided. The attic bedroom is finished in sheet rock, and was not originally a finished part of the house.

In appearance, the house is a simple bungalow by virtue of its massing and the pitch of its gable roof, echoed in its porches. Otherwise it is undecorated.

The fencing on the south side of the house was not an original part of the structure and was added in the 1970s or 1980s.

Garage-Shop (1936). This building is rectangular in plan (48 feet 4 inches by 24 feet 4 inches), oriented north-south, with a gable roof. It is a wood structure with stud walls on a concrete perimeter foundation and a gable roof supported by trusses. The walls are clad in seven-inch V-groove siding. The roof has overhanging eaves with paneled soffits, and is clad in corrugated metal. The interior is lit by two-over-two double-hung windows. There is a standard, wood paneled door in either end. Three wide doors on the west side open on rollers, providing access by motor vehicles. Inside, the floors are concrete, with raised sections at either end. At the south end is a partitioned space for storage. At the north end is an oil tank and a gas generator (AC generator, DC exciter) manufactured by International Harvester, with a plate stamped "Signal Corps U.S. Army; Power Unit PE 215."

Although it is unadorned, this building plays an important visual role in the complex due to its location closing the end of the U-plan, and because of the X-framing of its garage doors (See Photo 6).

Shed (1936). This small shed is rectangular in plan (14 feet 6 inches by 12 feet), oriented north-south, with a gable roof. It is located east of the garage-shop and is the only surviving building which is not part of the main U-plan of buildings. This is a stud-frame structure on a concrete foundation. It is clad in 7-inch V-groove siding. Its gable roof is supported on rafters with collar beams. The roof has overhanging eaves with exposed rafter ends, and is clad in shingles. The single interior space is lit by top-hinged windows in the side walls, and entered through a wide, side-hinged wood door with a diagonal framing member (See Photo 7).

Pipeline stream crossing (1936). The structure which originally served to carry the pipeline across Lost Man Creek is still in place, although the original steel pipeline has been replaced by plastic pipe. The crossing structure is a small suspension bridge with a steel tower on either side of the creek and steel cables. The towers are rectangular frames braced with crossing diagonal

members in an X shape. From the cables, a portion of the pipeline and a wooden catwalk above it are suspended (See Photo 8).

Round outdoor water tanks (ca. 1936 to 1943). All, five, round, water tanks located outside the north wall of the Hatchery building were built within the period 1936 to 1943. All the tanks are of reinforced concrete construction and measure 20 feet in diameter. They are sunk into the ground so that they are only a few inches high on the outside, but about a foot deep. The walls are about four inches thick, the bottoms slope slightly to a drain at the center. Today, a pipe is cantilevered from the side toward the center of each tank. This replaces an earlier system for aerating the water. The aggregate in the concrete is exposed below the waterline in the tanks and presents a distinctive appearance (See Photos 9).

Non-Contributors

Aeration tower (ca. 1962-1965). This is a concrete frame supporting an elevated wooden aeration tank (See Photo 10).

Rectangular, aboveground concrete tanks (ca. 1973). This pair of reinforced concrete tanks was built in the early 1970s as elements in a redesigned water supply and hatchery process. The rectangular tanks are side by side and share a common wall. Vertical grooves in the concrete walls are designed for the placement of moveable gates. Valves at either end allow water and fish to be moved in and out of the tanks. Each tank is approximately 79 feet long by 10 and 1/2 feet wide (See Photo 11).

PG&E pole (1984). This pole was installed in 1984 to supply additional electric power needs of the increasingly mechanized facility. The pumps in particular required an additional reliable power supply.

Dedication Pond and Associated Features (ca. 1962). A pond was built between the hatchery and the houses about 1962 when the original driveway was removed from the area. This pond is referred to locally as the "Dedication Pond" and contains a metal plaque inscribed with: "In Memory of Joe D. Walker, Fish and Game Conservationist, Bella Vista Rod and Gun Club." The rectangular pond is approximately 38 feet long and 11 feet wide. It is faced with irregular-cut stone in concrete mortar. At either end of the pond are ornamental plantings of juniper and ferns.

Several other features were added to the hatchery at the same time as the dedication pond and are built of the same materials. Wooden platforms with stone-faced steps were added to the south (front) and north entries of the hatchery. A raised stone-faced slab with steps was added to the west entry of the hatchery. In addition, low, stone-faced, retaining walls that contain planting beds were added to the front (south) side of the hatchery on either side of the entry porch. These walls connect to the dedication pond. The planting beds in front of the hatchery contain rhododendron. There is also a stone-faced, planting bed wall along the west side of the Hatchery that contains an evergreen hedge.

Lower Dam (1969-1971). The lower dam, consisting of a concrete dam between wing walls, was built to try to maintain a source of water in Lost Man Creek after the original (upper) dam was silted up. The lower dam is located upstream about 100 feet from the pipeline crossing.

Foot bridge, fence and picnic table (after 1968). After 1968, Redwood National Park built visitor facilities at PCFH that included a wooden foot bridge across Lost Man Creek, a split rail fence along the east side of the driveway, and a picnic table on the south side of the creek.

Description of Features Outside of the Historic District Boundaries

Pump House (1962). This is a small square building (8 feet by 8 feet) located outside the hatchery property near the new gate that was established in the 1960s on the north edge of Lost Man Creek. This is a stud-frame structure on a concrete perimeter foundation. It is clad in 7¼-inch V-groove siding. It has a gable roof with overhanging eaves and exposed raters. The roof is clad in shingles. The building is ventilated by louvered openings on each side and a roof monitor. It has a wood door and no windows. There is a pipe running between the southeast side of the building and the ground above the creek (See Photo 12).

Pump House (1971). This is a small rectangular building (6 feet 3 inches by 8 feet 2 inches) oriented north-south, and located near the southwest corner of the superintendent's residence, outside the boundaries of the parcel. This is a stud-frame structure on a slab foundation, clad in 7-inch V-groove siding. It has a gable roof with overlapping eaves, exposed rafters, and wood shingles. It is ventilated by louvered openings on the sides. The door is missing. Inside is a 40-horsepower Holloshaft Pump Motor (See Photo 13).

Rock-lined earthen ponds (ca. 1965). This pair of ponds was excavated in the area south of the hatchery property. The ponds were lined with rocks and linked at either end by concrete channels with valves and gates. Each pond is approximately 96 feet long and 15 feet wide. Currently, the ponds do not contain water and grass has grown through the rock lining (See Photo 14).

Fish Ladder (ca. 1973). This reinforced concrete fish ladder was built to enable returning salmon to climb to the new rectangular concrete tanks (see Photo 39).

Pond, Levee, Culvert (Built ca. 1967-1970). These are overflow facilities to accommodate growing salmon when the normal capacity of the hatchery was exceeded. These facilities consist of a pond on the north side of Lost Man Creek about 100 yards above the Lower Dam, a levee, and a culvert. The pond and culvert are silted up and overgrown.

Fencing. There are several type of fencing used at PCFH.

> **Chain link fence (after 1971).** A six-foot high chain link fence along the west boundary of the hatchery, this extends south below the parcel boundary.

Split rail fence (after 1971). A split rail fence is located to the north of the five, round, water tanks outside of the Hatchery. This type of fence is also located to the east of the driveway. The fence consists of three split rails with posts approximately 9 feet on center.

Vertical plank fence (after 1971). Portions of a vertical plank fence remain standing on the north side of the garage-shop and shed, south of the superintendent's house, and south of the assistant's house (see Photo 40).

Description of Features that have been Removed

There are several features that were part of the PCFH facilities that have been demolished or removed. Within the historic district, these included the easternmost residence, a cabin on the south side of Lost Man Creek, the original entry and driveway, and a flagpole that stood in the center of the driveway until 1962 (when the entry was moved to its current location). The upper dam, reservoir, and pipeline have also been removed.

Indomitable. There have been two carved, redwood sculptures (approximately 21 feet in length) at PCFH in recognition of a well-publicized salmon which returned to its place of origin in the PCFH by an improbable route through pipes and screens in 1964 (see additional information in Section 8). The first sculpture stood from 1974 until about 1981, by which time it had deteriorated. The second stood from 1981 to 1992 when PCFH closed. Each carved, redwood sculpture of Indomitable was mounted on a metal pole in a concrete pad just inside the new gate. The pole, concrete pad, and a dedication plaque remain. The dedication plaque reads: "As a lasting tribute to the never ending struggle within nature for the survival of the species...This replica of the indomitable salmon was presented to Humboldt County and its Prairie Creek Fish Hatchery on March 5, 1974, by the following as a symbol of the interdependence and common spirit that binds man to nature and all living things." Also remaining are stone-faced steps from the driveway down to the concrete pad (see Photo 41).

HISTORIC CONTEXTS

Local History and Setting

Prairie Creek Fish Hatchery (PCFH) is situated in northern Humboldt County about 45 miles north of Eureka and about four and one-half miles east of the Pacific Ocean. It is on the east side of U.S. Highway 101 in an area which, except for intermittent roadside structures, is undeveloped. It is located on Lost Man Creek just above its confluence with Prairie Creek. Prairie Creek in turn flows into Redwood Creek which empties into the Pacific Ocean west of the small community of Orick, about seven miles southwest of the hatchery. The region is mountainous and heavily forested; redwoods are the dominant species along the streams and in the vicinity of PCFH.

The history of PCFH is closely associated with the development of U.S. Highway 101 and the nearby town of Orick. This history can be divided into three general periods: 1) the early history, 1848 to 1927, associated with the exploitation of natural resources and homesteading; 2) the second phase, 1928 to 1967, associated with development of transportation and the local economy based on natural resources and agriculture; and 3) the third phase, 1968 to present, associated with declining reliance on natural resources and increasing tourism.

Early History, 1848 to 1927

The early history of the area is associated with the exploitation of natural resources. The first Euro-Americans in the region came looking for gold along the Trinity and Klamath Rivers in the late 1840s and 1850s. Very quickly, a lumber industry was also established; several mills were established in Eureka by 1854. Logging increased in the 1880s as the redwood forests closer to San Francisco were depleted (Lantis et al. 1963:422-423).

The first settler in the vicinity of PCFH arrived in 1864, with many others in the 1870s and 1880s. These settlers homesteaded and established the community of Orick on Redwood Creek, about three and one-half miles south of where the hatchery would later be built. The early homesteaders were primarily engaged in raising animals including cattle, dairy cows, chickens, and goats (Hufford 1985; Hufford 1993).

In the 1870s, Indian trails in the county were first developed as wagon roads (Hufford n.d.). An official county map in 1898 showed a north-south road generally along the alignment of U.S. Highway 101 through Orick and past the site of PCFH (Lentell 1898). The first bridge was built on this road over Redwood Creek in Orick in 1905 (Hufford n.d.). Official county maps in 1898, 1909, and 1914 showed the land north of Orick, including the site of PCFH owned by the American Lumber Company (Lentell 1898; Lentell 1909; and Lentell 1914). After World War I, an influx of settlers from Italy and Switzerland came to Orick and established about 25 small dairy farms (Hufford 1993). By 1922, the site of PCFH was part of a large undivided property owned by the Hammond Lumber Company and the Hill-Davis Company, with the property immediately to the south owned by Robert McIntosh, a pioneer settler in Orick (Lentell 1922).

Second Phase, 1928 to 1967

Big changes came to the area beginning in 1927, initiating the second phase of local history. In that year a new highway bridge was built over Redwood Creek at Orick (Hufford 1928). In 1928, the state bought the right-of-way for construction of a highway north of Orick (Humboldt County Engineer 1955). By 1935, this highway would be completed and functioning as a portion of the Redwood Highway, which later was designated U.S. 101. Also in 1928, the predecessor of the PCFH, a temporary hatchery and egg collecting station was established on Prairie Creek. In 1933, a Civilian Conservation Corps (CCC) camp was established about one and one-half miles north of PCFH, now the site of Prairie Creek Redwoods State Park, Elk Prairie Campground (Hufford 1977; Nash 1996). The CCC camp included barracks, headquarters building, cookhouse, shop, post exchange, and post office. CCC workers cleared stumps left by highway construction workers, and built rail fences, a bridge across Prairie Creek, fire trails, campgrounds, and "the all-redwood Visitor Center with the hand hewn beams and huge double rock fireplace" (Hufford 1977). In 1936, PCFH was rebuilt as a permanent facility.

After World War II, "Orick became a boom town—with a fire department and a community services district and a community hall—and more churches and more bars were built and the school was enlarged and more service stations were built and logging trucks were all over" (Hufford 1993). There were tepee burners and little mills "all over" (Hufford 1993), including the Geneva Company mill, built in 1945 on land bought from the heirs of Robert McIntosh. The Geneva mill was sold to Hammond Lumber Company in 1952 and subsequently to Louisiana Pacific who closed it in 1957 (Hufford 1985). Development of small houses and enterprises extended north of Orick intermittently along the highway, including construction of a house for a Geneva Lumber Company manager across the highway from PCFH in 1949-1952 (California Resources Agency 1949; U.S. Department of the Interior 1952).

Third Phase, 1968 to Present

The third phase of local history is associated with the establishment of Redwood National Park in 1968. The roots of the local tourist industry were much earlier, with designation of the "Redwood Highway" by 1935; recognition of sport fishing as a significant element of the economy by establishment of the temporary fish hatchery in 1928; and development of State Park facilities by the CCC and others in the 1930s. But tourism was a relatively minor element of the economy until 1968 when the establishment of the National Park both created a major focus for tourists in northern California and also permanently removed a substantial amount of land which was formerly logged by timber companies. In this same period, increased mechanization reduced the need for workers in the woods and in the mills. For related reasons, the 25 dairy farms around Orick were consolidated into "four big dairy ranches and a couple of cattle and sheep ranches" (Hufford 1993). A major result of these changes was a need for fewer workers, and a consequent sharp decline in the local population.

Prairie Creek Station (Experimental)

For nearly ten years before PCFH was permanently established, it operated as a "temporary" or "experimental" hatchery. According to the *30th Biennial Report* of the Department of Fish and

Game: "During the summer and fall of 1927, a survey was made to find a stream on the northwest coast from which cut-throat trout eggs could be obtained. After a close study and from data gathered in former years, we decided to establish a temporary hatchery and traps on Prairie Creek, Humboldt County" (California Department of Natural Resources 1929:57). The following year, in mid-November 1928, the hatchery was ready for operation. Facilities at that time included racks and traps in Prairie Creek for catching fish; a tent hatchery with eight eyeing troughs, later increased to 30 (Nash 1996); a 2,500-foot long, 12-inch flume; and two cabins for employees. This first station was not at the site of the present PCFH but apparently was on the west side of the highway. The station is located on "Prairie Creek below its junction with Lost Man Creek" (California Department of Natural Resources 1929:57). It was not far away however, as the 2500-foot flume brought water from Lost Man Creek.

While the purpose of the 1927 survey was to find a source for cut-throat trout eggs, in the first season, 1928-1929, high water enabled the cut-throat trout "to pass over the tops of the racks" so that none were trapped and no eggs were taken. During the 1928-1929 season, the station operated both as an egg collecting station and a hatchery for both trout and salmon; 208,000 silver salmon eggs were taken and hatched at Prairie Creek, except for 60,000 eggs taken to Fort Seward Hatchery; and 1,400,000 steelhead trout eggs were taken, with nearly half hatched at Prairie Creek Station and the remainder taken to Fort Seward Hatchery. "Several logjams and other obstructions in Prairie Creek" were partially removed, and plans were made to remove the rest before the next fall salmon run. Four types of fish were observed: chinook salmon, silver salmon, cut-throat trout, and steelhead trout. "The chinook and steelhead are desirable for general distribution and the silver salmon and cut-throat trout were of value for distribution in Humboldt County." The overall assessment of the first year was favorable: "Judging from the first season's showing, we think the establishing of the station was justifiable and the station is a decided asset. There is ample water for hatchery purposes, even if the capacity is increased and the water seems to be good" (California Department of Natural Resources 1929:57).

The *31st Biennial Report* stated that due to bad weather: "we still consider the station in an experimental stage and unproven as to either its continuance or as to its abandonment." The only substantial improvement made to the facility during 1929-1930 was to build a garage. Because "a good run of steelhead trout in Prairie Creek" was believed to occur only every five years, "we have planted the creek heavily during the past two years in the hope of ultimately building up a regular steelhead run in the creek. If we are able to succeed in this endeavor, it will be very good proof of the plan of planting large numbers of small fish instead of a few large fish." An alternate plan under consideration was the establishment of a hatchery on Redwood Creek (California Department of Natural Resources 1931:52-53). "Nevertheless, the hatchery continued hatching steelhead, cutthroat trout, silver salmon and King salmon eggs and distributing the fry in waters of Humboldt and Del Norte Counties through 1936" (Leitritz 1970:67).

For the period of its temporary status, from 1928 to 1936, the predecessor to PCFH was named "Prairie Creek Station (Experimental)" (California Department of Natural Resources 1931:52). More loosely, it was referred to by its two functions, as "Prairie Creek Egg Collecting Station" and "Prairie Creek Hatchery" (Leitritz 1970:67). At least in its first year, it appears to have been located on the west side of the highway (rather than on the east side as it is today). Sometime before 1935, it was moved to another temporary location on the south side of Lost Man Creek

(this is east of its present location). A 1935 survey map showed a rectangular hatchery building on the south side of Lost Man Creek on the section line, just east of the midpoint of the section line with a house shown west of the midpoint (Elam 1935). Thus, during the period 1928 to 1936, the temporary hatchery appears to have been originally located west of Highway 101 and west of the present location of PCFH. Later, it was relocated south of Lost Man Creek and east of the present location of PCFH.

The buildings and facilities of the temporary hatchery are also incompletely known. An undated photograph of the "Prairie Creek Hatchery" at the State Archives may be the tent hatchery of the first season (1928-1929). This is a rectangular stud-frame structure with gabled roof framing. The lower walls are clad on the outside by horizontal wood planks. The roof, upper walls, and gable ends appear to be draped in white canvas. The building is situated among tall trees. The photograph is taken along a path leading diagonally to a corner of the structure.

Another undated photograph published in 1970 of the "old hatchery building, Prairie Creek" (Leitritz 1970:67) is an image of a structure with a similar shape, in a similar setting, from the same diagonal point of view. This structure appears to have the same horizontal siding on its lower walls, but its upper walls have been enclosed with windows and it has a solid roof with overhanging eaves. It appears to be a wider building, but the use of a different camera lens for the two photographs makes them hard to compare. This may be the same building as shown in the apparently earlier photograph, with improvements to the structure; it may be another building on the same site; or it may be another building on a different site.

Another undated photograph from the State Archives labeled "Main Racks Prairie Creek" is an upstream view of what appears to be a spillway with wooden box-like structures below the spillway.

One of the two cabins described in the *30th Biennial Report*, for 1926 to 1928, may be the same structure shown on a survey of the property in 1935 situated on the section line on the south side of Lost Man Creek (Elam 1935). A hand-drawn addition to a map made by the Department of Fish and Game later in 1935 showed the cabin just north of the section line (California Department of Natural Resources 1935). In 1962, the cabin was shown on another map at this same location (Larson & Macmillan 1962). In fact, both cabins may have survived into the 1970s (Sanders 29 July 1996); if the second cabin was south of the first, it would not necessarily have been shown on any of these maps.

Although there is no physical evidence, it seems possible that the garage built in 1929-1930 may survive either moved or on its original site as the shop or shed. Because the garage was described as a major improvement, it seems unlikely that it would have been simply abandoned. Rather, like the employee cabins but unlike the temporary "tent hatchery," it may have been reused in some form.

Prairie Creek Fish Hatchery

Construction of PCFH

In 1935, the Department of Natural Resources, Division of Fish and Game initiated steps to replace the temporary Prairie Creek Station with a permanent hatchery. Until this time, the hatchery had operated on land leased from the Hammond & Little River Redwood Company and its partner, the Hill-Davis Company, and had relied primarily on temporary facilities including a tent hatchery and a flume (presumably an open, wood structure). To build a permanent hatchery, the land had to be surveyed and purchased; it was necessary to get a license from the Department of Public Works, Division of Water Resources to take water from Lost Man Creek; and the buildings and other features of the hatchery facility had to be designed and built.

In May of 1935, the Division of Fish and Game had a survey made to accompany its application to the Division of Water Resources (California Department of Natural Resources 1935). On the map prepared by the surveyor, the following features were shown: the proposed hatchery property; the route of a pipeline from an upstream point of diversion to the hatchery property; and the point of diversion on Lost Man Creek. The hatchery property was an L-shaped piece of land (later described as 5.8 acres) consisting of a main east-west section, generally rectangular in shape, and a small panhandle projecting southward from the east end. The main part of the property was crossed by Lost Man Creek flowing northeast to southwest, from the east end to the center of the southern boundary; and the west end faced the Redwood Highway. The southern boundary of this section of the property was the line between Sections 14 and 23 of Township 11 North, Range 1 East, south of which was the property of Robert McIntosh. A comparison with another survey made just prior to this map suggests that the southward panhandle at the east end of the property was included in order for the old temporary hatchery to fall within the boundaries of the new fish hatchery property (Elam 1935).

For the purposes of the application, several features of the proposed hatchery were shown by the surveyor with dashed lines to indicate their proposed location and the general functioning of the facility. On the west half of the property between Lost Man Creek and the Redwood Highway, several buildings were shown including a rectangular hatchery, a garage, two houses (for a superintendent and an assistant), and a "B.Q." (Bachelors' Quarters?). A discharge flume was shown leading from the southeast corner of the hatchery in a southeastward direction to Lost Man Creek. In addition, a tank was shown near the east end of the hatchery which was the terminus of a 3,000-foot, 12-inch pipeline from the point of diversion. The route of the pipeline was shown as a dashed curve which crossed Lost Man Creek, passed across the eastern boundary of the L-shaped property, traveled east across adjacent portions of Township 11 North, Range 1 East, and curved south along the left bank of Lost Man Creek to the point of diversion on the south side of the meandering creek.

The map was prepared with the size and shape of the property shown as they were later established, and the facilities shown partly as they were established (California Department of Natural Resources, Division of Fish and Game 1935b). However, marked by hand on the map were corrections which showed the property as it was actually built. These hand corrections, which are not dated, were as follows: a domestic water tank is shown north of the group of

buildings; the garage is turned from an east-west orientation to a north-south orientation, occupying the space of the building later called the shop; a small shed was built east of the south end of the garage-shop; a third house, for an assistant, was shown between the houses of the superintendent and another assistant; the discharge flume was moved so that it ran from the center of the Hatchery directly south toward Lost Man Creek; a house was shown on the east side of the creek south of the pipeline. Each of these features was built as shown on the altered surveyor's map, although some features have since been removed. Only one feature is unknown – the "B.Q." which was hand corrected to a point east of the garage-shop and the shed. In summary, PCFH was built largely according to this map prepared in mid-1935, and all the features shown, whether as part of the original base map or drawn in by hand, were built by 1940.

The map accompanied an "Application to Appropriate Unappropriated Water," submitted as application no. 8391 to the Division of Water Resources as the first step towards permanent licensing to take water from a stream (California Department of Public Works 1935a). The application requested three cubic feet per second to be used for recreational and incidental domestic use where recreational use was defined to include fish culture. Water would be taken from a diversion works, which was not categorized as a dam, in a 12-inch riveted steel pipeline for 3,000 feet, falling 7.44 feet. The cost of the diversion works, intake, and pipeline was $1,800.00. In response to this application, Permit No. 4619 was granted on 29 August 1935, with the stipulations that construction begin before 1 April 1936, be completed by 1 December 1938, and be in complete operation by 1 December 1939.

With a permit to take water, work on the entire hatchery complex could proceed, beginning with design of facilities by the Department of Public Works, Division of Architecture (Nash 1996). PCFH was one of three new hatcheries about which it was said that "Extensive construction and improvement have been accomplished through government relief agencies" (California Department of Natural Resources 1937). This is all that is known about the source of money for the project. In the first of three progress reports required as steps toward licensing, received 20 October 1936, $10,000 worth of work had been done, but the project was not finished. By that time, 1,800 feet of 12-inch steel pipe had been laid and construction had begun on "new hatchery buildings." A diversion dam and the hatchery were projected to be finished by 31 December 1936 and other hatchery structures in the following year (California Department of Public Works 1936).

In addition, on 29 July 1936, the property was sold by Hammond & Little River Redwood Company and the Hill-Davis Company to the Division of Fish and Game. The sale included the 5.8 acre property surveyed in 1935 together with right-of-way for a pipeline from Lost Man Creek and the point of diversion on Lost Man Creek (Humboldt County Recorder 1936).

According to the "Progress Report by Permittee" for 1937, prepared 8 October 1937, all work on the hatchery was complete "at a total expenditure of approximately $20,000 for materials, labor and service." At the time of the report, the hatchery was not using as much water as it expected it would need, and was not in full operation (California Department of Public Works 1937). By the end of the year, this was achieved: "During 1937, the rebuilt Prairie Creek and Basin Creek hatcheries were put into full operation" (California Department of Natural Resources

1939:35), with 80 troughs and four tanks (Leitritz 1970:67) and the description as an egg collecting station was dropped (Leitritz 1970:13). The buildings were built under the supervision of a state employee who hired local carpenters to do the work. Glen Nash, now retired in Eureka, recalls building two of the houses with one other man. They worked from a set of plans provided by the state and used virgin redwood milled locally. He considers the houses well designed and well built, but "nothing fancy." At the time they were built, there were more trees on the site. During the period of construction, the workers stayed in a motel in Orick (Nash 1996).

The progress report for 1938, filed 14 October 1938, stated that maximum use of water had been reached, a prerequisite to inspection for permanent licensing. This was clarified in a letter on 25 October 1938 stating that the entire capacity of the water line was not being used, but that it would be used when additional tanks were installed "at some indefinite time in the future" (California Department of Natural Resources 1938).

Following the assertion in the progress report for 1939 (California Department of Public Works 1936-1939) that maximum use of water had been reached, the facility was inspected on 18 September 1940. This inspection was conducted by A.S. Wheeler, assistant hydraulic engineer for the Division of Water Resources, accompanied by Allan F. Pollitt, hatchery foreman. Facilities noted in the inspection were a concrete dam (8 feet high, 175 feet long) "with a plank apron and a 4' × 54' spillway at the center"; a conduit consisting of "4' of 16" and "3000' of 12" pipe" discharging into a filtration tank (22.6 feet × 16.6 feet × 7.8 feet) with three 8-inch distribution lines; three houses occupied by fourteen people; one house with a sink only for two people; a hatchery with 40 double rearing tanks and a meat room; five outside ageing tanks; 800 square feet of flowers and ornamentals; 2,825 square feet of lawns; an aquarium; and a 1,980 gallon domestic water tank. The objective of the facility was to raise annually 1,750,000 fish, 150,000 of which would be over three inches long (California Department of Public Works 1941). Following this report, License for Diversion and Use of Water No. 2355 was issued (California Department of Public Works 1942) for 1.86 cubic feet per second, enabling PCFH to operate on a permanent basis.

PCFH Facilities and Operations Prior to 1955

Once the license had been issued, new reports were filed with the Division of Water Resources every three years. Reports continued to be made every two years by the Division of Fish and Game in the *Biennial Reports*. Looking back, Leitritz wrote, "During the 1940s, silver and king salmon and cutthroat, rainbow, and steelhead trout were produced. The installation also served as headquarters for rescue work on north coastal streams" (Leitritz 1970:67). The superintendent of PCFH from 1943 to 1949 was Steven Paul Smedley. Smedley's son, Glen, now a retired Del Norte County Supervisor in Crescent City, was a teenager living at the hatchery during those years and recalls the place and its operation well. When the Smedley family moved in, the only electricity at the hatchery was provided, unreliably, by a hand cranked, blue Kohler generator in the north end of the shop. Water was delivered in a pipeline carried across Lost Man Creek on a suspension bridge with a walkway above the pipe. The dam where the pipeline began was a wood frame structure of rocks, with a trap and holding boxes at the north end. The pipeline ended at an elevated water filter located behind the east end of the Hatchery, where the

easternmost round tank now stands. The filter was a wood cage full of rocks. When the water had passed down through the filter, it was distributed to the Hatchery, to five round concrete tanks on the north side of the Hatchery, and to the domestic water tank. At the Hatchery, it was carried in a flume across the north side of the building and distributed to the troughs. From the bottoms of the troughs, it was carried as waste in an outfall line southward into Lost Man Creek. From the filter, another pipe carried water to a pump north of the Hatchery, which raised it 60 feet to a tank on the hillside for domestic purposes. This was a round, redwood tank on a stand, covered by a roof. Gasoline was pumped by hand in front of the shop. The shed east of the shop was used for storage of "presto logs" to heat the houses (Smedley 1996).

The entrance to PCFH from Redwood Highway was a circular driveway between the Hatchery and the three houses. In the center of the driveway were dahlias, a stand of second growth redwoods, and a flagpole with a cross bar for two flags. South of the houses (where the raised tanks, pump houses, and earthen ponds are now) were clotheslines and a garden. Two big redwood trees were cut down and removed. A very large stump outside the north end of the shop was overgrown with Cecil Bruner roses planted by Mrs. Smedley. Rhododendrons around the property flourished and were fertilized with salmon carcasses. Mr. Smedley built a small smokehouse on the west side of the creek, south of the pipeline. Smoke was brought to the smokehouse in an underground pipe from the houses (Smedley 1996).

The buildings were all whitewashed. The northernmost of the three houses was occupied by the Smedleys with two boys and two girls. The attic was finished as a bedroom for the girls. In the middle house were the Laidlaws with five children. There was a young couple in the third house. Across the creek, a single man lived in the cabin (Smedley 1996).

Two types of fish were hatched, salmon and trout. Salmon swam up the creek and were trapped behind the dam. They were dipped out, examined, and, if ripe, eggs were removed from females and spawned from males in buckets. Carcasses were left for bears, and fresh carcasses were eaten by the staff or given away. Fertilized eggs were carried to the Hatchery and set in special baskets with holes inside the troughs. The baskets were turned, eggs hatched, and fry grew to fingerlings. (During Steve Sanders tenure as superintendent, fry were referred to as button-ups or swim-ups.) Fingerlings were moved to outside tanks to grow. When they were big enough, they were placed in milk cans with aerators, loaded in trucks and carried to streams in Humboldt and Del Norte Counties. By 1949, the deliveries were made in a special tank truck. Trout were raised in the same way, except that trout eggs were collected at the Mt. Shasta Hatchery and delivered to PCFH.

While the fish were growing, they were fed a diet of ground liver, delivered regularly from a slaughterhouse in Eureka. The liver, from cattle, was dyed green so it wouldn't be eaten by humans. It was ground in the northeast room of the Hatchery (Smedley 1996).

"Following World War II, the water supply deteriorated because of logging operations in the watershed above. Flows decreased in summer and winter floods required expensive annual stabilization of the creek banks adjoining the hatchery property" (Leitritz 1970:67). Between 1946 and 1948, $1,482.00 was spent on improvements to the water system (California Department of Natural Resources 1949). These improvements may have included five, redwood

tanks mentioned for the first time in documents during 1949. These were outside the hatchery and measured four feet by 16 feet by 30 inches high.

"The old, outmoded installation required extensive repairs by 1955, so work there was largely discontinued and production was replaced by the Cedar Creek Experimental Station" (Leitritz 1970:68). A description of the hatchery is available about the time it closed from another former employee, Bob Will, now manager of the private Rowdy Creek Fish Hatchery. Will worked at PCFH from May to December 1955 under superintendent Carleton Rogers. Will described the facility almost exactly as Smedley did for 1943 to 1949, including whitewashed buildings; an elevated rock filter at the end of the pipeline; the dam built of wood with rocks; access to the property between the hatchery and the three houses; and a single cabin across the creek. The only difference in 1955 was that the area south of the houses was a large blackberry patch instead of a garden and clothesline area. Throughout the state period, there were five to eight employees, and a total population including dependents of up to 15 (Will 1996).

PCFH Facilities and Operations after 1955

The history of PCFH for the period immediately after 1955 is not completely known. Bob Will visited the facility in the spring of 1956 and was involved in shipping eggs from Mt. Shasta later in that year, indicating that it was still in operation, after which it was idle for some time (Sanders 1989). The Report of Licensee filings for the years 1956 to 1964 state that the full amount of water allowed under the license was used in each of those years, that it was still operated by Fish and Game, and that three families remained in residence (California State Water Rights Board 1958-1964). However, the Department of Fish and Game stated that it had been abandoned in the *44th Biennial Report* for the period ending 30 June 1956 (California Department of Natural Resources 1957). According to Leitritz, "Humboldt County assumed operation of the hatchery in 1957" (Leitritz 1970:68). "On December 16, 1957 the Board of Supervisors, upon the request of the Department of Fish and Game, executed a lease for a term of five years. The lease commenced February 1, 1958 and terminated June 31 [sic], 1963." (Sanders 1989)

On 15 September 1961, an act of the State Assembly took effect "to provide for the conveyance to Humboldt County of the Prairie Creek Fish Hatchery." The property was transferred without cost to be used only as a fish hatchery for the following reasons: "The Legislature finds that there is an urgent need that all available facilities be used to produce fish for the citizens of this State and that use of this property by the County of Humboldt is a state public purpose since it will permit the continued operation of a fish hatchery which would otherwise be discontinued for economic reasons" (California Assembly 1961).

The description of this property was exactly the same as that purchased by the state in 1936. A resurvey of the property in 1962 confirmed the description of the boundaries but arrived at a total of 6.2 acres, more or less, whereas the previous figure was 5.8 acres (Larson and Macmillan 1962). This survey showed some but not all features of the facility. The features shown were the hatchery buildings, three dwellings along the southern edge of the property between U.S. 101 and Lost Man Creek, one dwelling on the southern edge of the property east of Lost Man Creek, and a portion of the pipeline crossing Lost Man Creek.

By 1962, under the ownership of Humboldt County, the superintendent of the facility was Ken Johnson. Johnson is remembered for having discovered on 2 December 1964 the salmon which returned to the Hatchery through the outfall system by swimming up narrow pipes, jumping two and one-half feet, and getting around a screen. The fish was named Indomitable and was widely publicized (Hufford n.d.:310). Later, in 1974, a five-ton, carved redwood sculpture of Indomitable, made by Floyd Davis of Crescent City, was installed at the entrance to PCFH (Hufford n.d.:310; Bentzley 1984). This sculpture deteriorated and was replaced about 1981 by a similar sculpture. The first was sold and now resides at Buck's Restaurant in Woodside, San Mateo County (MacNiven 1996). The last record of the second sculpture was that it had been moved to the Arcata-Eureka Airport when the PCFH closed (31 October 1992) and was then sold by the Humboldt County Supervisors to Washington Elementary School for one dollar (Bernay 1992; Humboldt County Administrative Officer 1992).

During the 1960s, under Johnson and his successor, Bill Steuer (ca. 1967 to 1970), numerous changes were made. Operational changes were made both to improve water quality and to modernize an outmoded process. Due to increased runoff caused by logging, silt in Lost Man Creek resulted in water which was often too warm and too dirty for the fish. At least three efforts were made to dig a well, one of which resulted in the construction of a small pump house in 1962 (Sanders 1996; Humboldt County 1992). This was located just north of the intersection of U.S. 101 and Lost Man Creek on land which was outside the PCFH property. Sometime during the 1960s, and perhaps at this time, the entrance to PCFH from the highway was moved from its original location between the Hatchery and the houses to its present location just north of Lost Man Creek. In association with the use of well water, the old filtration tank behind the Hatchery was demolished and a new aeration tower was built by Humboldt County. Silted creek water and, especially, well water could be improved by passing through the aeration system.

Around 1965, the ornamental "dedication pond" was built where the driveway had been, between the Hatchery and the houses, and, to modernize the hatchery process, two, rock-lined, rectangular ponds were dug in the earth south of the houses. Inside the Hatchery, metal racks were placed for incubator trays, replacing the baskets with fertilized eggs which were previously put in the troughs for hatching. Now, fertilized eggs were placed in incubators until they grew into fry; fry were placed in troughs until they were big enough to move to the round tanks; and later to the rock-lined earthen ponds. The growing fish were fed dry pellets in place of ground liver (Humboldt County 1966; Sanders 1996; Sanders, Joanne 1996; Will 1996). Under superintendent Steuer, the cabin across Lost Man Creek was demolished (Sanders 1996); the lower dam was completed in August 1969 (California State Water Resources Control Board 1970); facilities, consisting of a pond on the north side of Lost Man Creek about 100 yards above the Lower Dam, a levee, and a culvert, were built to accommodate growing salmon when normal capacity at the hatchery was exceeded (Sanders 1997; Anderson 1997); and there was "quite a bit of construction work in and along Lost Man Creek." Because of problems with the water and construction work, no water was taken from the creek in 1968-1969 (California Department of Fish and Game 1970).

In early 1971, Steve Sanders took over as Superintendent. Under Sanders, additional changes were made to improve the operation, which, because of poor water quality, "was on its last legs" (Sanders 1996). At that time a new water intake was under construction and nearly complete. This never produced satisfactory water. Instead, in 1971, a new well was dug and a new pump

house built for it which were located behind the superintendent's house (Joanne Sanders 1996; California State Water Resources Control Board 1974). A new pump for this well was purchased in 1973 (Humboldt County 1992), and a new pole for increased power was installed east of the Hatchery by PG&E in 1984. An electrical weir, superseded by mechanical weirs, was placed in the stream at the base of a new concrete fish ladder. Fish were diverted up the ladder into a pair of new, rectangular, aboveground, concrete tanks. The old domestic water tank (8-foot diameter) was brought down the hill and placed inside the Hatchery next to the three existing tanks (10-foot diameter). More incubators were also purchased for the Hatchery. To provide better feed than pellets, a walk-in cooler was built outside the east end of the Hatchery for frozen meat (Sanders 1996).

With these new facilities, the hatchery process was modified. Salmon returned up the fish ladder to the big rectangular concrete tanks where they were spawned; eggs were moved to incubators; fry were moved to troughs, which were "ponded" into sections; growing fish were moved to inside tanks, then outside tanks, then the rock-lined earthen ponds, then the rectangular concrete tanks again before release (Sanders 1996).

This operation was run with three workers. Family accommodations changed when the easternmost house was demolished to build the rectangular concrete tanks, and a mobile home was placed east of the garage-shop and shed (Humboldt County 1992). The houses, originally whitewashed, were painted red and reroofed in 1981. In 1988, the original, upper dam, no longer in use, was removed (Sanders 1996).

While the principal purpose of the facility continued to be a hatchery, with establishment of Redwood National Park around it in 1968, there was an increase in tourism, fishing, swimming and sightseeing in the 1970s. Redwood National Park built a footbridge across the creek on hatchery property to accommodate visitors. PCFH received thousands of visitors and was a regular part of school field trips in Humboldt County. In addition to its function as a hatchery, PCFH and its personnel took on the added role of serving as an interpretational and educational facility (Sanders 1996).

According to Report of Licensee filings, water quality was "marginal" in the mid-1970s but afterward improved (California State Water Resources Control Board 1977 and 1979). As this difficulty was overcome, however, funding problems emerged. The county provided funding until restricted by Proposition 13 in 1978; the Department of Fish and Game provided grants until 1990, when the funding criteria changed to require stream rehabilitation; and the County provided funding again in 1991 and 1992 (Rathjen 1992). Despite much favorable publicity and the efforts of private groups and public officials, PCFH closed 31 October 1992 (Frishberg 1991; Rathjen 1992; *Times-Standard* 1992; Humboldt County Board of Supervisors 1988; Bernay 1992). In less than a month, the fish, most of the furnishings and equipment, and the personnel, except for a caretaker, were gone. The mobile home was sold and moved away, and the sculpture of Indomitable was taken to the Arcata-Eureka Airport in McKinleyville (Bernay 1992).

Fish Hatchery Policy in California

From the earliest days of fish hatcheries in California, hatcheries have had two purposes. The act of the state legislature which established the Fish Commission in 1870 stated that the purpose was "to provide for the restoration and preservation of fish in the waters of the state" (Shebley 1927a:164). While the language of the act implied a fish conservation motive, the unstated, underlying purpose was to stock streams for sport fishing. Many streams and lakes had become depleted from overfishing and habitat changes, such as those caused by logging and hydraulic mining. California waters were stocked both with native fish and with exotics, imported from other parts of the United States, whose only purpose was sports fishing. The rise of sport fishing was associated with larger cultural developments, notably the rise of tourism and an interest in the outdoors, another manifestation of which was the establishment of the Sierra Club in 1892. In 1890, state officials persuaded the Southern Pacific Railroad to transport fish from hatcheries to streams for free because of its association with tourist travel on the railroad (Shebley 1927a:170). Sport fishing increased in the early 20th century with the introduction of the automobile, which provided larger numbers of sports fishermen with access to more streams and lakes in increasingly remote areas (Stickney 1996:132, 136).

Sports fishing was the first important reason for fish hatcheries, and it has continued to be one important reason throughout the history of hatcheries, up to the present day. Sport fishing has had a growing economic value to the state, from the generation of sales of fishing and camping equipment and traveling expenses; and, since 1913, the sale of fishing licenses. Today, the state takes in over $2,000,000 a year in fishing licenses, and it is estimated that billions of dollars in sales are added to the economy (Barracco 1997).

In the 20th century, other reasons arose for hatcheries which came to have equal or greater importance than sport fishing. The effect of hatcheries on commercial ocean fishing was long hard to quantify and the subject of debate during the late 19th and early 20th centuries. Then, in 1924, the U.S. Bureau of Fisheries began supporting hatcheries for that reason (Stickney 1996:134-135). In the late 1940s, mechanization of commercial fishing boats resulted in a substantially increased commercial catch. Today, private organizations of commercial fishermen pay the state to supply 4,000,000 salmon a year to augment ocean fishing (Barngrover 1997).

From the beginning, a secondary reason for hatcheries was for the conservation of fish species. The increased damming of streams for hydroelectric power, irrigation, and water supply in the early 20th century contributed to an enhanced recognition of the relationship between habitat changes and to a growing interest in conservation. For example, the Pit 1 hydroelectric facility in Shasta County was nicknamed "The Fish Killer" even before it was completed in 1921 (Hay and Corbett 1992:19-5). In 1934, new hatcheries were required by federal law to mitigate the losses caused by dams, an action regarded at the time as a conservation measure.

From 1947, when large amounts of money became available for the state hatchery program following passage of the Wildlife Conservation Act of 1947, to 1988, nearly all new hatcheries were built for mitigation purposes. This coincided with increased mechanism and a premium on economy and efficiency. Generally speaking, old, small hatcheries were closed, and larger,

modern ones were built. The emphasis of the hatchery program shifted in this period away from the support of sport and commercial fishing and toward mitigation (Barngrover 1997).

In 1988, the California Salmon and Steelhead Restoration Act and related federal legislation shifted the emphasis of the hatchery program and state policy toward fish preservation. New objectives, unrelated to those of the past, included the improvement of genetic strains through natural reproduction, and preservation or restoration of habitat, rather than focusing only on the supply of fish. Under this new policy, hatcheries have a diminished role (Barngrover 1997; Barracco 1997).

In summary, hatcheries were first built in California, beginning in the 1870s, primarily for sport fishing, and were associated with the development of tourism and economic development. From the mid-1920s, hatcheries were also developed to support commercial fishing. A major new reason for hatcheries was established in 1934, to mitigate for the losses created by dams. Support of sport fishing, commercial fishing, and mitigation continued as the primary objectives of the state hatchery program, influenced by trends toward mechanization, economy, and efficiency in the period 1934 to 1988. In 1988, state and federal policy shifted the emphasis of the hatchery program toward improving genetic diversity through natural reproduction and to conservation through habitat preservation, improvement, or restoration.

Fish Culture in California

With the tremendous boom in the population of California beginning with the Gold Rush in 1849, there was a rapid decrease in fish and other aquatic creatures from overfishing in some areas. In 1851, the state passed a law "concerning oysters and oyster beds"; in 1852 and 1854, laws were passed outlawing obstructions which inhibited salmon in streams; and in 1861, the first laws were passed protecting trout. The issue was first addressed in a comprehensive manner with the establishment of the California Fish Commission in 1870, and the authorization, in 1871, of a federal Commission of Fish and Fisheries for each state (Leitritz 1970:8).

The purpose of the California Fish Commission, consisting of three commissioners, was "to provide for the restoration and preservation of fish in the waters of the state." This was to be accomplished by the establishment of 'fish breederies' to stock and supply streams, lakes and bays with both foreign and domestic fish, to purchase and import spawn and ova, to employ fish culturists and other needed help, to construct fish ladders, and to distribute spawn and ova to fish breeders," and to provide for the conservation of fish (Leitritz 1970:8). The first work of the California Fish Commission was to import exotic trout and plant them in California waters. From 1871 to 1908, 15 species of trout were introduced to California. In 1882, striped bass were brought from Red Bank, New Jersey to Suisun Bay (Shebley 1927:166-169).

During the 19th century, "hundreds of lakes and streams were stocked" (Shebley 1927:169). Typically, small fish were carried in cans from the hatchery by rail. Various means were devised to keep the water in the cans cool and aerated. From the railroad, cans of live fish were carried by army ambulance wagon to the water where they were "planted." Or, if roads were not adequate for wagons, they were packed in on mules. After 1893, the California Fish Commission arranged for free delivery of its fish by the Southern Pacific Railroad. "As the demand for fish

increased with the ever-increasing population of the state and the capacity of the baggage cars on the different railroads was often overcrowded with fish cans", the commission obtained its own specially outfitted rail car in 1907. Beginning about that time, trucks became available for deliveries, and with the gradual construction and improvement of roads, transformed not only the delivery process, but the possibilities for locating hatcheries (Shebley 1927:171-172).

Over the years, the name and structure of the California Fish Commission changed. In 1909, the Board of Fish Commissioners became the Board of Fish and Game Commissioners, reflecting expanded responsibilities since 1878. In 1927, the Fish and Game Commission and several other state entities were joined together under the newly created Department of Natural Resources. Within the Department of Natural Resources there were four new divisions including a Division of Fish and Game under a new Fish and Game Commission. Within the Division of Fish and Game were nine new bureaus including the Bureau of Fish Culture which operated hatcheries; the Bureau of Patrol which planted trout; and the Bureau of Hydraulics which installed fish ladders. At that time there were 18 hatcheries and 20 egg collecting stations (Jordan 1928:177-181). Later, in 1952, the Division of Fish and Game became a separate department (Department of Fish and Game) outside the Department of Natural Resources (Leitritz 1970:9).

An essential aspect of the work of the California Fish Commission and its successors was the establishment of fish hatcheries. In the last quarter of the 19th and the first half of the 20th centuries, many stations were set up first with temporary facilities as "experimental" stations before being established on a permanent basis. Even so, many of these were closed within a few years of opening. Out of 169 experimental and permanent hatcheries and egg collecting stations established between 1871 and 1960, only 23 were still in operation in 1960. Among the problems encountered in establishing hatcheries, those associated with an adequate, year-round supply of clean, cool, aerated, low-nitrogen water were most important. Problems related to water quality included dams and other obstructions downstream and run-off upstream causing silt and affecting water quality and temperature. Although hatcheries went through a lengthy licensing process to take water from streams, the possession of a license was no guarantee that additional licenses would not be granted to others on the same stream for activities that would ruin conditions for the hatchery. Floods, fires, politics, and economics all posed dangers to established hatcheries as well (Leitritz 1970:10-14).

The first two hatcheries in California were established in 1870, and from 1870 to 1915, there was a steady pattern of construction of new hatcheries and egg collecting stations, with one or two opened in most years. The size and character of these facilities varied according to location, purpose, and period of construction. Beginning in 1913, fishing licenses were required in California, with the fees going to support the building of hatcheries and other work of the California Fish Commission. From 1916 to 1927, the pace of hatchery construction increased, with three to six new facilities opening in most years. One reason for this was the expanding use of trucks. In 1927, the year before PCFH was opened as an experimental facility, there were nine hatcheries operating "where the fish are planted by the hatchery foremen and crews by the use of trucks. These fish are always delivered in good condition as the trips are short and the fish are carried in trucks and can be given better care. These are mostly small hatcheries that are used to furnish a supply of fish for nearby streams and lakes" (Shebley 1927:172).

By 1927, the year that the Fish and Game Commission was given a new organizational framework within the Department of Natural Resources, funding sources had also expanded to include "hunting and angling licenses, commercial fishermen's licenses, trappers' licenses, commercial gun club licenses, tonnage tax on fish paid by fish canners and reduction plants, tags permitting the sale of domestically reared fish and game, domestic game and fish breeders' licenses, and fines imposed on fish and game law violators" (Jordan 1928:180).

In 1928, the year after this reorganization took effect, ten new hatcheries were established, the largest in any single year before or since. Then, from 1929 to 1934, a relatively high rate of new hatcheries opened each year, followed by the period from 1935 to 1942 when one or two hatcheries opened each year (Leitritz 1970:10-14). In 1934, Public Law No. 732 was passed by the U.S. Congress, requiring mitigation of the loss to fish caused by dams, resulting in a number of new hatcheries (Leitritz 1970:17).

During the war years, work "centered around an effort to maintain a normal program so far as war time limitations would permit" (California Department of Natural Resources 1945:9-14). "Hatchery and residential buildings suffered continued depreciation . . . when materials and labor were unavailable for normal upkeep," and plans were made "for extensive repair and remodeling" (California Department of Natural Resources 1947:41).

While the war limited work at the hatcheries, afterwards there was a boom and a reorientation of the program. In the immediate aftermath in 1945, "the lifting of gasoline restrictions contributed to a tremendous increase in the purchase of fishing licenses" (California Department of Natural Resources 1947:39). Soon, "it became apparent that a large amount of repair and new construction must be done in order to keep existing facilities in operation and to add to new hatchery facilities . . . It was hoped that with the enactment of the Wildlife Conservation Act of 1947 and the subsequent allocation by that board of $2,187,200 for fishery projects that a sound planned hatchery expansion and rehabilitation program could be undertaken" (California Department of Natural Resources 1951:73). Prior to 1947 and the funding that became available in that year, 150 hatcheries had been built. Under the new modernization program, the first small phases of three hatcheries were opened from 1947 to 1949 (Leitritz 1970:10-14; 74-76), but because the Division of Fish and Game relied upon the Division of Architecture, for its facilities, and was overwhelmed with war-deferred work, "It was not until 1950 that the Division of Architecture could undertake our first fish hatchery projects" (California Department of Natural Resources 1951:73). Even then, work "did not get underway as rapidly as expected" (California Department of Natural Resources 1953:21). From 1952 to 1959, eleven new hatcheries were opened (Leitritz 1970:10-14).

Post-war hatchery construction was different in character from and larger in size than hatcheries before the war. Until World War II, hatcheries were generally built to enhance sport fishing. Afterwards they were more often built as mitigation for dam construction. Whereas the state hatchery program had long included small hatcheries at remote sites, after the war small hatcheries were considered inefficient and were closed, and big new hatcheries were built. The old hatcheries were relatively labor intensive. The new hatcheries were increasingly mechanized. The old hatchery program focussed its efforts on raising and releasing fingerlings. The new

program grew larger fish before they were released. Until the 1950s, fish were fed ground meat. By 1960, meat was almost completely replaced by processed pellets.

At the time of the first phase of this transformation, "three of the older, outmoded hatcheries were abandoned." The abandoned installations were Prairie Creek Hatchery, Humboldt County; Kings River Hatchery, Fresno County; and Madera Hatchery, Madera County. "This brought to ten the total of outmoded hatcheries that have been closed during the modernization period" (California Department of Natural Resources 1957:35). The efforts to modernize were ongoing with a program of automation and modernization at the state hatcheries (*Outdoor California* September 1964). This was succeeded in the 1970s by a major effort to improve efficiency (Gunter 1996).

Today there are 27 state hatcheries in five regions. Many of today's hatcheries were established before 1946. However, even at the hatcheries established prior to World War II, buildings and structures date mostly from the 1950s and afterwards. In addition, there is one federal fish hatchery, Coleman National Fish Hatchery; it is located below Shasta Dam. PCFH was for many years the only county operated fish hatchery in California and the only one in the United States to raise anadromous fish (Sanders 1997). There are numerous small private hatcheries in California.

Architecture, Facilities, and Landscapes of Fish Hatcheries

Throughout their history in California, fish hatcheries have typically consisted of a number of built components: a hatchery building providing shelter for the hatching process; support buildings for storage, maintenance, and fuel; indoor and outdoor ponds for growing fish; pipelines and other facilities for delivery of suitable water to the hatchery; fish ladders and other features to facilitate the return of fish to a hatchery. Remote hatcheries and almost all hatcheries built before World War II had housing for a superintendent and workers. Hatcheries required access to transportation, to receive feed, eggs, and other supplies, and to ship fish. Until after 1900, this always meant access to a railroad. After 1900, this increasingly could mean automobile roads. Apart from lighting, heating, plumbing and other systems for the comfort of workers, electricity was used at hatcheries for pumps and other machines when it became available – from generators or by hookups to outside sources. Finally, all hatcheries have needed a reliable source of good water, which has usually meant a stream, but may also include wells.

A hatchery is a complex which includes all of these features. However, the way in which these features exist within individual hatcheries can take various forms: compact or spread out; small or large; plain in appearance or decorated; consist of the minimum of features or of many buildings, hydraulic features, and other equipment; lack any utilities or be dependent on electric power to run a variety of devices to move and treat water, feed fish, medicate fish, spawn fish, open and close gates, count eggs, weigh and grade fish (Leitritz 1976).

The key building in any hatchery facility is the hatchery building, a type of structure whose requirements for good light and unobstructed space for troughs, tanks, and water conduits have remained constant for a long time. Hatchery building interiors from 1915 (Mt. Shasta), 1936 (PCFH), 1953 (Lake Almenor), 1958 (unidentified), and 1973 (unidentified) were all large

rectangular, column-free rooms with bands of windows on outside walls (Leitritz 1965:78,114; *California Fish and Game* 1934:132). The Lake Almenor Hatchery appears identical to PCFH in construction and interior space. The exteriors of hatcheries built as early as 1881 suggest that the same type of space was already provided by that time (Leitritz 1970:17, 25). While old hatchery buildings can still serve modern needs, many have been replaced due to wear and tear, especially induced by constant overflows of water onto walls and floors. Floors have often rotted out of hatcheries (Will 1996).

Other buildings at hatchery facilities appear to have been ordinary examples of their times, whether garages, sheds, or houses. For example, the superintendent's residence at the first Tahoe Hatchery of 1896 was a saltbox in form, a typical inexpensive house of its day (Leitritz 1970:21); the residence at the Price Creek Hatchery of 1906 was a typical rectangular house with a hip roof and front porch (Leitritz 1970:25); the three houses at PCFH of 1936 were ordinary bungalows; and the four houses at Fish Springs Hatchery of 1952 were simple concrete block houses with gable roofs, and steel sash windows (Leitritz 1970:83). An exception was the Burney Creek Hatchery (closed 1949) of 1927, which incorporated housing for workers on the second floor of the hatchery building itself (Leitritz 1970:41; Shebley 1927:168).

Just as most of the buildings have been typical examples of their type in plan and construction, they have also been generally utilitarian in appearance and little decorated. The first Tahoe Hatchery (1896) and the Tallac Hatchery (1897) had vertical board and batten siding and no embellishments; the Brookdale Hatchery (1905) had a hip roof, horizontal siding, and a symmetrical arrangement of windows on the entrance facade – but no other decoration; the Fort Seward Hatchery, Fall Creek Hatchery, Kaweah Hatchery, Central Valley Hatchery, and PCFH buildings of the 1930s were all clad in ordinary rustic siding with a minimum of decorative trim; and buildings of the 1950s and later such as at Moccasin Creek, Darrah Springs, and Fish Springs hatcheries are industrial structures clad in corrugated metal siding (Leitritz 1970:passim).

While most early hatchery buildings were plain in appearance, a few, especially in the period 1910s to 1930s, received architectural embellishment from the Office of the State Architect who designed them. For most of these, embellishment was little more than shingled siding and composed facades or volumes which created a rustic appearance, such as at Burney Creek (1927), Fern Creek (1927), Big Creek (1927), and Feather River (1935). The Yosemite Hatchery (1927) represented an extreme case of this type with river rock walls and a log trellis (Shebley 1927:passim; Leitritz 1970:passim).

As designed, the Mt. Whitney Hatchery of 1917 and the second Tahoe Hatchery of 1920 were distinguished works of architecture (Leitritz 1970:21, 63). Both were rustic in materials and suggested northern European or Alpine models in image. Mt. Whitney was a long stone structure with a tower at one end whose top had half-timbered walls and a jerkinhead roof. The Tahoe Hatchery was dominated by a jerkinhead roof with eaves overhanging ground floor walls. It had a stone base and log porch columns.

Today, Mt. Shasta (1881) survives as an example of an early plain-looking hatchery and Mt. Whitney survives as a romantic image of a hatchery operation, among state hatcheries. The second Tahoe Hatchery building may survive, but it was closed as a hatchery in 1956. The

remaining state operated hatcheries were either built or largely rebuilt since the 1950s (Gunter 1996; Ellis 1996; Barngrover 1996; Haynie 1996; Corn 1996; Yamashita 1996). Among closed hatcheries, while no survey has been done, PCFH is the only one known to survive largely intact.

FINDINGS AND CONCLUSIONS

Significance

Summary

PCFH appears to be eligible as a district to the NRHP under criterion A at the State level of significance. The period of significance is 1936 to 1946. PCFH is significant as one of only three fish hatcheries known to both survive among 150 hatcheries built in California from 1871 to 1946 and to still possess integrity. PCFH was among the last built before a major state program of modernization and mechanization begun in 1947. Although built in the 1930s, it has more in common with 19th-century hatchery facilities than it does with those built after 1946. Attributes it shares with earlier hatcheries were its small size, localized region of release, design to hatch and release fingerlings, purpose to stock streams rather than mitigate dam construction, provision of housing for workers, dependence on simple technology with minimal need for power, and funding through fishing licenses and related fees.

Criterion A

Under criterion A, PCFH could possibly be significant for its association with a pattern of events, either in relation to the efforts of the Department of Fish and Game (DFG) and its predecessors, or in relation to the economic development or social life of Humboldt County.

Under criterion A, in relation to the economic development or social life of Humboldt County, PCFH appears to have been a relatively minor enterprise during the years of state operation (1936 to 1955). During those years the lumber industry boomed in nearby Orick and in the county generally. PCFH employed a maximum of eight people. PCFH was the principal provider of stocked fish for local streams, but little information has been developed to show what that meant in terms of a sport fishing industry. Later, PCFH had relatively greater local importance. (From 1970s to 1992, PCFH was the only county operated anadromous fish hatchery in the United States.) As logging declined, it held a more conspicuous position in the local economy and local life. From the 1970s to early 1990s, it was an effective producer of fish. In response to recurring threats to close it from 1978 until it finally closed in 1992, many arguments were developed for its local significance. However, its entire history as a county facility took place within the last 39 years. Under the criteria of the NRHP, if a property is less than 50 years old, it must possess exceptional significance under criteria consideration G in order to be eligible. PCFH does not appear to possess exceptional significance, and it does not appear eligible under criterion A for its local role in the economic development and social life of Humboldt County.

Under criterion A, in relation to the fish hatchery program of the DFG and its predecessors, PCFH is a rare surviving representative of an important early phase of hatchery history. Hatcheries have been developed in three periods in California. Hatchery facilities were similar in Period I (1871 to 1915) and Period II (1916 to 1946) in many ways. They were low technology enterprises with minimal requirements for power. Most were small and in isolated locations, so required housing for workers. They were designed to release small fish, they were paid for by fishing licenses and related fees, and most were built for the purpose of stocking

streams for sport fishing. Period I was dependent on railroads for the delivery of fish. Period II was dependent on trucks for delivery. New hatcheries were freed to locate away from railroads. Period III (1947 to present) was very different from Periods I and II. Most new facilities were built as mitigation for dam construction and were paid for by federal and state agencies outside DFG. The facilities were large, modern, highly mechanized, and dependent on substantial amounts of electrical power. They provided less housing for workers, who commuted in automobiles like other Americans. New facilities and remodeled old ones were designed to raise larger fish before they were released.

PCFH is one of only three fish hatcheries to survive intact, among 150 built in the state, from the first two phases of fish hatchery development. It was among the last built before a major program of modernization and mechanization began with Period III in 1947.

Although built in the 1930s, PCFH has more in common with 19th-century hatcheries than it does with those built after 1946. Attributes it shares with earlier hatcheries were its small size, localized region of release, design to hatch and release fingerlings, purpose to stock streams rather than mitigate dam construction, provision of housing for workers, dependence on simple technology with minimal need for power, and funding through fishing licenses and related fees.

Criterion C

Under criterion C, PCFH could be eligible if it "embodies the distinctive characteristics of a type, period, or method of construction" or "represents a significant and distinguishable entity whose components may lack individual distinction," as an example of a fish hatchery complex.

A generic fish hatchery is a facility which includes both buildings and water supply structures. The building complex at PCFH possesses a high degree of integrity, but key elements of the water supply system have been lost (all but a fragment of the dam and all but a portion of the pipeline). Under criterion C, there is a loss of integrity of design, materials, workmanship, and feeling. PCFH appears ineligible for the NRHP under criterion C.

Integrity

Although there have been a number of changes to the facility, under criterion A, integrity is maintained, when it is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior 1991:44). The principal losses of historic fabric (the removal of the upper dam and reservoir) have occurred upstream, away from the highway, hidden in the forest. The main group of buildings at PCFH, which possesses a high degree of integrity, is highly visible due to its location on U.S. Highway 101. This group of buildings represents PCFH and its operation to the public, and, in turn, these buildings represent PCFH's association to the history of DFG.

In terms of the seven aspects of integrity, PCFH possesses a high degree of integrity of location and association. Integrity of setting is diminished somewhat by the expansion of the facility in the 1960s and 1970s to the south of the original development on the 6.2-acre parcel. The larger setting of forested hillsides and stream course remains intact. Integrity of feeling is diminished

by the removal of the circular driveway, construction of the Dedication Pond and addition of asphalt paving; by the loss of most of the pipeline and the upper dam; and by painting of the originally whitewashed buildings dark red. At the same time, the group of buildings retains a high degree of integrity. The group of buildings contributes strongly to integrity of feeling. In a similar way, integrity of design, workmanship, and materials is diminished by the alterations of the water supply system including demolition of the third house and the cabin across the creek. The integrity of design, workmanship, and materials is also diminished due to the removal of the original unpaved entry drive and the addition of asphalt paving. However, at the same time, the features which remain from the period of significance possess a high degree of integrity in these areas. The losses of the third house and the cabin are ameliorated by the survival of two houses. These surviving houses maintain the original plan of buildings and spaces and the idea that housing was an integral part of a hatchery complex during this period; the people who worked at the facility also lived there. The loss of the original circulation system involved little loss of material and could be easily restored. The most important loss is in the water supply system. At the same time the buildings represent the life of PCFH, have always been the primary public aspect of the facility, and remain largely intact. In short, this group of buildings conveys the significance of the property under criterion A.

Boundary Definition and Justification

The boundaries of the PCFH historic district are those of the 6.2-acre parcel on the east side of U.S. Highway 101. This parcel contains all the surviving components of the PCFH facility during the period of significance (1936 to 1946). Within the boundaries of the historic district, there are both contributing and noncontributing features (See Figures 2 and 3).

East of the 6.2 acre parcel, the pipeline, the upper dam, and the pond behind the dam are no longer in existence. Therefore, the curvilinear right-of-way and the footprint of the upper dam are excluded from the boundaries of the district.

Contributors and Noncontributors

The following table provides the list of contributing and noncontributing features in the PCFH historic district.

Names	Date of Construction	Contributor	Noncontributor
Hatchery	1936	X	
Superintendent's House	1936	X	
Assistant's House	1936	X	
Sidewalk south of houses	ca.1936-1943	X	
Garage-Shop	1936	X	
Shed	1936	X	
Pipeline Crossing	1936	X	
Five Round, Concrete Tanks	ca.1936-1943	X	
Aeration Tower	ca.1962-1965		X
Raised, Rectangular, Concrete Tank	ca.1973		X
PG&E Pole	ca. 1962		X
Dedication Pond and associated retaining walls	ca.1962		X
Lower Dam	1969-1971		X
Footbridge, Fence, Picnic Table (Visitor Facilities)	after 1968		X

RECOMMENDATIONS

Recommendations related to planning, resource management, and interpretation include the following:

Further Recordation and Documentation of the PCFH Facilities

The windows in the buildings at PCFH were boarded up during the field survey for this project. Interior photographs should be taken of the buildings with the boards removed. This would be particularly important in the Hatchery. Also more detailed photographs should be taken of the interior of the Hatchery to document the fish hatchery process (wooden troughs, wooden tanks, etc). Historic American Engineering Record (HAER) recordation and the accompanying large format photography would seem to be an appropriate method of providing further recordation and documentation of the PCFH facilities.

Oral Histories

In the course of our research, we spoke to several individuals who had lived and worked at PCFH during its period of significance. To add to the information on PCFH and to aid in interpretation, oral histories should be conducted with these individuals. Suggested individuals include: Florine Buchert and William Laidlaw who lived at PCFH in the 1940s when their father was employed there; Glen Nash who worked on the construction of the PCFH in 1928 and in 1935; Glen Smedley who lived at PCFH between 1943 to 1949 when his father was superintendent of the facility; Bob Will who worked at PCFH in 1955; and Steve and Joanne Sanders who lived and worked at PCFH from 1971 to 1992.

Copy Photographs

Several individuals who were interviewed as part of this project mentioned that they had personal photographs of PCFH taken during the time they lived or worked at the facility. These individuals should be contacted and copy photographs made of some of these photographs to add to the recordation of PCFH. These photographs could also aid in the interpretation of the facility, either in the restoration of the facility to its former appearance during the period of significance or in use in interpretive displays, etc. Mrs. Florine Buchert and Mr. Bob Will are among the individuals who should be contacted concerning photographs. Mrs. Buchert, daughter of Jim Laidlaw an employee at PCFH in the 1940s, lived at PCFH in the 1940s. Mr. Will has taken photographs of hatcheries throughout the state and possibly has photographs of PCFH; Mr. Will worked at PCFH in 1955.

Inventory and Historic Context of Fish Hatcheries in California

An inventory and more complete historic context of state fish hatcheries would provide a better understanding of PCFH's role within the state system.

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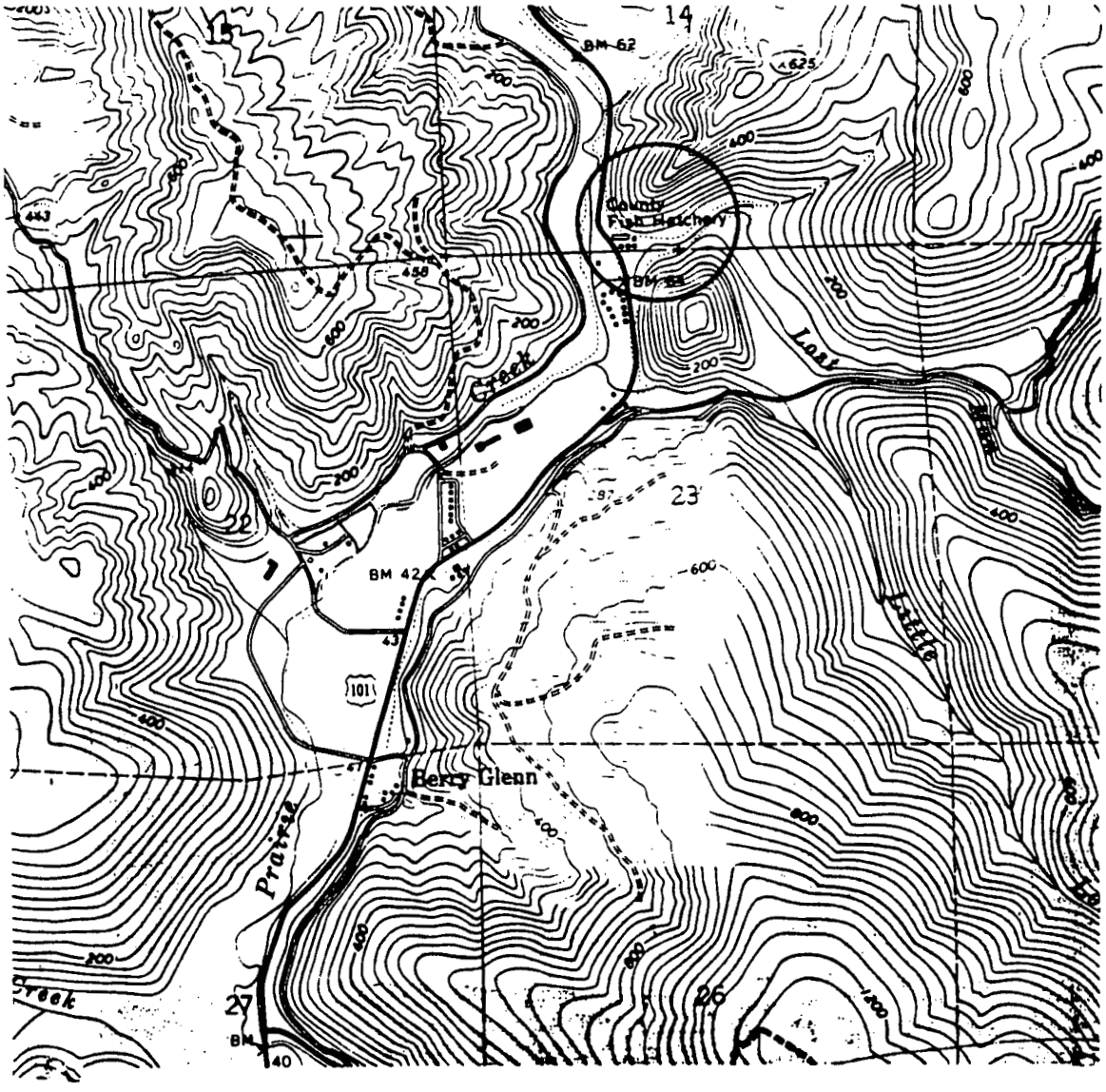
FIGURE 1 - USGS Map

Orick Quadrangle (1:24,000) 1966 Photoinspected 1975