

FINAL REPORT

**Yonkers Creek
Migration Barrier Removal Project
Wonderstump Road
Del Norte County**

Submitted By:

**Del Norte County
Community Development Department**

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SECTION 1

DESCRIPTION OF CONDITIONS BEFORE PROJECT WAS EXECUTED

Yonkers Creek is located in Del Norte County and is a tributary to Lake Earl (T17N, R1W, Sec. 34) (Figures 1 & 2). It is well documented as a valuable tributary to Lake Earl and according to the California Department of Fish and Game (CDFG), all native salmonid species have been found there. The metal culvert at Wonderstump Road was a migration barrier to adult and juvenile species of salmonids (Figures 3& 4). The replacement aluminum arch culvert is 30-feet long with a cross-sectional diameter of 28.3 square feet, constructed of corrugated steel. Under the culvert are two water mains, a 12-inch and a 24-inch diameter culvert. These are the main distribution water lines for the City of Crescent City.

The Yonkers Creek culvert had high winter flow velocities and low summer flows. The outlet of was elevated approximately three feet (Figures 3 & 4) above the water surface, creating a jump barrier for juveniles. The combination of height and velocities within the culvert resulted in a migration barrier to the upper reaches of Yonkers Creek, which originates within the boundaries of Jedediah Smith Redwoods State Park. A study prepared by CDFG in 1975 recognized Yonkers Creek as essential habitat for the maintenance of salmonid populations for Lake Earl.

The project site location is approximately five miles east of Crescent City on Wonderstump Road, a well traveled County maintained road (Figure 2). The project site was well within the County right-of-way and minimal offsite work occurred.

SECTION 2

DESCRIPTION OF THE RESTORATION & PLANNING TECHNIQUES UTILIZED

This project was consistent with the adopted Local Coastal Plan, the County General Plan, and State goals of protecting and enhancing resource habitats. The stream corridor for Yonkers Creek is well established, with substantial riparian vegetation upstream and downstream of the project site. The upstream and downstream property owner signed an access agreement for any work on this project that encroached upon his property. An adjacent property owner, and closing the road within the project area, provided adequate room for equipment operation, storage, water treatment, and general access to the project site.

A Stream Alteration Agreement was obtained from CDFG as was a Coastal Grading Permit. County Planning Staff completed compliance with the California Environmental Quality Act (CEQA). The Regional General Permit for Fish Passage/Sediment Reduction Projects at Water Crossings (RGP 1) from United States Army Corps (Corps) was also obtained by CDFG.

The final project was designed to provide for natural channel conditions, allowing for year-round unobstructed fish passage and increased fish habitat. Removing this barrier allows access to over 9,000 feet of historical salmonid spawning and rearing habitat. The original project design consisted of removing the culvert and replacing it with bridge. The design was changed to a constructing a natural bottom aluminum arch culvert with grade control at the outlet, allowing the City of Crescent City's water lines to cross Wonderstump Road. The grade control allows backwatering of the new structure during low flows, permitting anadromous fish to swim

upstream year-round. The upstream and downstream disturbed streambanks were revegetated and bioengineering techniques were utilized for erosion control.

Wonderstump Road is a public roadway that is used by the school district to bus students to and from school throughout the school year. Temporary closure of the road in the project area, while school was in session, would have forced the school bus to un-safely detour onto Highway 101 due to the lack of a left turn lane. To avoid potential danger for the school bus traffic, it was essential to have the project completed by the beginning of the school year.

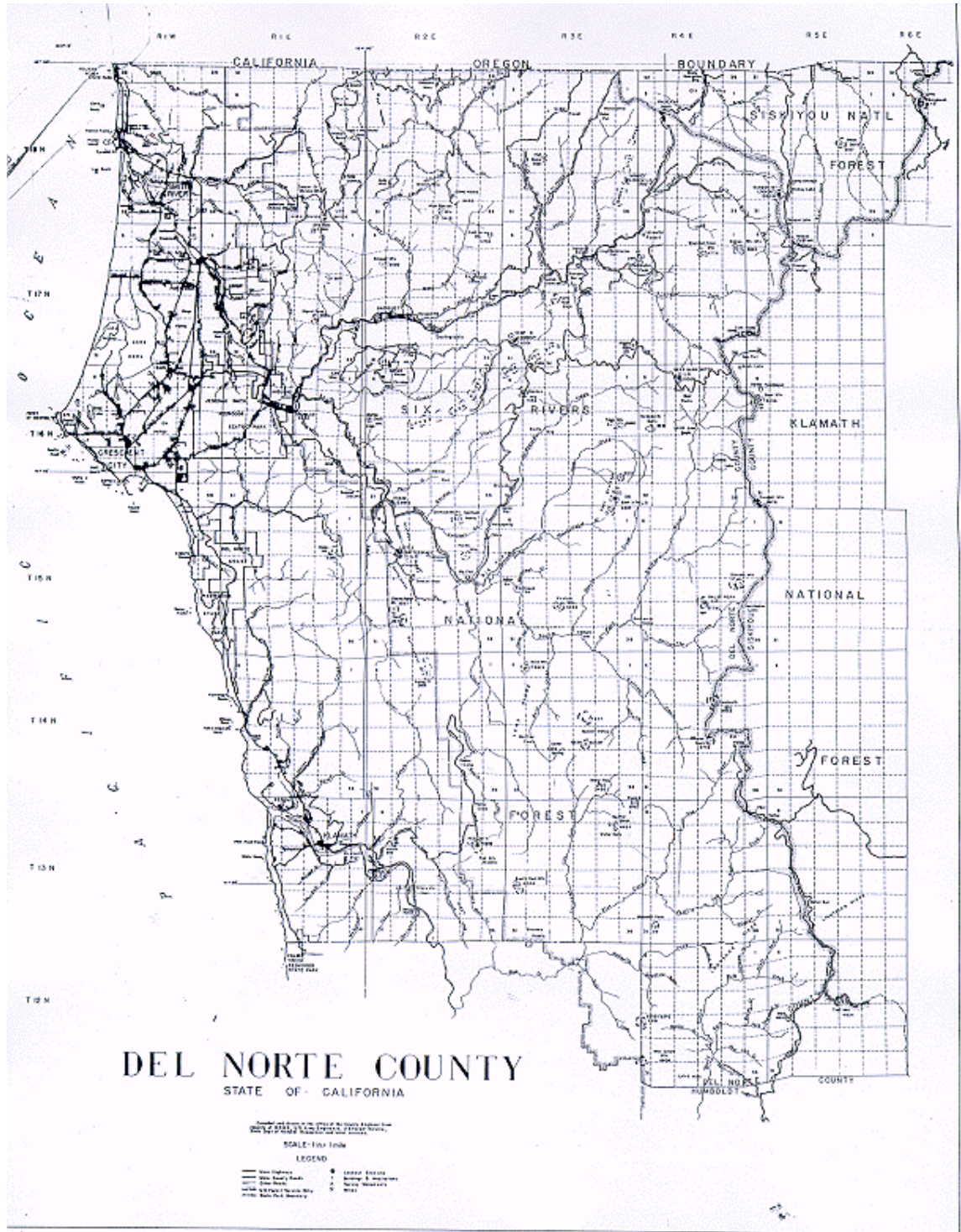


Figure 1 – Map of Del Norte County, California

PROJECT VICINITY MAP

LAKE EARL / JORDAN CREEK / REDWOOD NATIONAL PARK

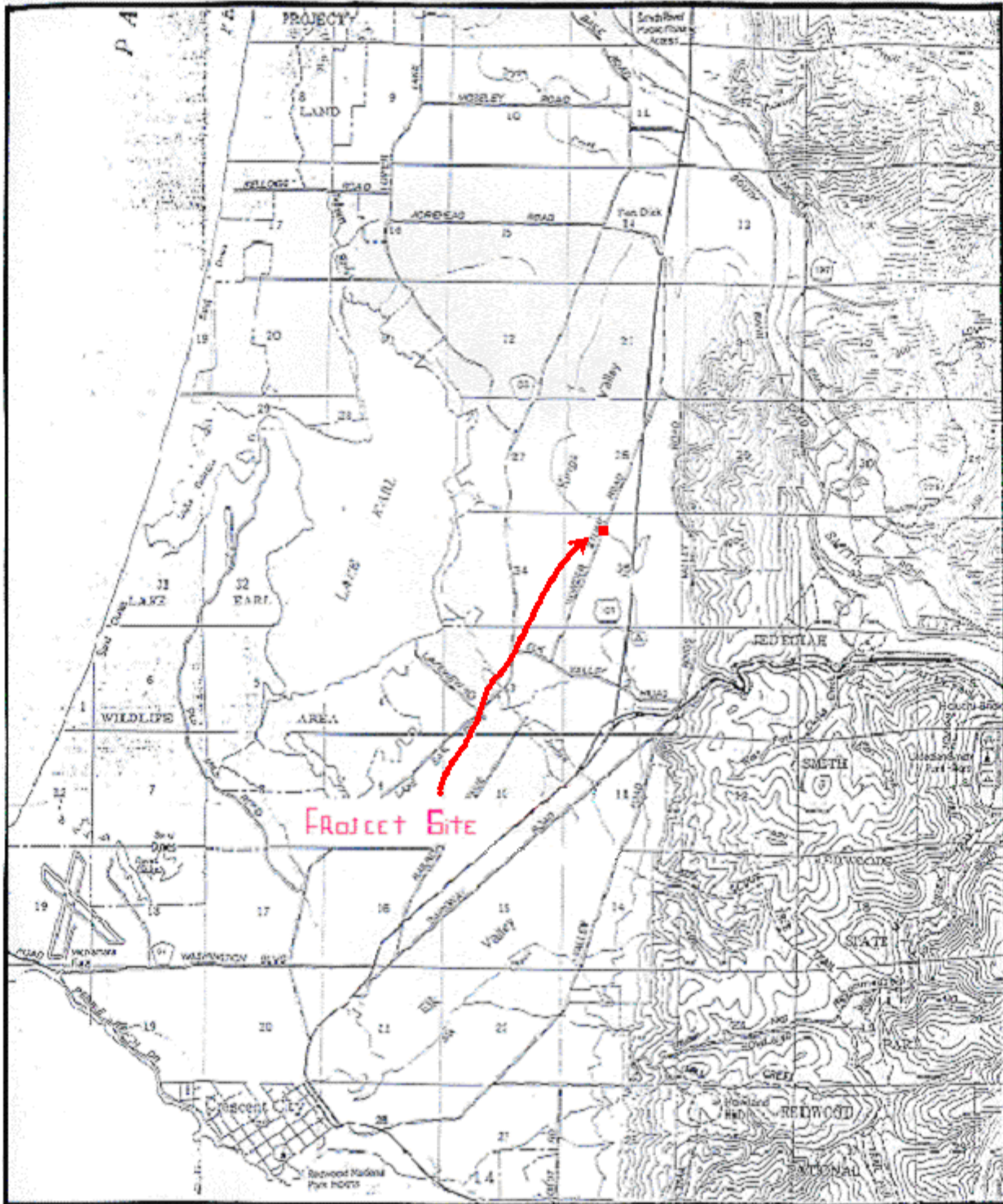


Figure 2 – USGS 7.5 minute topographical map illustrating location of project site

**SECTION 3
DESCRIPTION OF THE RESULTS OF THE PROJECT**

The Wonderstump Road/Yonkers Creek culvert was the County’s last high priority project for fish barrier removal and unfortunately, the County needed to get a one-year extension from CDFG in order to complete the project. The reasons for the extension are as follows:

1. The City of Crescent City had no extraction plan for the 40,000 gallons of chlorinated water within the 12-inch water line that needed to be removed before the pipe was relocated.
2. While pot-holing the location of the 24-inch water line, ground water was observed to be extremely high (seven feet above the sub-excavation elevation), probably due to the high rainfall at the end of the spring season.
3. It was also observed that the 24-inch water line was serving as a conduit for ground water and because of the pipes location at the Yonkers Creek crossing, it would have been draining over two miles of roadway ditch delivery.
4. The bridge manufacturer would not have the bridge delivered by the August 16, 2005 targeted delivery date.
5. Several major projects were scheduled to be completed in 2005, creating a staff shortage in the Road Department.

CDFG granted the County the extension and while preparing for the next construction season, the design was changed from a bridge to an arch culvert, which was the original concept in the CDFG grant proposal. The City agreed to install a portable water bypass line and relocate the 12-inch and 24-inch water lines over the top of the new arch culvert. In addition, the Five Counties Salmonid Conservation Program obtained grant funds to help pay for the relocation of the portable water lines.

Before commencing the project, County staff requested, and was granted, permission from the Board of Supervisors to temporarily close a section of Wonderstump Road at the project site (Star Trek Drive to Donna DeClue Road) from July 17 through September 18. On July 11, 2006 Ross Taylor and Chris Katopothis of Ross Taylor and Associates, arrived at the project site and relocated fish from the site using electrofishing equipment and moved the captured salmonids down stream of the work area. Several Coastal cutthroat and steelhead trout were relocated downstream of the fish exclusion fencing (Chart 1). Fish exclusion fences were up and downstream of the project site. The upper screen (hardware cloth – 36” high with 1/16” mesh, supported by two 48” long T-posts) was placed approximately 30’ upstream of the culvert inlet. The lower fish exclusion screen of hardware cloth was placed at the tail-out of the first riffle downstream of the culverts outlet pool.

Chart 1 – Summary of Species Relocation

Section within project area	Trout - Young-of-Year	Coastal Cutthroat Trout – 1+ Age Class	Coastal Cutthroat Trout – 2+ Age Class	Prickly Sculpin	Three-spined Stickleback	Lamprey Ammocetes
Channel						

upstream of Culvert	34	3	1	0	5	1
Channel downstream of Culvert	39	8	1	3	16	1
TOTALS	73	11	1	3	21	2

After placement of the fish screens, a gravity bypass system was installed, along with silt fencing to protect water quality during construction. The potable water bypass system was installed and the 12-inch and 24-inch water lines were removed. Once the subgrade for the new arch culvert was established, County road crews installed the aluminum arch culvert. This particular culvert has aluminum footings, which helped speed up the work process. Because of the County's past experience with aluminum arch culverts (Jordan Creek at Parkway Drive, 2000); the footings were encased in concrete to assure no shifting prior to arch installation and bolting. Afterward, the 24-inch and 12-inch potable water lines were reinstalled along side the arch culvert and were backfilled. The roadway was reopened with a gravel road surface and later surfaced with asphalt concrete. The final road treatment was installation of the guardrail system.

The County's next sequence of work was revegetation of the project area, and installation of the downstream grade control and bioengineering structures to stabilize the streambanks.

Habitat Protection and Restoration Projects – Reporting Metrics

- Ross Taylor's Del Norte County Culvert Inventory and Fish Passage Evaluation (March, 2001) was used to identify the watershed and priority.
- Access to 2 miles of priority spawning and rearing habitat for adult steelhead and adult Coastal cutthroat trout and all juveniles.
- Photo points and longitudinal profiles are the types of monitoring techniques that will be utilized to evaluate the success of this project.
- No trees were planted, but it is presumed that several redwood trees in the area will propagate within the rich soils of the project area.



Figure 3 – Migration Barrier Yonkers Creek Outlet



Figure 4 – Inlet of Yonkers Creek



Figure 5 – Final Project Yonkers Creek

Project Budget is as Follows:

County Engineering Staff	\$32,093.26
County Road Staff, Equipment, and Materials	\$164,611.19
Crescent City Labor and Materials for Water Line Relocation	\$52,780.12
Big R Culvert (including transportation)	\$48,404.77
Guardrail System (material and labor)	\$18,697.029
Bioengineering/Revegetation	\$504.30
Rental Equipment	\$172.00
Construction Material (gravel and riprap)	\$26,870.10
Fish Nets	\$160.94
Geotechnical and Hydrology Consultants	\$13,900.00
Bypass Water System	\$5,377.58
Concrete (including pump truck)	\$2,992.34
Asphalt Concrete and Road Stripping	\$17,090.73
Permitting	\$1,061.46
Project Sign	\$1,982.95
Temporary Sanitation	\$304.05
TOTAL PROJECT COSTS	\$ 390,163.10

Funding for this project over a two-year period came from the following sources:

- CDFG Fisheries Restoration Grant Program **\$271,560.00**
- Coastal Conservancy Funds (engineering & construction) **\$91,987.39**
- Crescent City Water Funds **\$9,296.20**
- Del Norte County Road Funds **\$17,319.51**

The Yonkers Creek Migration Barrier Removal Project success is due to the following institutions, organizations, and individuals:

- Del Norte County Board of Supervisors
- California Department of Fish and Game
- Five Counties Salmonid Conservation Program
- Del Norte County Road Division
- Crescent City Public Works Department
- Del Norte County Community Development Department
- Michael Love & Associates
- Taber Consultants
- California Department of Corrections
- Del Norte County Planning Commission
- United States Army Corps of Engineers
- California Coastal Conservancy