



US Army Corps
of Engineers.

SAN FRANCISCO DISTRICT

PUBLIC NOTICE

NUMBER: 24845N DATE: 15 March 2000
RESPONSE REQUIRED BY: 17 April 2000

Regulatory Branch
333 Market Street
San Francisco, CA 94105-2197

PROJECT MANAGER: Peter Straub TELEPHONE: (415) 977-8443 E-Mail: pstraub@spd.usace.army.mil

1. **INTRODUCTION:** The Sonoma County Water Agency (SCWA), P.O. Box 11628, Santa Rosa, California 95406 (POC: Jon Niehaus, 707-547-1943), has applied to the U.S. Army Corps of Engineers (USACE) for a permit to construct a fish ladder on the Healdsburg War Memorial Dam. The dam is located on the Russian River, approximately 500 feet north of the Highway 101 overpass, in the City of Healdsburg, Sonoma County, California. This individual permit application is being processed pursuant to the provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. **PROJECT DESCRIPTION:** As shown in the attached drawings, the SCWA proposes to construct a Denil-type fish ladder on the downstream face of the dam. Project construction would occur during the low-flow period of June 1 to October 1, 2000. During the construction period, removable flashboards on the dam would not be installed to enable water diversion around the project area. In subsequent years, flashboard installation would be delayed from May 20 to June 26 to enable the completion of adult shad migration. When the flashboards are installed between June 26 and late September, the fish ladder would be inoperable. Project construction would cause temporary disturbance to 1.45 acres of jurisdictional waters and permanent disturbance to 0.25 acre of jurisdictional waters and 0.10 acre of jurisdictional wetlands.

The project would include the following construction activities:

Construction Yard and Street Access: A new access road would be constructed from Healdsburg Avenue to the parking lot at the Healdsburg Veterans' Memorial Beach to reduce conflict with park operations. A temporary construction yard would be located in the parking lot to serve as parking space for vehicles and equipment, a material storage area, and an equipment maintenance facility. Chain-link fencing would be installed around the construction yard and dam site to provide security and public safety.

Access Road to Dam Site: A temporary access road, 15 feet wide and 160 feet long, would be constructed on the downstream face of the dam by placing imported gravel around and over existing boulders until a firm base is achieved. The temporary access road would be eventually converted to a permanent access road by placing a 6-inch thick fiber mesh concrete topping over the base material. The access road would

require the discharge of approximately 625 cubic yards (cys) of aggregate base material and 45 cys of reinforced concrete below the plane of ordinary high water (OHW).

Site Preparation: A gravel cofferdam, approximately 8 feet wide and 430 feet long, would be constructed around the dam site to minimize sediment mobilization and downstream turbidity during construction. The gravel fill would be obtained from an off-site Russian River source. The cofferdam would require the discharge of approximately 3,510 cys of fill material below of the plane of OHW. After installation of the cofferdam, approximately 1,570 cys of substrate and boulders would be removed below the dam to allow installation of sheet pile around the perimeter of the proposed fish ladder. Excavated boulders would be placed along the toe of the cofferdam to deter erosion; excess material would be hauled to a certified landfill or an area outside of USACE jurisdiction. Sheet piling would be then installed upstream of the dam and around the fish ladder subgrade to allow de-watering of the project area.

Fish Ladder Construction: The fish ladder subgrade would be excavated to attain the foundation design elevation, removing approximately 120 cys of substrate material. Excavated gravel would be stockpiled and then used as backfill material. Excavated fines, including sands and silts, would be hauled to a certified landfill or an area outside of USACE jurisdiction. The fish ladder structure would be then constructed by installing piles in the foundation subgrade, erecting formwork, and pouring concrete. The reinforced concrete and steel fish ladder would be approximately 38 feet wide and 140 feet long, consisting of 13 concrete steps or bays (with space for an additional bay if erosion were to occur at the base). Each bay would consist of two sidewalls, a weir and baffle between the sidewalls, and a gate to enable the discharge of entrapped sediment. A 30-inch diameter polyethylene bypass pipe would be installed to provide high velocity water flow to induce migrating fish to use the fish ladder. A series of 3-foot high concrete training walls would be constructed to divert water into the bypass pipe and fish ladder. Steel grating would be installed over the invert to prevent accidental entry of people and other objects. Grouted rip-rap would be placed at a 2:1 slope along the sides of the fish ladder to prevent erosion. The fish ladder structure would require the discharge of approximately 545 cys of reinforced concrete, 285 cys of aggregate base material, and 400 cys of grouted rip-rap below the plane of OHW.

Site Restoration: Sheet piling installed upstream of the dam would be removed; sheet piling installed around the fish ladder subgrade would remain in-place, becoming an integral part of the structure. Gravel from the cofferdam would be removed to within 1 foot above the existing water surface elevation and hauled off-site; remnant gravel would remain in-place until displaced by winter high-flow events. Boulders placed along the toe of the cofferdam would be moved to an erosional area downstream of the fish ladder. Boulder relocation would require the discharge of approximately 135 cys of fill material below the plane of OHW. To compensate for 0.10 acre of wetland loss, approximately 0.30 acre of riparian habitat would be established on the west bank across from the park and maintained by the SCWA for a 3-year period.

3. PURPOSE AND NEED: The Healdsburg War Memorial Dam is a 330-foot long concrete sill that supports a hinged steel frame and removable 7-foot high flashboards. The dam was constructed in 1953 for recreational purposes. Since the 1950s, the dam has experienced several washouts and severe downstream riverbed degradation, necessitating the placement of rock slope protection below the sill to maintain dam stability. The degradation and placement of rock slope protection have blocked passage of American shad, thereby eliminating 20 miles of upstream spawning habitat in the Russian River Basin, and may be temporarily delaying passage of other anadromous fish species. After a series of unsuccessful attempts to address this problem, the California Department of Fish and Game ordered the County of Sonoma to construct a fish ladder, pursuant to a Settlement Agreement executed in March 1993. Construction of the fish ladder would, therefore, satisfy the Settlement Agreement, enabling upstream passage of American shad and enhancing upstream passage of coho and chinook salmon, and steelhead.

4. STATE APPROVALS: State water quality certification or waiver is a prerequisite for the issuance of a permit to conduct any activity which may result in a fill or pollutant discharge into waters of the United States, pursuant to Section 401 of the Clean Water Act (33 U.S.C. 1341). The SCWA is hereby notified that, unless the USACE is provided a valid request for State water quality certification by the Regional Water Quality Control Board (RWQCB) within 30 days of the date of this Public Notice, the District Engineer may consider the permit application to be withdrawn. No permit will be issued until the applicant obtains the required certification or waiver. A waiver will be explicit, or it may be presumed if the State fails or refuses to act on a valid request for certification within 60 days of receipt, unless the District Engineer determines a shorter or longer period is reasonable for the State to act. Water quality issues should be directed to the Executive Officer, Regional Water Quality Control Board, North Coast Region, 5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403, by the close of the comment period.

The project is not subject to the jurisdictional purview of the San Francisco Bay Conservation and Development Commission or the California Coastal Commission.

5. PRELIMINARY ENVIRONMENTAL ASSESSMENT: The USACE has assessed the environmental impacts of the project in accordance with the requirements of the National Environmental Policy Act of 1969 (Public Law 91-190), the Council on Environmental Quality's Regulations at 40 CFR 1500-1508, and USACE Regulations at 33 CFR 230 and 325. Unless otherwise stated, this preliminary Environmental Assessment describes only the direct, indirect, and cumulative impacts which would result from regulated activities within the jurisdiction of the USACE.

The Preliminary Environmental Assessment has resulted in the following findings:

Impacts To The Physical Environment:

a. **Substrate:** Excavation of the fish ladder foundation would lower the substrate elevation up to 5 feet over 0.18 acre of river channel. Subsequent construction of the fish ladder and access road would replace native material with imported aggregate, reinforced concrete, and grouted rip-rap, raising the substrate elevation up to 7 feet over 0.35 acre of river channel and wetlands. Boulder relocation to an area downstream would raise the substrate elevation up to 3 feet over 0.10 acre of river channel. Construction of the temporary gravel cofferdam would raise the substrate elevation up to 12 feet over 0.50 acre of river channel. After project construction, gravel from the cofferdam would be removed to within 1 foot above the water elevation and hauled off site; remnant gravel would be subsequently scoured by winter high-flow events and deposited downstream. In view of the limited aerial extent and temporal nature of specific disturbances, adverse project impacts on substrate alteration would be short-term and long-term in duration and minor in magnitude.

b. **Streamflow and Drainage Patterns:** Project construction would involve the use of a gravel cofferdam to de-water approximately 1.45 acres of river channel upstream and downstream of the dam. During the summer construction period, the flashboards would not be installed and river flow would be diverted over a 90-foot reach of the dam at the west abutment. After project completion, the cofferdam would be breached to re-establish normal flow conditions. In view of the temporal nature of this disturbance, adverse project impacts on river flow would be short-term in duration and minor in magnitude.

c. **Water Quality:** Construction of the cofferdam would cause localized erosion and sedimentation, thereby increasing turbidity and reducing dissolved oxygen levels in the water

column downstream of the dam. The affected water column would return to an ambient condition shortly thereafter. The cofferdam, in turn, would contain sediment generated by other construction activities and prevent further downstream turbidity during the construction period. In view of the temporal nature of this disturbance, adverse project impacts on water quality would be short-term in duration and minor in magnitude.

d. **Air Quality:** Project construction activities and operation of construction equipment would generate various air pollutant emissions, including fugitive dust, carbon, nitrogen and sulfur dioxides, and reactive organic gases. In view of the limited construction period, air pollutant emissions attributed to project construction would cause adverse but short-term and minimal impacts to ambient air quality.

e. **Noise Conditions:** Equipment operation, pile driving, and other construction activities would generate noise that could be audible from the park. In view of the limited construction period, noise emissions attributed to project construction would cause adverse but short-term and minimal impacts to ambient noise levels.

Impacts To The Biological Environment:

a. **Wetlands (Special Aquatic Site):** Construction of the access road and fish ladder would displace approximately 0.10 acre of wetlands comprised of several shrubby willows (*Salix sp.*) which have become established on the downstream face of the dam. This vegetation has been subject to frequent past disturbance and provides little habitat value due to the lack of a substantial canopy structure and production of organic debris as a food source. Various sedges (*Carex nudata*), rushes (*Scirpus acutus*), and other herbaceous vegetation have become established in a backwater area downstream of the dam; this wetland habitat would be temporarily enclosed by the cofferdam but remain undisturbed during construction. Since opportunities for creating similar wetland habitat do not exist in the project vicinity, the SCWA is proposing to establish approximately 0.30 acre of riparian vegetation on the floodplain terrace of the west bank, directly across from the park. Non-native grasses and herbs that cause a "gap" in the riparian corridor dominate this site. Mitigation plantings would include coast live oak (*Quercus agrifolia*), California black walnut (*Juglans californica*), Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*), blue elderberry (*Sambucus mexicana*), western spice bush (*Calycanthus occidentalis*), and other species. Considering the limited habitat value and area of wetland disturbance, adverse project impacts on wetland habitat would be long-term in duration but minor in magnitude. The loss of wetland habitat would be adequately compensated through the establishment of riparian habitat.

b. **Pool and Riffle Areas (Special Aquatic Site):** A 0.70-acre riffle complex is located approximately 550 feet downstream of the dam but would not be impacted by construction activities or operation of the fish ladder.

c. **Riparian Vegetation:** Riparian vegetation occurs as discontinuous stands on floodplain terraces above the active river channel. This vegetation is characterized by Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), narrow-leaf willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), and other species. Riparian vegetation typically provides breeding and foraging habitat for amphibians, reptiles, waterfowl, shorebirds, and small mammals. Project construction may necessitate the removal of a few trees to allow equipment access to the dam. Tree loss would be minimized to the extent practicable, and temporary fencing would be installed along the access right-of-way to protect remaining vegetation. Considering the limited area of habitat disturbance and the adequacy of proposed mitigation for wetland loss, adverse project impacts on riparian habitat would be long-term in duration but minor in magnitude.

d. **Endangered Species:** Naturally spawned populations of coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss*), and chinook salmon (*Oncorhynchus tshawytscha*) inhabiting the California Coast Province, including the Russian River Basin, have been federally listed as "threatened," pursuant to the Endangered Species Act of 1973, as amended. In May 1999, critical habitat for coho salmon was designated to include all estuarine and river reaches accessible to coho salmon below longstanding, naturally impassable barriers. The critical habitat consists of the water, streambed, and adjacent riparian zone where coho spawn and mature. Critical habitat has been also proposed for steelhead and chinook salmon and would include essentially the same habitat features specified for coho salmon. The Middle Reach of the Russian River principally serves as a migratory corridor for adult and juvenile salmonids. Upstream migration of coho salmon generally occurs from late October to mid-February. Adult steelhead migrate up the Russian River from October through May, with stragglers entering the basin as late as mid-June. Upstream migration of chinook salmon occurs from late August through November. Due to high water temperatures during the summer months, the Middle Reach does not typically provide suitable rearing habitat for non-migrating juveniles. Steelhead and chinook salmon may be utilizing portions of the Middle Reach for spawning purposes in the late winter and spring.

The initial water diversion and construction of the cofferdam in June and breaching in the fall would cause minor turbidity and sedimentation downstream of the dam. Early returning adult chinook salmon and late returning adult steelhead may become somewhat disoriented by the increased turbidity and temporarily delay their upstream migration;

passage, however, would be readily afforded by the water diversion over the dam sill. With construction occurring between June 1 to October 1, the principal upstream and downstream migratory periods for adult and juvenile salmonids would be avoided. While adult salmonids can pass over the dam sill (prior to flashboard installation) during most flow conditions, construction of the fish ladder may facilitate upstream passage during particular low-flow events. In view of the declining salmonid populations in the Russian River Basin, project impacts on threatened salmonids would be adverse and beneficial, short-term and long-term in duration, and minor to moderate in magnitude.

The USACE will be initiating Section 7 consultation with the National Marine Fisheries Service on project related impacts to coho salmon, steelhead, chinook salmon, and designated and proposed critical habitat for these species.

e. **Fish and other Wildlife Habitat:** The Russian River Basin provides habitat for over 40 fish species. Resident fish species occurring in the greatest numbers are the Sacramento sucker, hardhead, California roach, Sacramento squawfish, and smallmouth bass. Water diversion during construction would cause temporary loss of potential habitat for these species. Considering the limited area of habitat disturbance and the limited period of water diversion, adverse project impacts on aquatic habitat would be short-term in duration and minor in magnitude.

American shad (*Alosa sapidissima*) is a non-native anadromous fish species introduced to the West Coast in the late 1800s. After maturing three to four years in the ocean, adult shad enter the Russian River from mid-March to mid-June. Historically, shad migrated upstream as far as Ukiah to seek riffle habitat for spawning. Since 1953, the dam sill has effectively prevented upstream shad migration under all flow conditions, and the shad population in the Russian River Basin has subsequently declined. Construction of the fish ladder and delayed flashboard installation to June 26 would allow adult shad access to approximately 20 miles of upstream spawning habitat. Accordingly, beneficial project impacts on shad migration would be long-term in duration and moderate to major in magnitude. While juvenile shad could compete with other native fish species for habitat and food sources, any adverse impact of shad population growth on other fisheries, including threatened salmonids, is problematic and unpredictable in magnitude.

Impacts To The Social And Economic Environment:

a. **Recreational Resources:** To enable water diversion and de-watering of the site, fish ladder construction would preclude flashboard installation and formation of the impoundment for one summer season. Swimming, canoeing, and other

recreational activities that normally take place in the impoundment would not occur or be limited during the construction period. In subsequent years, flashboard installation would be delayed until June 26 to accommodate shad migration. In view of the limited number of seasonal dams and similar recreational opportunities on the Middle Reach, adverse project impacts on recreation would be short-term and long-term in duration and minor to moderate in magnitude.

b. **Public Water Supply:** The Russian River overlies an alluvial aquifer that supplies nearly all municipal and agricultural water in the region. The City of Healdsburg maintains water-supply well fields at three locations, including the Fitch Mountain Well Field 2,500 feet upstream of the dam; while this well field is relatively shallow, water quality is improved by additional recharge from the seasonal impoundment. Fish ladder construction would preclude flashboard installation and formation of the impoundment for one summer season and delay flashboard installation in subsequent years, thereby reducing the quality and production of municipal water at the Fitch Mountain Well Field. In view of the availability of alternative well fields to the City of Healdsburg, adverse project impacts on water supply would be short-term and long-term in duration and minor to moderate in magnitude.

Impacts To The Historic And Cultural Environment:

a. **Archaeological Resources:** There are no known archaeological or historic resources in the project vicinity that could be adversely impacted by construction work. Since the river channel below the dam has been altered by previous construction activities, scouring, and sediments deposited by winter high-flow events, project construction would not likely encounter intact archaeological resources. If unrecorded archaeological resources were discovered during the conduct of work, these operations would be suspended until the USACE concludes Section 106 consultation with the State Historic Preservation Officer.

Cumulative Impacts: No cumulative impacts to the aquatic environment have been identified.

Conclusions and Recommendations: Based on an analysis of the above identified impacts, a preliminary determination has been made that it will not be necessary to prepare an Environmental Impact Statement (EIS) for the project. This Environmental Assessment has not yet been finalized, and the preliminary determination may be reconsidered if additional information indicates the project would *significantly* affect the aquatic ecosystem.

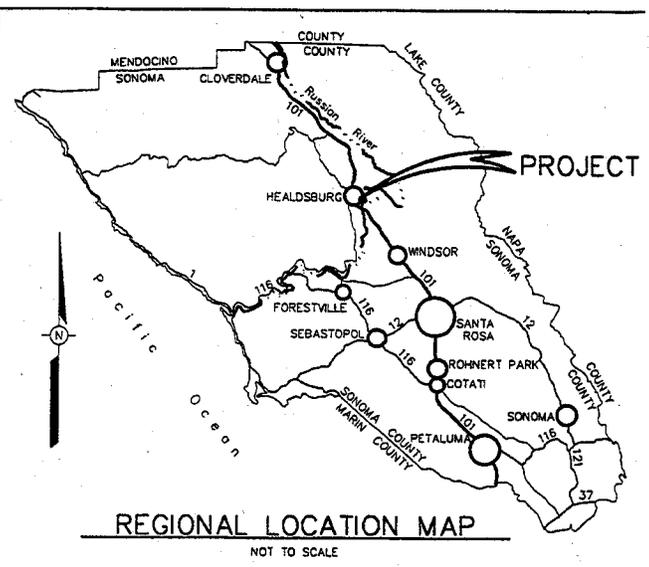
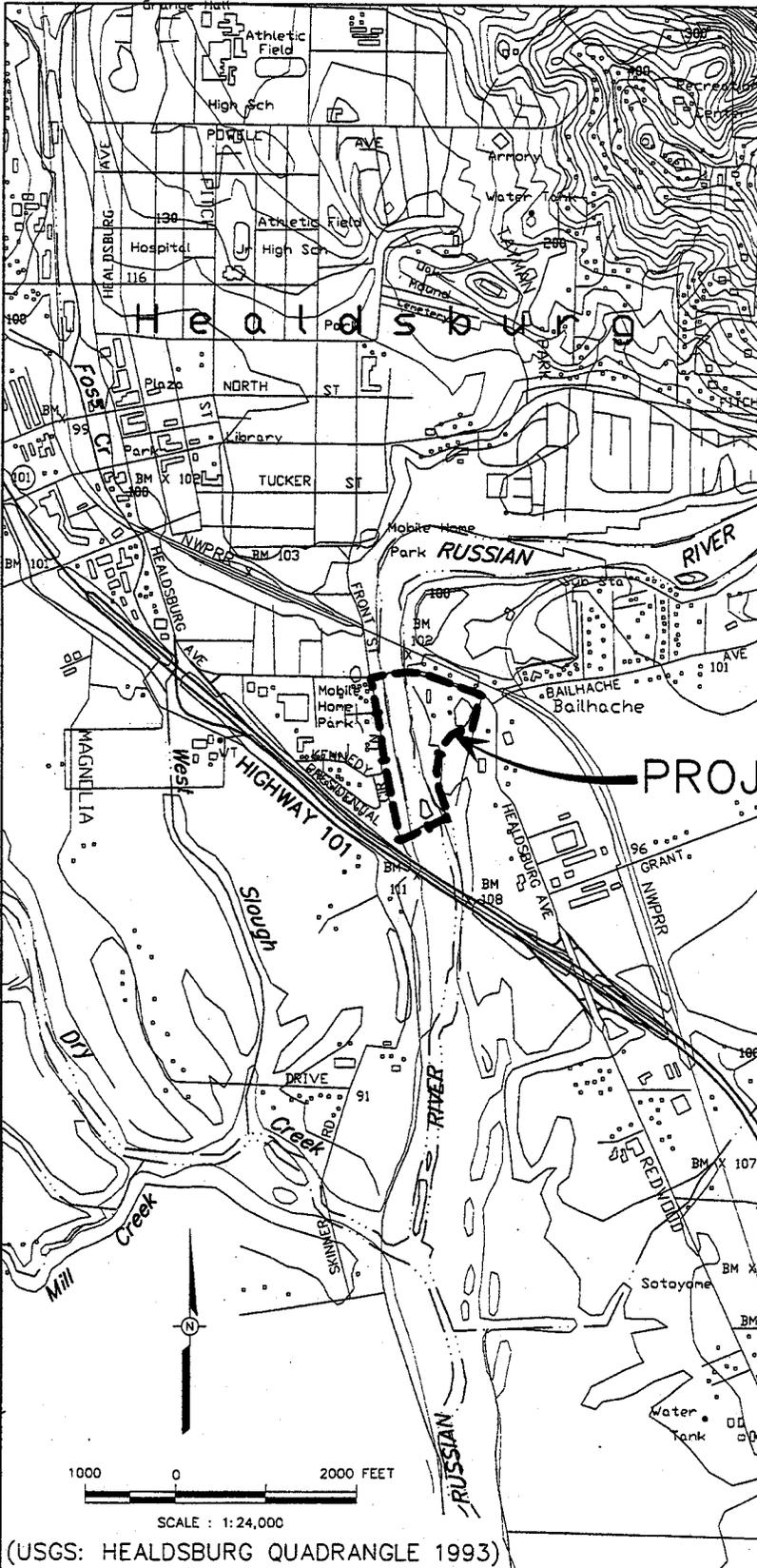
6. COMPLIANCE WITH THE 404(b)(1) GUIDELINES: Projects involving fill discharged into waters of the United

States must comply with the guidelines promulgated by the Administrator of the Environmental Protection Agency under Section 404(b) of the Clean Water Act (33 U.S.C. 1344(b)). An evaluation pursuant to the guidelines indicates the project is dependent on location in or proximity to waters of the United States to achieve the basic project purpose. The SCWA has submitted an analysis of project alternatives to be reviewed for compliance with the guidelines.

7. PUBLIC INTEREST EVALUTION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the project and its intended use on the public interest. Evaluation of the probable impacts which the project may have on the public interest requires a careful weighing of all factors relevant in each particular case. The benefits which reasonably may be expected to accrue from the project must be balanced against its reasonably foreseeable detriments. The decision on permit issuance will, therefore, reflect the national concern for both protection and utilization of important resources. Public interest factors which may be relevant to the decision process include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

8. CONSIDERATION OF COMMENTS: The USACE is soliciting comments from the public; Federal, State and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of the project. All comments received by the USACE will be considered in the decision whether to issue, modify, condition, or deny a permit for the project. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, and the other environmental factors addressed in the final Environmental Assessment or Environmental Impact Statement. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the project.

9. SUBMITTING COMMENTS: During the specified comment period, interested parties may submit written comments to the San Francisco District, Regulatory Branch, North Section, citing the applicant's name and public notice number in the letter. Comments may include a request for a public hearing on the project prior to a determination on the permit application; such requests shall state, with particularity, the reasons for holding a public hearing. All comments will be forwarded to the SCWA for resolution or rebuttal. Other information may be obtained from the SCWA or by contacting Mr. Peter Straub of the Regulatory Branch at telephone 415-977-8443.



(USGS: HEALDSBURG QUADRANGLE 1993)

Purpose: HEALDSBURG WAR MEMORIAL DAM FISH LADDER

Datum: NGVD 1929

Property Owners Adjacent to Project:

1. Winifred Kennedy
2. Syar Industries Inc.
3. County of Sonoma
4. State of California

REGIONAL LOCATION & VICINITY MAP

SONOMA COUNTY WATER AGENCY

2150 W. COLLEGE AVE.
SANTA ROSA, CA. 95401

In: Russian River, River Mile 31.6

Latitude 38°36'10"

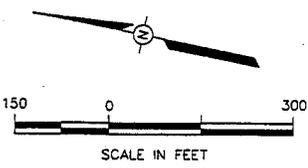
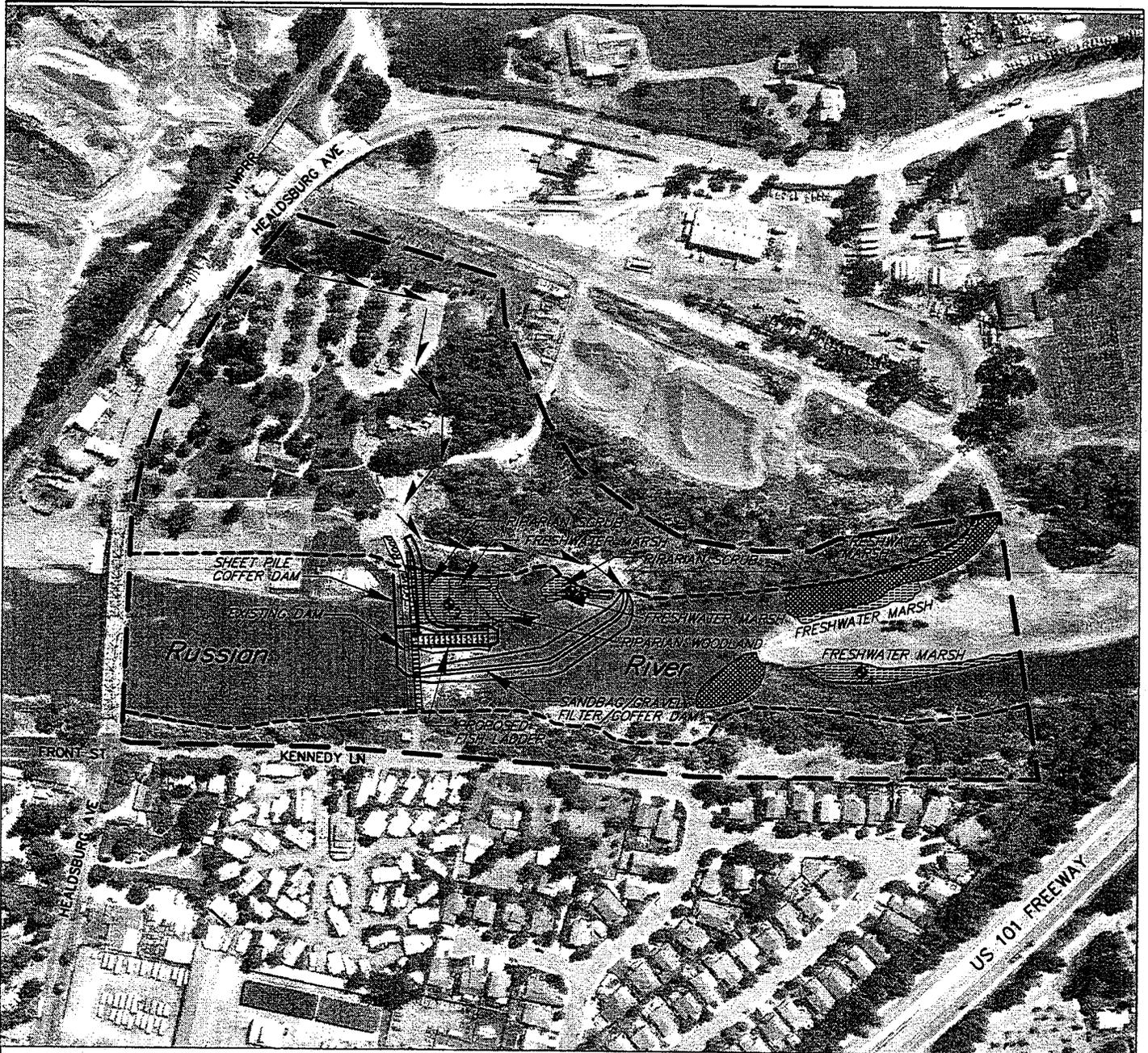
Longitude 122°51'31"

County Of: Sonoma, CA

Application By: JON NIEHAUS

Sheet 1 of 3 Date: 12/20/99

FLOOD CONTROL \ZONE 5A\HEADSBERG DAM\FISH LADDER\COE\SUPPLEMENT-2 FEB 3, 2000



DATE OF PHOTOGRAPHY MAY 1999
UNRECTIFIED AERIAL

Study Area Boundary		Section 404 Waters OHW Boundary	
Section 404 Wetlands		Sampling Locations	
Section 404 Riffles		ACCESS ROUTE	

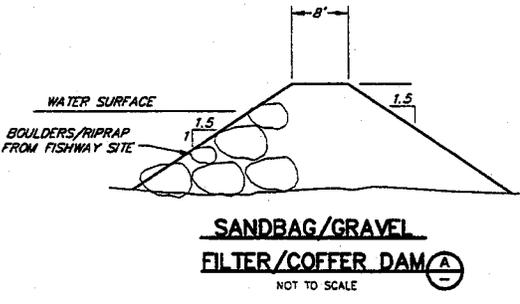
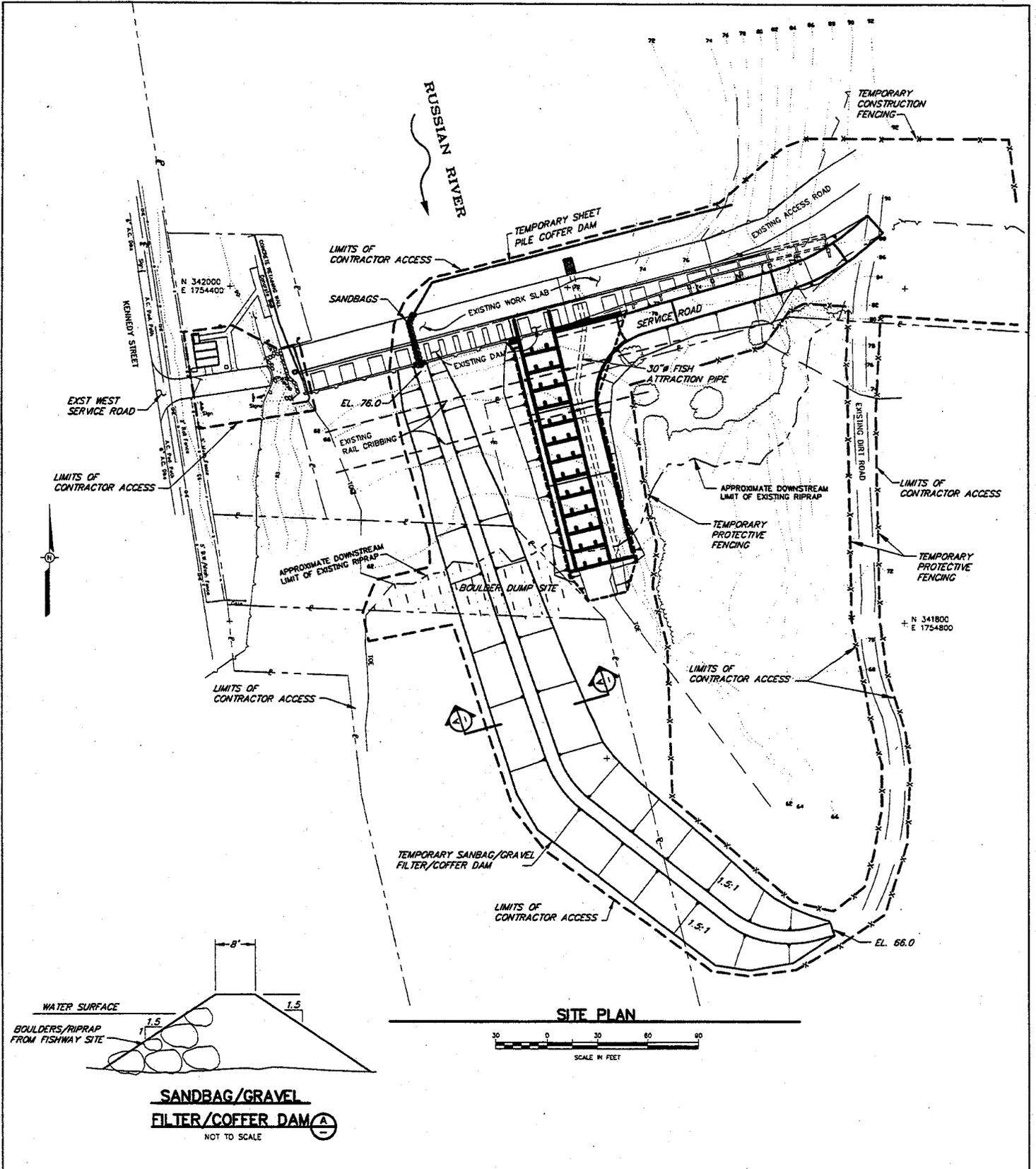
Purpose: HEADSBERG WAR MEMORIAL DAM
FISH LADDER

Property Owners Adjacent to Project:

1. Winifred Kennedy
2. Syar Industries Inc.
3. County of Sonoma
4. State of California

**AERIAL PHOTOGRAPH
OF PROJECT**
SONOMA COUNTY
WATER AGENCY
2150 W. COLLEGE AVE.
SANTA ROSA, CA. 95401

In: Russian River, River Mile 31.6
Latitude 38°36'10"
Longitude 122°51'31"
County Of: Sonoma, CA
Application By: JON NIEHAUS
Sheet 2 of 4 Date: 12/20/99

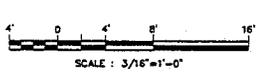
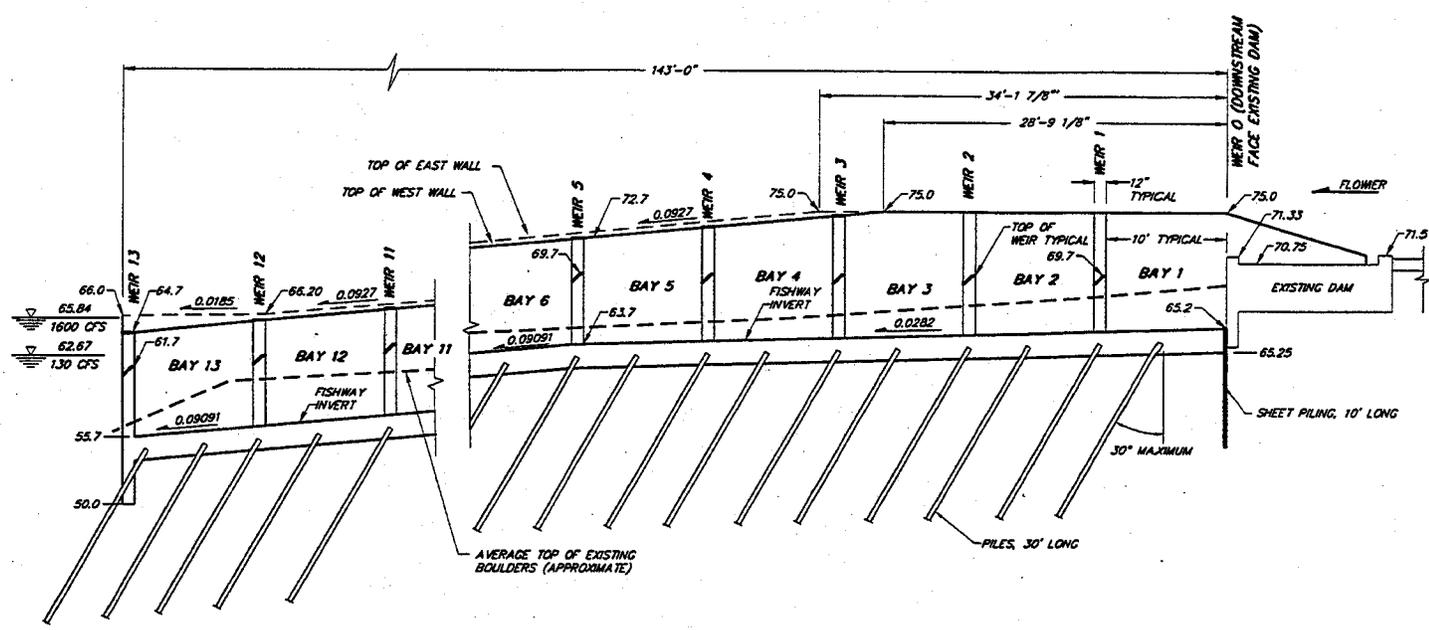


Purpose: HEALDSBURG WAR MEMORIAL DAM FISH LADDER
 Datum: 1929
 Property Owners Adjacent to Project:
 1. Winifred Kennedy
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 4. State of California

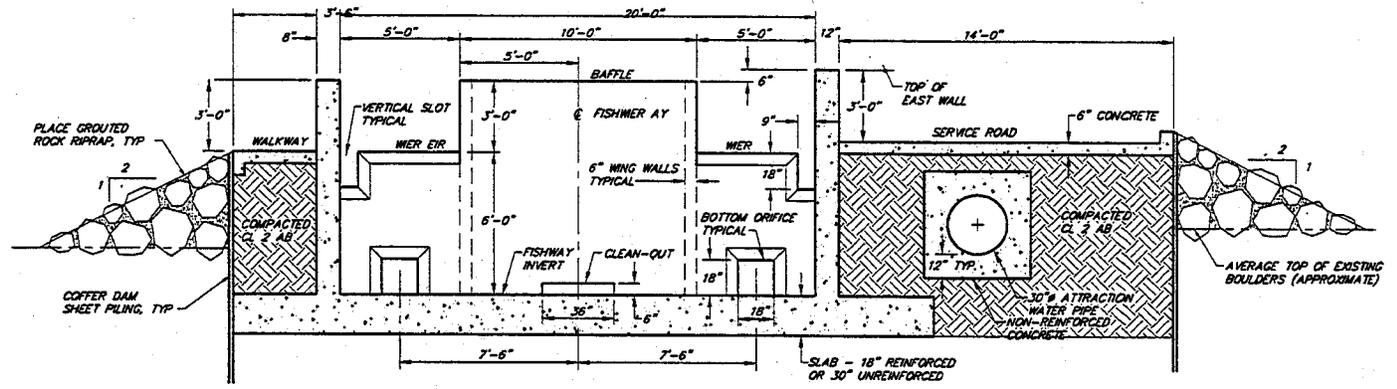
CONSTRUCTION SITE PLAN
SONOMA COUNTY WATER AGENCY
 2150 W. COLLEGE AVE.
 SANTA ROSA, CA. 95401

In: Russian River, River Mile 31.6
 Latitude 38°36'10"
 Longitude 122°51'31"
 County Of: Sonoma, CA
 Application By: JON NIEHAUS
 Sheet 2 of 3 Date: 12/27/99

\FLOOD CONTROL\ZONE 5A\HEADSBURG DAM\FISH LADDER\COE APPLICATION-3 FEB 3, 2000

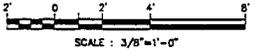


FISHWAY PROFILE
SCALE: 3/16" = 1'-0"



TYPICAL SECTION OF FISHWAY & SERVICE ROAD

LOOKING UPSTREAM
SCALE: 3/8" = 1'-0"



Purpose: -----
 Datum: 1929
 Property Owners Adjacent to Project:
 1. Winifred Kennedy
 2. Syar Industries Inc.
 3. County of Sonoma
 4. State of California

PROFILE & SECTION
SONOMA COUNTY
WATER AGENCY
 2150 W. COLLEGE AVE.
 SANTA ROSA, CA. 95401

In: Russian River, River Mile 31.6
 Latitude 38°36'10"
 Longitude 122°51'31"
 County Of: Sonoma, CA
 Application By: Jon Niehaus
 Sheet 3 of 3 Date: 12/27/99



Purpose: HEADSBURG WAR MEMORIAL DAM FISH LADDER

Property Owners Adjacent to Project:

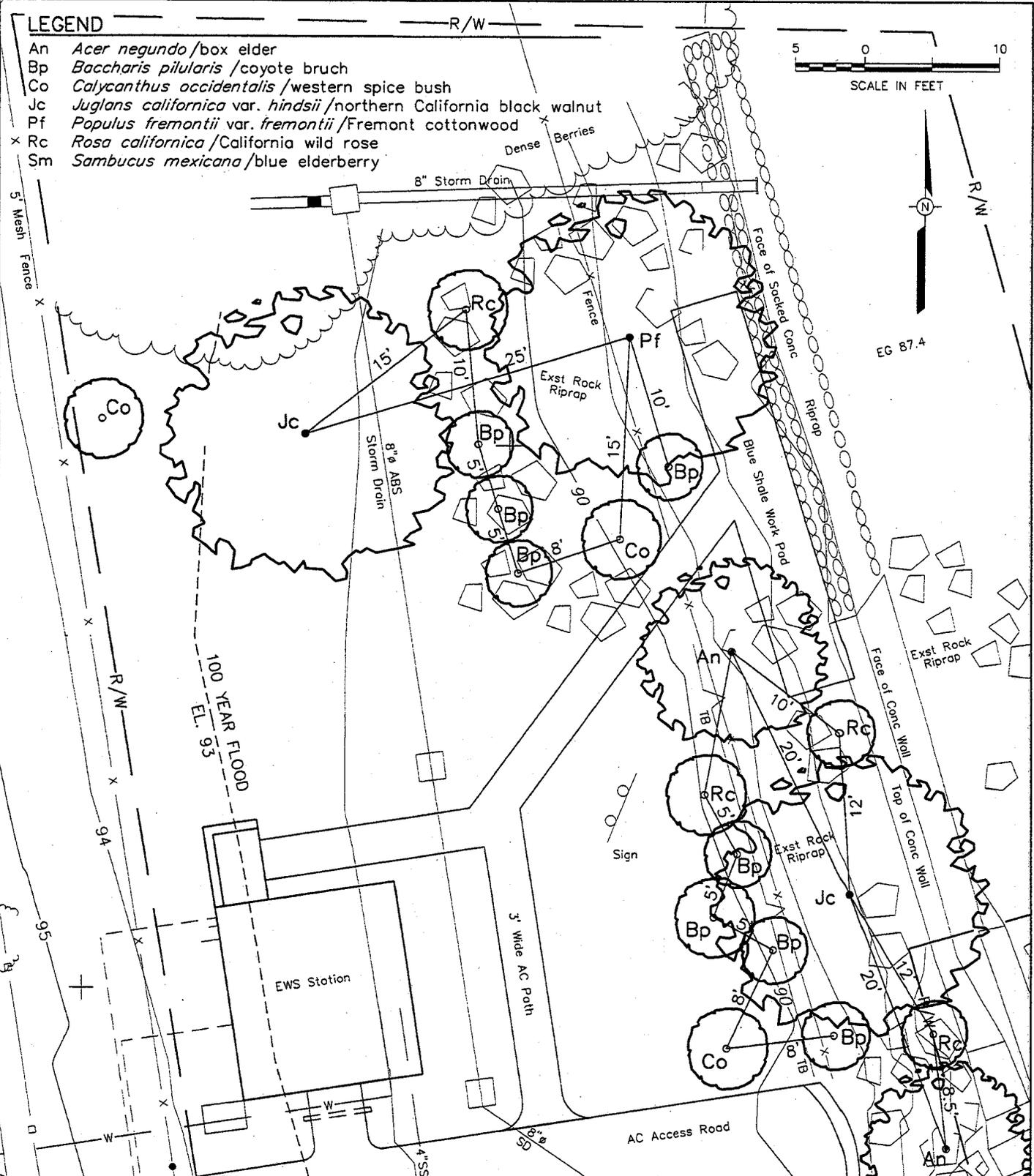
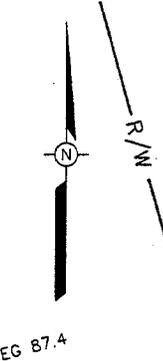
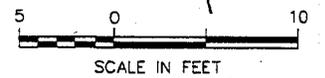
1. Winifred Kennedy
2. Syar Industries Inc.
3. County of Sonoma
4. State of California

LOCATION MAP
FIGURE 1
SONOMA COUNTY
WATER AGENCY
 2150 W. COLLEGE AVE.
 SANTA ROSA, CA. 95401

In: Russian River, River Mile 31.6
 Latitude 38°36'10"
 Longitude 122°51'31"
 County Of: Sonoma, CA
 Application By: JON NIEHAUS
 Sheet 1 of 3 Date: 12/20/99

LEGEND

- An *Acer negundo* /box elder
- Bp *Baccharis pilularis* /coyote brush
- Co *Calycanthus occidentalis* /western spice bush
- Jc *Juglans californica* var. *hindsii* /northern California black walnut
- Pf *Populus fremontii* var. *fremontii* /Fremont cottonwood
- x Rc *Rosa californica* /California wild rose
- Sm *Sambucus mexicana* /blue elderberry



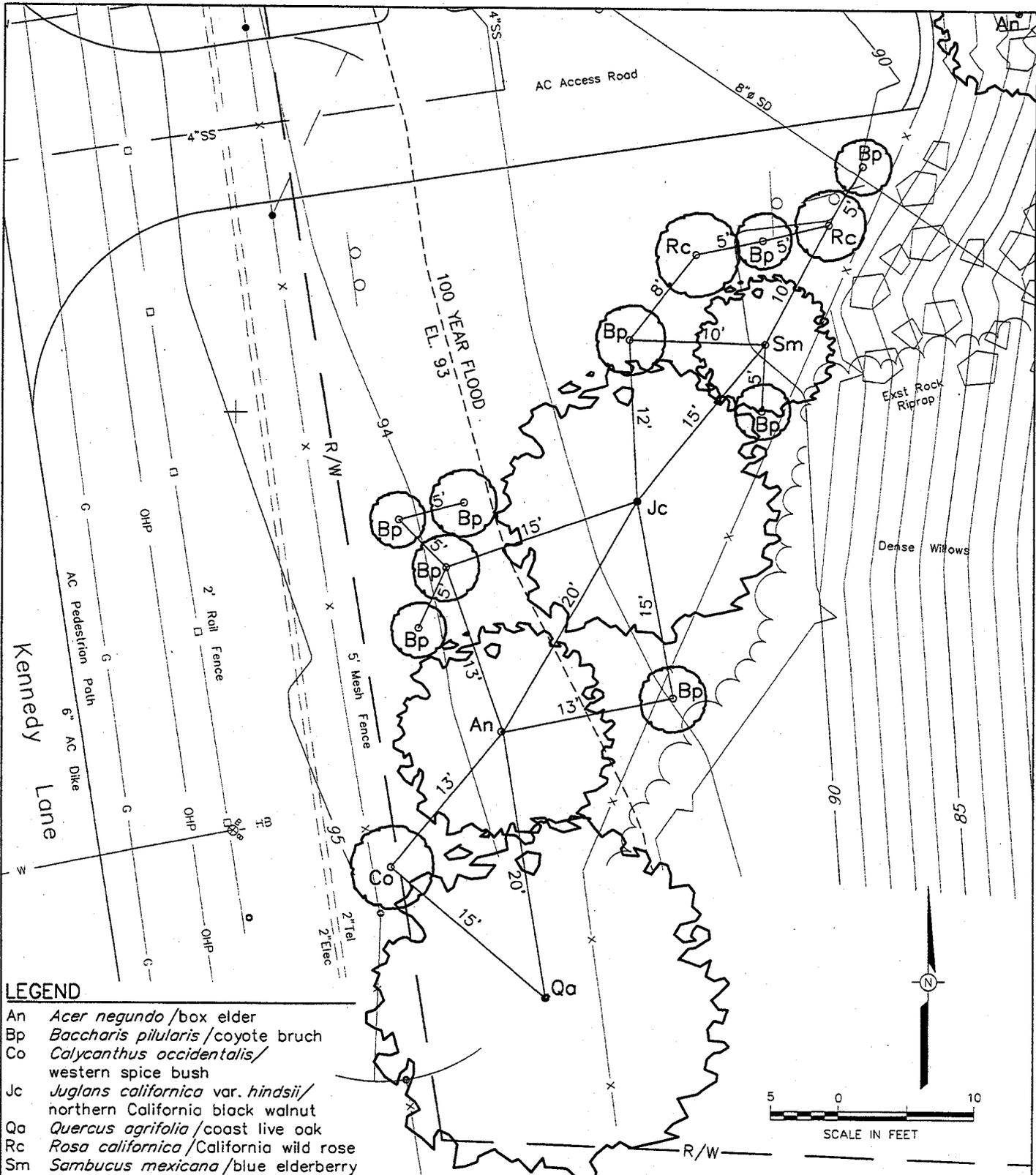
\FLOOD_CONTROL_ZONE 5A\HEALDSBURG DAM\FISH LADDER\COE\REVEG-SITE-MAP JAN 26, 2000

Purpose: HEALDSBURG WAR MEMORIAL
 DAM FISH LADDER
 Datum: 1929
 Property Owners Adjacent to Project:
 1. Winifred Kennedy
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 3. County of Sonoma
 4. State of California

REVEGETATION PLAN
FIGURE 2A
SONOMA COUNTY
WATER AGENCY
 2150 W. COLLEGE AVE.
 SANTA ROSA, CA. 95401

In: Russian River, River Mile 31.6
 Latitude 38°36'10"
 Longitude 122°51'31"
 County Of: Sonoma, CA
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 Sheet 2 of 3 Date: 12/27/99

FLOOD CONTROL_ZONE_5A HEADSBURG DAM\FISH LADDER\COE\REVEG-SITE-MAP JAN 26, 2000



LEGEND

- An *Acer negundo* /box elder
- Bp *Baccharis pilularis* /coyote brush
- Co *Calycanthus occidentalis* /western spice bush
- Jc *Juglans californica* var. *hindsii* /northern California black walnut
- Qa *Quercus agrifolia* /coast live oak
- Rc *Rosa californica* /California wild rose
- Sm *Sambucus mexicana* /blue elderberry

Purpose: HEADSBURG WAR MEMORIAL DAM FISH LADDER
 Datum: 1929
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REVEGETATION PLAN
FIGURE 2B
SONOMA COUNTY
WATER AGENCY
 2150 W. COLLEGE AVE.
 SANTA ROSA, CA. 95401

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