

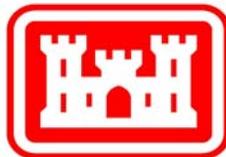
Environmental Assessment (with Draft FONSI)

**Warm Springs Dam and Lake Sonoma Operational Requirements
for
Pre-flood and Periodic Inspections**



**Warm Springs Dam, Lake Sonoma
Geyserville, California**

**U.S. Army Corps of Engineers
San Francisco District**



May 11, 2010

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ACRONYMS AND ABBREVIATIONS

af	acre-feet
afy	acre-feet per year
BA	Biological Assessment
BMP	best management practice
BO	Biological Opinion
CCC	Central California Coast
CDFG	California Department of Fish and Game
CDWR	California Department of Water Resources
CESPD	Corps of Engineers, South Pacific Division
CESPK	Corps of Engineers, Sacramento District
CESPN	Corps of Engineers, San Francisco District
CFR	Code of Federal Regulations
cfs	cubic feet per second
cfs/hr	cubic feet per second per hour
cm	centimeter(s)
CSR	Coho Salmon Replacement Rates
CVD	Coyote Valley Dam
CVFF	Coyote Valley Fish Facility
CWA	Clean Water Act
D1610	SWRCB Decision 1610
DC	direct current
DCFH	Don Clausen Fish Hatchery (also known as Warm Springs Fish Hatchery)
EA	Environmental Assessment
EIS	Environmental Impact Statement
El.	elevation
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act of 1973
Estuary	Russian River Estuary
ESU	Evolutionarily Significant Unit
EWSL	Emergency Water Supply Line
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
FTU	Formazin Turbidity Units
fps	feet per second
FR	Federal Register
ft/hr	feet per hour
hp	horsepower
hr	hour(s)
km	kilometer(s)
kw	kilowatt(s)
lf	linear feet

ACRONYMS AND ABBREVIATIONS

LMPP	Lake Mendocino Hydroelectric Power Plant
m ³ /s	cubic meter(s) per second
M&E	Plan Monitoring and Evaluation Plan
MCIWPC	Mendocino County Inland Water and Power Commission
MCRRFCD	Mendocino County Russian River Flood Control and Water Conservation Improvement District
mg	million gallons
mgd	million gallons per day
mg/l	milligram(s) per liter
mi ²	square miles
min	minute(s)
ml	milliliter
mm	millimeter(s)
MOU	Memorandum of Understanding
MSL	Mean Sea Level
mw	megawatt(s)
NCRWQCB	North Coast Regional Water Quality Control Board
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
ntu	nephelometric turbidity unit
PG&E	Pacific Gas and Electric Company
PL	Public Law
psi	pounds per square inch
PVP	Potter Valley Project
QPF	Quantitative Precipitation Forecast
RWQCB	Regional Water Quality Control Board
SCWA	Sonoma County Water Agency
sq mi	square mile
ssp	subspecies
SWMP	Storm Water Management Program
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirements
WQM	Water Quality Monitoring
WSD	Warm Springs Dam Project
WSEL	Water Surface Elevation Level
YOY	Young of the Year

1.0 PROPOSED PROJECT

1.1 Background Information and Project Description

This Environmental Assessment (EA) has been prepared by the United States Army Corps of Engineers, San Francisco District (USACE), in accordance with the National Environmental Policy Act (NEPA) (40 CFR part 1500-1508, November 29, 1978) as amended on May 27, 1986 (40 CFR part 1502), Section 404 (b)(1) Guidelines of Section 404 of the Clean Water Act of 1977 (40 CFR part 230), Section 310 of the Water Resources Development Act of 1990, Section 7 of The Flood Control Act of 1944 and Corps of Engineers Enterprise Standard (ES)-03011.

Its purpose is to identify any possible direct, indirect and/or cumulative significant impacts to the human environment resulting from establishing, identifying and analyzing the impacts of alternatives to the proposed action. Furthermore this EA will also be used to determine if the proposed action would result in significant impacts requiring the preparation of an Environmental Impact Statement (EIS).

Yearly inspection of the outlet works is essential to assure the safety, continued structural integrity, and operational adequacy of Warm Springs Dam. Each year's conduit inspection is meant for early identification of any deficiencies, giving USACE time, prior to each year's flood season, to address any deficiencies the inspection might uncover. However, preparation of the deviation paperwork each year requires a significant amount of repetitive coordination and time, which would be better spent addressing any deficiencies found during the inspection. These annual outlet works inspections are routine operations and maintenance activity that have taken place since the dam went operational in 1983. They do not change significantly year to year. The inspections at Warm Springs Dam occur in the fall and require a reduction, if necessary, from existing operational flows at that time through the outlet works for a period of two hours, while the inspection takes place.¹

Currently, the actions required to inspect the conduit (outlet works) of Warm Springs Dam are not detailed in *Warm Springs Dam and Lake Sonoma Water Control Manual*. Because the procedures for inspecting the conduit of the dam are not part of the current *Water Control Manual*, they fall under USACE South Pacific Division Regulation (CESPD R) 1110-2-8 – *Guidance on the Preparation of Deviations from Approved Water Control Plans*. The yearly inspections are considered a 'deviation' to the *Water Control Manual*. Therefore, prior to each inspection, documentation justifying the inspections must be approved by USACE South Pacific Division.²

¹ Minimum stream flows through the outlet works during the fall range from 25 – 80 cubic feet per second depending on the cumulative inflow to Lake Pillsbury per SWRCB Decision 1610, 1986.

² A "deviation" is described in Exhibit A of the *Water Control Manual* (A.04. Deviation from Normal Regulation), which states: "*Deviations from approved Water Control Plans occur because every possible circumstance cannot be accounted for in a Water Control Plan. Because of the often competing goals and complex interactions of interested groups/agencies, even seemingly inconsequential deviations from an approved plan can lead to unforeseen environmental and legal complications. The CESPD regulation, CESPD R 1110-2-8 dated 12 September 2002 [Guidance on the Preparation of Deviations from Approved Water Control Plans], serves to assist CESP[N] in preparing their deviation requests... They are not intended as a means for identifying or initiating new opportunities to re-operate or reallocate storage in response to new and changing public needs.*"

However, until these procedures are documented in the *Water Control Manual*, the procedures described in CESP D R-1110-2-8 must still be followed. Therefore, USACE proposes adding a new Exhibit E – *Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections* (See Appendix F) into the current *Water Control Manual (WCM)* so that the procedures and operations for conducting the inspections are incorporated in this document.

The current *Warm Springs Dam and Lake Sonoma Water Control Manual* (Appendix II to the Master Water Control Manual, Russian River Basin)³, which provides a detailed plan for water control and management at the Warm Springs Dam and Lake Sonoma Project, was first published in September 1984 when the dam became operational. Four (4) existing exhibits are attached as appendices to the WCM and are as follows:

Exhibit A – *Standing Instructions to the Project Operators for Water Control, revised September 2003.*⁴

Exhibit B – *Water Supply Contract.*

Exhibit C – *1970 Agreement between Sonoma County Water Agency and California Department of Fish and Game.*

Exhibit D - *CVD & WRS Drought Contingency Plan, 1992.*

The proposed Exhibit E – *Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections*, would document the operation plan for routine inspections and maintenance activities.

This Environmental Assessment addresses both (1) the effect of the inclusion of *Exhibit E* into the *Warm Springs Dam and Lake Sonoma Water Control Manual* and (2) the procedures provided for in *Exhibit E* and are necessary as both a vehicle to achieve public involvement and as a tool to ensure full compliance with NEPA and Section 310 of the Water Resources Development Act of 1990.⁵

1.2 Project Area and Location

Warm Springs Dam and Lake Sonoma is located on Dry Creek, Sonoma County, California, approximately 14 miles above the confluence with the Russian River. The project is located on 15,966 acres of land, situated approximately 14 miles northwest of Healdsburg and approximately 90 miles northwest of San Francisco.

³ The Master Water Control Manual consists of Appendix I – Coyote Valley Dam and Appendix II – Warm Springs Dam, which is located on the Dry Creek Tributary to the Russian River located in Geyserville, California.

⁴ This section was revised to reflect the Memorandum of Agreement between San Francisco District (CESPN) and Sacramento District (CESPK) of July 10, 1996 on responsibilities in operating the project, installation and operation of a remote automated gate controller, and new maximum flow rates of changes designed as mitigation to conserve endangered and threatened species downstream from the project.

⁵ Section 310 of the Water Resources Development Act of 1990 state that public involvement is required before any change can be made to an existing Water Control Manual which goes beyond the level of being merely informational or administrative. The addition of *Exhibit E* to the existing *Warm Springs Dam and Lake Sonoma Water Control Manual* is a substantial change that triggers the need for public involvement.

Warm Springs Dam forms Lake Sonoma (Figure 1), which has a design capacity of approximately 381,000 acre-feet (AF) and drains an area of approximately 130 square miles, or approximately 9 percent of the total Russian River basin (See Figure 2). Construction started in August 1967 and was completed in 1982.

The dam is operated and maintained by USACE. The storage space for water conservation is owned by the Sonoma County Water Agency (SCWA), while the remaining part of the project is owned by USACE, which directs flood control releases from Warm Springs Dam according to the *Warm Springs Dam and Lake Sonoma Water Control Manual*.⁶

Warm Springs Dam is a rolled earth embankment. The dam crest is 319 feet above the streambed and 6 feet above the maximum spillway flood water surface elevation. The dam crest extends 3,000 feet across the stream channel and is curved on a 6,000-foot radius. The top of the dam is 30 feet at the crest and 2,600 feet at the base.

The Don Clausen Fish Hatchery (also referred to as the Warm Springs Fish Hatchery) is located on Dry Creek at the base of Warm Springs Dam. This fish production facility is operated by California Department of Fish and Game (CDFG) under a cooperative agreement with USACE. The hatchery was created as part of the Warm Springs Dam Project to compensate for loss of spawning and rearing habitat that was impounded and made inaccessible to anadromous fish by the dam in the creation of Lake Sonoma.

SCWA owns and operates the Warm Springs Dam hydroelectric facility. The hydroelectric facility was completed in December 1988. SCWA operates the facility under a 50-year license issued by FERC on December 18, 1984 (Project No. 3351-002).

⁶ The Sacramento District Water Management Section (SPK) operates these releases under direction from The San Francisco District (SPN) for USACE.

Warm Springs Dam and Lake Sonoma
 Safety Inspections Environmental Assessment

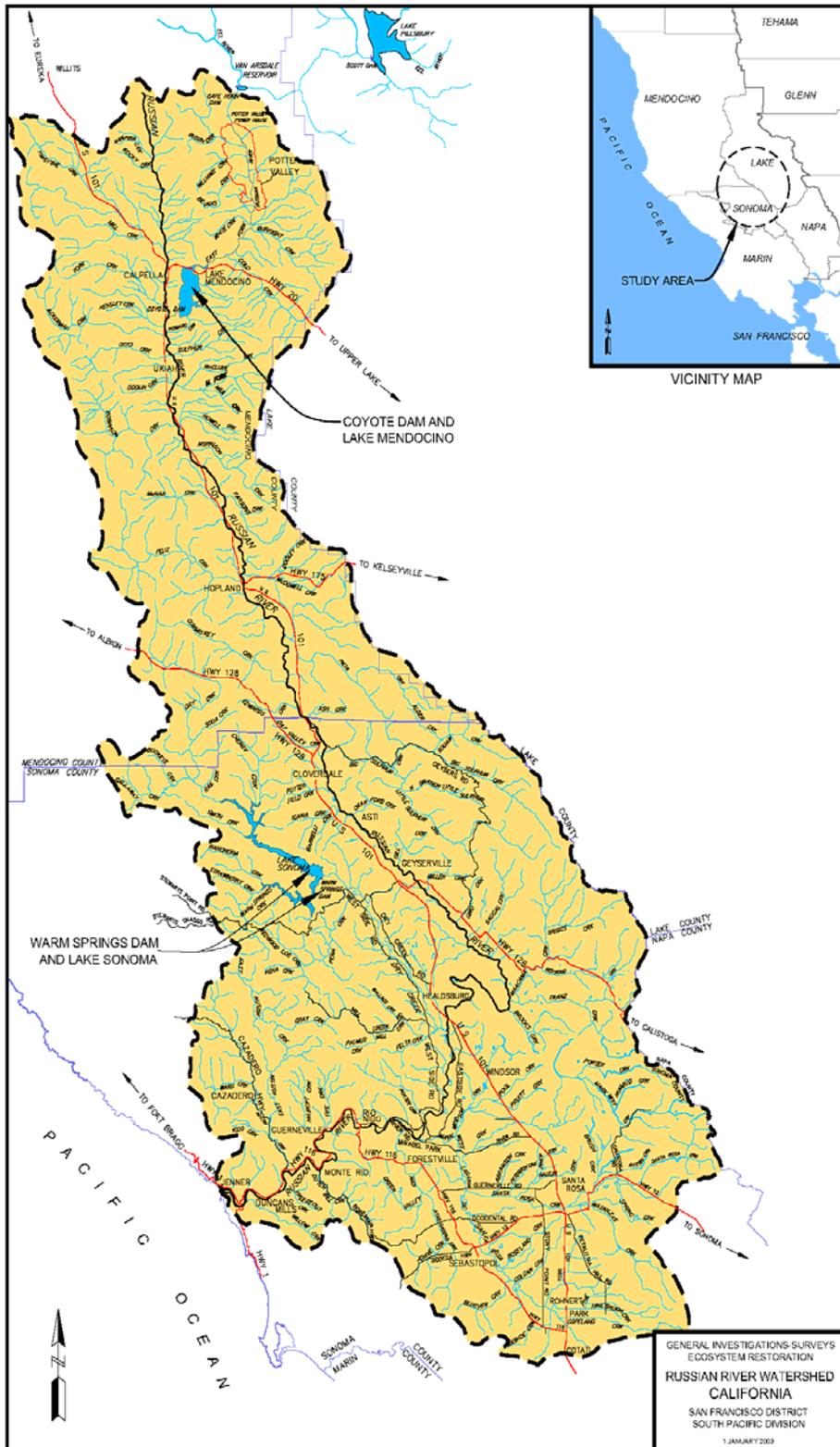


Figure 1 – Russian River Basin Map

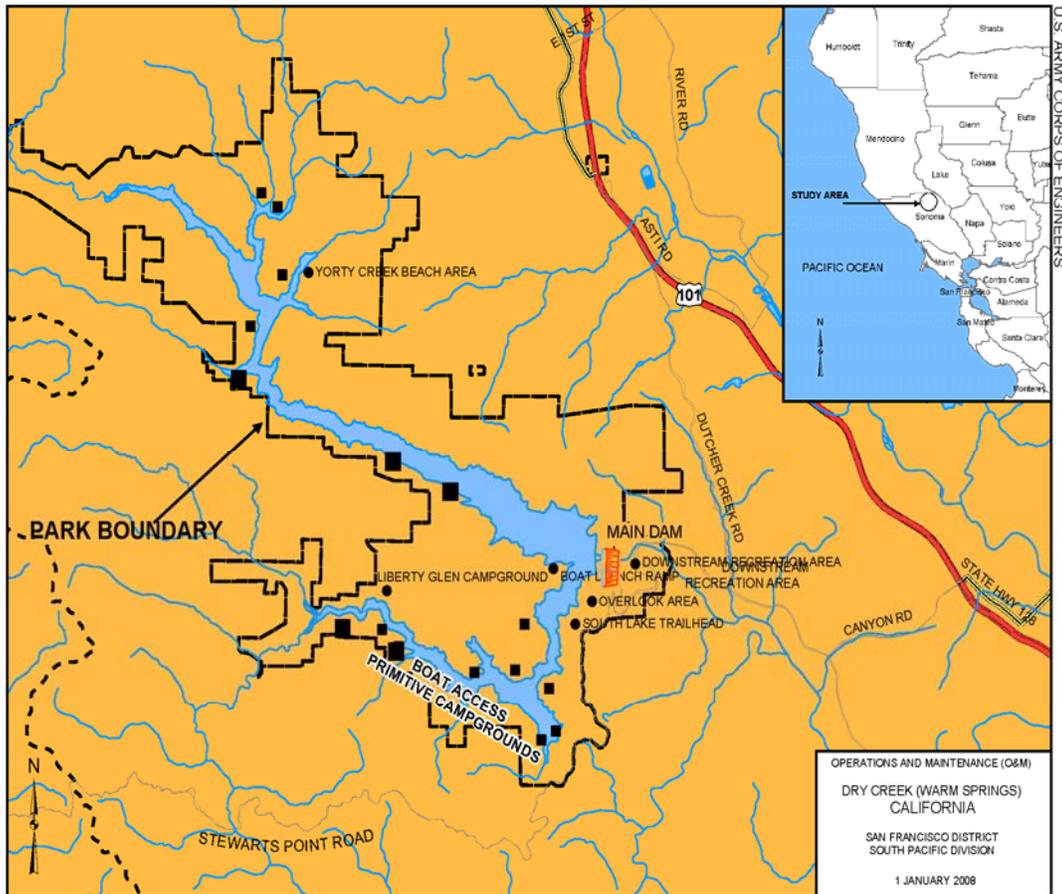


Figure 2 – Warm Springs Dam and Lake Sonoma

The 3,000-KW Francis turbine generator has a power rating of 2.6 MW. The facility is located within the control structure of the outlet works for Warm Springs Dam. Water from Lake Sonoma flows to the hydraulic turbine via a vertical wet well located in the control structure that draws water from the horizontal, low-flow tunnels. Water from the tunnels drops between 132 and 221 feet to the turbine. Water passing through the turbine flows into the flood control tunnel to a stilling basin located at the base of the dam. The hydroelectric facility operates during normal releases of water through the low-flow tunnels and the wet well. All maintenance activities occur within the Warm Springs Dam control structure shaft. During any unplanned events that require shutting down the generator, automatic controls shut down flows to the turbine and open a valve that bypasses flows around the turbine unit. The only visible part of the hydroelectric facility above ground is the transformer substation and connecting electrical power lines at the top of the control structure shaft.



Figure 3 – Warm Springs Dam Outlet Works

The outlet works is located in the left abutment and is excavated in rock for most of its length. The outlet works consists of a short approach channel, trash rack, a submerged intake structure, an upstream tunnel 10-1/2 feet in diameter, two gate passages, two hydraulically operated 5-foot by 8-foot flood control gates for service and emergency use, a 14-1/2 foot diameter downstream tunnel, and a double stage stilling basin. The control structure located above the regulating gates accommodates multiple intakes designed for meeting water requirements. Maximum discharge capacity of the outlet works is 8,100 cfs with the pool at elevation 513.1 feet mean sea level (MSL).

In addition to the 5-foot by 8-foot service and emergency gates, each passageway has a bulkhead gate to allow for maintenance and inspection. All gates are mounted in tandem. An additional bulkhead gate is located just downstream of the trash rack to allow work on the upstream tunnel. The emergency and service gates are equipped with bronze seals that seat against bronze seals in the gate frames. The gate sills and the sills in the passageway floor are stainless steel. Steel liners on the floor and walls are provided upstream and downstream of the emergency and service gates to protect against cavitation. Each gate passage has a 5-foot by 2-foot vent located in the roof immediately downstream of the service gate to satisfy air demands.

The lengths of the upstream tunnel, gate passages, and downstream tunnel are 512 feet, 182 feet and 2,484 feet, respectively. The downstream tunnel has a 1,400-foot radius, 1,637-foot long curve just downstream of the gate passages. At the exit portal, the circular section transitions to a 14-1/2 foot rectangular section at 40 feet and then transitions to the 40-foot stilling basin after 100 feet.

The outlet works stilling basin consists of a primary basin, a fish barrier and a secondary basin. The fish barrier weir is located between the primary and secondary basins and provides the tail water control for the upper basin. Dimensions of the primary basin are 40 feet wide and 80 feet long with walls 29 feet high. The basin has a row of five baffle blocks which are five feet high and four feet wide. The primary basin can be dewatered by opening a gate in the right retaining wall which allows draining to the secondary basin. A 5-foot by 8-foot opening in the right wall of the basin can provide water necessary for fish attraction flow and hatchery process water, if needed. The secondary basin is 40 feet wide, 104 feet long and has walls 21 feet high. One row of five baffle blocks that are five feet high and four feet wide is provided in the basin. Tail water control is provided by a concrete sill located 600 feet downstream at the stream gage. Drainage is provided by a 3-foot by 6-foot sump at the end of the basin. A fish passageway, located in the secondary stilling basin, connects to a ladder to the fish hatchery through an opening in the right retaining wall.

The low flow system, designed to release up to 600 cfs under normal operation, consists of three 5 foot diameter circular concrete conduit and one 30" circular steel pipe, each of which connect to a common 6 foot diameter steel pipe wet well. The three larger conduits are located at elevations 352, 391, and 431 feet MSL with the inlet of the smaller conduit located in the roof of the flood control tunnel at elevation 228 feet MSL. The 30-inch pipe connects to the wet well at elevation 274 feet MSL. Discharges from the multiple inlets to the wet well are controlled by butterfly valves that can be operated in a full range of positions. Discharges from the wet well are controlled by a 2 foot by 3-1/2 foot rectangular, electrically operated slide gate. Flows from the wet well discharge into the 14-1/2 foot diameter flood control tunnel just downstream of the service gates. Bulkheads can be inserted into either end of the low-flow conduits for inspection or maintenance.

1.3 Purpose and Need

The need for this action is to provide a routine procedure that would ensure the continued safe operation of Warm Springs Dam. The objective of the proposed action is to conduct annual and periodic inspections of the outlet works (conduit) of Warm Springs Dam, which impounds and conveys water from Lake Sonoma to Dry Creek, a tributary to the Russian River.

These inspections would become part of the normal operation and maintenance actions for the dam and classify the essential yearly inspection of the outlet works as routine Operation and Maintenance actions by adding a new Exhibit E – *Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections* into the current *Warm Springs Dam and Lake Sonoma Water Control Manual*.

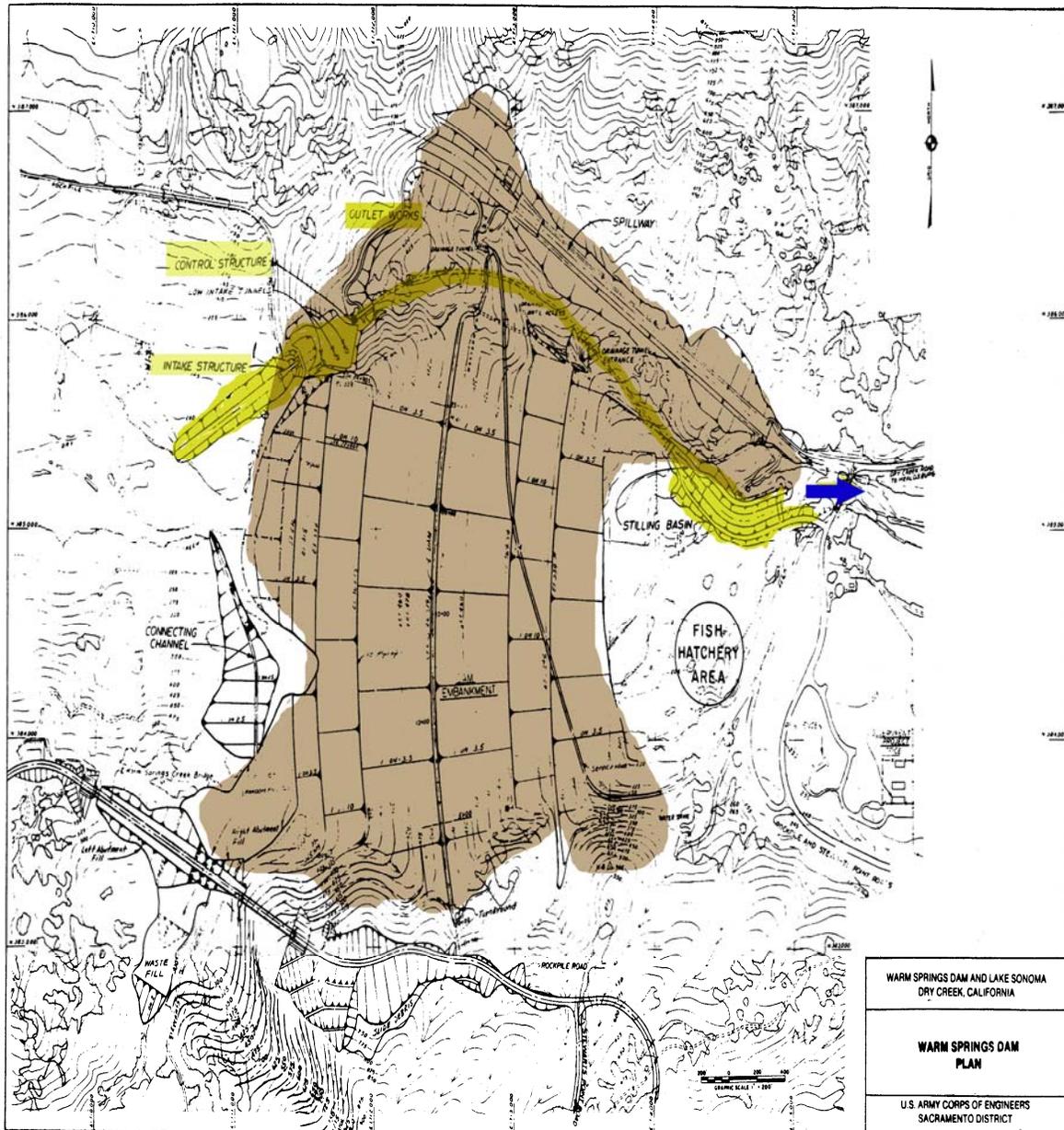


PLATE 4

Figure 4 - Warm Springs Dam Outlet Works – arrow shows downstream end of the conduit and outlet works which sends water to Dry Creek below the dam



Figure 5 - View of steel lined portion of the inspection conduit



Figure 6 - View of conduit near slide gates



Figure 7 - View of slide gate



Figure 8 - Low flow slide gate



Figure 9 - Stilling basin



Figure 10 – Baffle blocks in the stilling basin



Figure 11 – Baffle blocks



Figure 12 – Weir with outlet works in background



Figure 13 - Weir downstream of the outlet tunnel

1.4 Project Authority

The construction of the Warm Springs Dam Project was authorized by section 203 of the Flood Control Act of 1962 in accordance with the recommendations of the Chief of Engineers. Pub. L. No. 87-874, §203, 76 Stat. 1173 (Oct. 23, 1962) in accordance with the Chief of Engineer's Report, House Doc. Number 547 (Sept. 12, 1962). It was amended by section 95 of the Water Resources Development Act of 1974 to compensate for fish losses on the Russian River which may be attributed to the operation of the Coyote Dam component of the project through measures such as possible expansion of the capacity of the fish hatchery at the Warm Springs Dam component of the project. Pub. L. No. 93-251, §95, 88 Stat. 12 (Mar. 7, 1974).

2.0 SCOPE OF ANALYSIS

The scope of analysis under NEPA will consider direct, indirect, and cumulative environmental factors occurring within the project footprint of the project alternatives, and indirect effects that may occur later in time and/or further removed from the project footprint.

Actions within the scope of analysis include documentation of the inspection compliance with NEPA and establishing and documenting the annual conduit inspections at Warm Springs Dam

as routine Operation and Maintenance actions by adding *Exhibit E – Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections into the Warm Springs Dam and Lake Sonoma Water Control Manual*.

The geographical scope of analysis of the inspections includes the areas within the proposed project footprint affected by the temporary reduction of flows through the outlet works while the inspection takes place.

This EA assesses the effects of the proposed action on the environment to determine whether an Environmental Impact Statement should be prepared. This EA has been prepared in accordance with the National Environmental Policy Act, which requires full disclosure of the environmental effects, alternatives, potential mitigation, and environmental compliance procedures of the proposed action through an EA. Also this EA will satisfy Section 310 of the Water Resources Development Act of 1990, which requires public participation in developing or revising reservoir operating manuals.

3.0 PROPOSED ACTION

To accomplish the stated purpose and need, USACE proposes to reduce the flows from Warm Springs Dam to no less than its minimum stream flow requirement of 25 cfs for a period of two hours in the fall of each year to conduct dam safety inspections inside the conduit, which conveys water from Lake Sonoma into Dry Creek for the purposes of flood control, water supply and hydroelectric power. This action enables a dam inspection safety team to visually inspect the dewatered tunnel, gates, and stilling basin for any structural problems that could compromise the safety of the dam.

In addition, the procedures used to prepare for inspecting the conduit will be documented in the *Water Control Manual* as a routine operation and maintenance task by adding a new *Exhibit E – Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections* into the current *Warm Springs Dam and Lake Sonoma Water Control Manual*.

3.1 Motorized Outlet Tunnel Inspection Vehicle

The motorized outlet tunnel inspection vehicle (MOTIV) is a prototype specially designed to drive in the cylindrical outlet tunnel under low flow conditions. In essence, the vehicle is a work platform on wheels. Constructed mainly of steel, the vehicle weighs approximately 6,500 pounds and is designed for a maximum payload of about 3,000 pounds. The vehicle's width can be adjusted from a minimum width of about 8 feet to a maximum width of 12 feet, so that its wheels ride above the water line. The front of the vehicle is fitted with a smaller, lower working platform that rests on adjustable forks. Wheels are mounted at a 15-degree angle to maximize contact area on a curved surface, which in turn enhances traction and stability. The MOTIV is an all-wheel drive vehicle with each wheel being driven by a hydraulic motor. At normal continuous operating speeds, the MOTIV has roughly a 1-hour operation time before the batteries discharge to the 50 percent charge level. The normal operating speed is less than 5 miles per hour.

It has been successfully used since 2008 for the inspections at Warm Springs Dam, and will continue to be used for routine and periodic inspections at this project.



Figure 14 – MOTIV

4.0 ALTERNATIVES

4.1 No Action Alternative

NEPA requires consideration of a no-action alternative. The no-action alternative provides the environmental baseline conditions if no action is taken and helps evaluate effects of the action alternatives.

Under the no-action alternative, USACE would continue to operate the reservoir under the current *Water Control Manual*, and each year's conduit inspection would still be classified as a deviation and require additional time to complete, reducing the amount of time available to address any issues discovered in the inspection itself prior to the start of the flood season.

The no-action alternative would result in no changes to existing environmental parameters.

There are no other alternatives considered for this project, as the only way to inspect a conduit used

for water conveyance for deformations or other structural problems is by reducing normal operation flows to the point where the tunnel and gates can be inspected.

4.2 Action Alternative

Under the Action Alternative, USACE would establish and document the annual conduit inspections at Warm Springs Dam as a routine operation and maintenance action. The addition of *Exhibit E – Warm Spring Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections* into the *Warm Springs Dam and Lake Sonoma Water Control Manual* would remove the inspection from being a “deviation” of the *Water Control Manual* and establish it as a routine operation and maintenance action and follow previously created mitigation requirements to ensure that this Action Alternative results in no changes to existing environmental parameters. The following section documents the impacts of the inspection activities associated with the reduction of flows. There are no impacts to the environment associated with the incorporation of *Exhibit E* into the *Water Control Manual*.

4.3 Alternatives Considered and Eliminated

A range of actions were considered but eliminated as potential alternative measures for inspecting the tunnel at Warm Springs Dam. These actions included:

1. Cessation of all flows from the dam into Dry Creek.
2. Scheduling inspections for the winter time period.

The first action would instruct the dam tenders to shut all the gates and install bulkheads behind the gates to allow the tunnel to dewater and to let inspectors into the tunnel for the annual dam inspections. This alternative was eliminated because shutting the gates would also disrupt flow into the fish hatchery at the base of the dam and impact this mitigation facility. Also, federally listed species: steelhead trout, coho salmon and Chinook salmon and their critical habitat would be adversely impacted by interruption of flows into Dry Creek.

The second action was eliminated because of safety concerns. Inspections are meant to discover any deficiencies in the project and to fix them before the winter season/flood control season starts. NMFS has also stated in their *2008 Biological Opinion*, which analyzed this project that by conducting the inspections in the fall USACE would be avoiding adverse effects to juvenile steelhead and adult Chinook salmon with inspection timing and bypass flows, the Corps has obtained NMFS’ yearly concurrence (since 1998) that these activities are not likely to adversely affect listed salmonids or their critical habitats.

5.0 IMPACT ASSESSMENT

An impact is defined as an effect causing a change in conditions. This change can be beneficial or adverse.

The impacts of the proposed alternative on the environment are the same since the outlet work

inspections began. These inspections are mandatory actions that assess the continuing safe operation of the dam, and there would be no change in those physical operational procedures.



Figure 15 – MOTIV entering outlet works at 40 cfs

5.1 Potential Impacts on Environmental Parameters

5.1.1 Water

Water Temperature:

Lake Sonoma is typical of Northern California reservoirs in that the water stored becomes isothermal in the winter months and develops strong stratification in the low inflow summer months. In order to insure proper temperature control for downstream release through the outlet works, multiple level inlets are provided at elevations 431, 391, 352 feet msl and in the roof of the flood control tunnel gate passage way at elevation 228 MSL. Warmer water at the higher elevations is used for conservation releases when possible which allows for the conservation of colder water used for the fish hatchery.

Previous surveys conducted during the annual and periodic inspections by USACE and NMFS have included the collection of water and air temperatures to determine the thermal effects of ramping flows to zero for the two-hour inspection period.⁷

Since water temperatures remained constant during the inspections, and the inspections are scheduled in the early morning to minimize water quality effects during the two-hour inspection, it was determined that there was no significant impact to water temperature due to ramping down of flows for the inspections.

Water Salinity Patterns & Other Parameters:

The change in flow for outlet inspections would have no impact on water salinity patterns and other parameters.

Turbidity, Suspended Particulates:

The Russian River is listed as impaired on the US Environmental Protection Agency's (EPA) 303(d) list for both sedimentation and turbidity. Warm Springs Dam releases water through Dry Creek to the lower Russian River near Healdsburg, California. However, Dry Creek has not been observed to contribute persistent turbid waters downstream from the dam. This most likely has to do with the project's multiple inlet tunnels.

The Lake generally becomes turbid with the first heavy runoff of the year and remains turbid until early summer. However, during periods of low flow Dry Creek is exceptionally clear with turbidity levels less than 20 Formazin Turbidity Units (FTU). The inspection happened during the fall during the low flow period and stream surveys conducted downstream of the dam have confirmed that this project does not increase the turbidity levels downstream.⁸

Based on this data, there are no significant impacts to turbidity expected from the proposed project.

Mixing Zone:

Currents, Circulation or Drainage Patterns:

Due to the limited time period of the inspections, the current velocity, direction and variability of the stream and the present degree of turbulence, the two-hour inspection period would have no affect on these or any other relevant factors affecting rates and patterns of mixing.

The proposed project would have no affect on existing currents, circulation or drainage patterns.

⁷ Surveys between 2001 and 2008 have shown that water temperatures downstream of the dam typically range between 50 and 55°F during the inspections.

⁸ SCWA, USACE, CDFG, and NMFS have routinely conducted stream and fish surveys downstream of the project during the inspection period.

Erosion and Accretion Patterns:

The change in flow for outlet inspections would have no impact on existing erosion and accretion patterns.

Aquifer Recharge:

The change in flow for outlet inspections would have no impact on aquifer recharge.

Base Flow, Water Supplies and Conservation:

The two-hour reduction in flows needed to inspect the tunnel at Warm Springs Dam decreases the amount of water flowing through the reservoir into the Russian River.

Base flow will decrease from the previous day's current releases from the dam, typically 80 – 200 cfs. The flows will be “ramped-down” in increments of 25 cfs per hour until the flows reach 25 cfs. After two hours, the gates will open to allow a maximum 100 cfs to flow through the project into Dry Creek. After one hour, flows will be increased, if necessary, to normal operating flows as indicated by the guidelines in the *Water Control Manual*. Sonoma County Water Agency (SCWA) assumes control of the releases after the inspections are concluded.

The change in base flow is short in duration and the impacts are also no different than the existing baseline conditions.

5.1.2 Substrate:

During inspections, gravel bars in the middle of the stream may become slightly exposed in the upper reaches of the Dry Creek below Bord Bridge. Dry Creek is an incised and confined channel that limits the extent of exposed gravel bars along the creek.

There will be no change to the quality or quantity of the substrate when flows are resumed after the inspections.

5.1.3 Flood Control Functions

USACE operates Warm Springs Dam for flood control according to the Water Control Diagram in Exhibit A of the *Water Control Manual*. Flood control operations begin when pool elevations at Lake Sonoma are at or above 451 feet, which generally occurs each year in November and continues through April.

During mid to late-September, the effect on USACE flood control operations would not be an issue. About 95% of the time, the lake level normally reside about 15 feet below the bottom of the flood control pool and (see Appendix G) are scheduled for a two-hour period during the last two weeks of September, when the dam is operated strictly for water supply needs and minimum stream flow requirements under the direction of the Sonoma County Water Agency. Therefore,

no flood control functions will be affected by this action.

5.1.4 Storm, Wave and Erosion Buffers

The change in flow for outlet inspections would have no impact on any storm, wave, or erosion buffers.

5.1.5 Erosion and Accretion Patterns

The change in flow for outlet inspections would have no impact on existing erosion or accretion patterns.

5.1.6 Terrestrial Habitat:

Dry Creek flows downstream from Lake Sonoma through the Dry Creek Valley agricultural vineyards, which is surrounded on both sides by a thick riparian forest ranging from 50 to 300 feet in width on both sides.

The change in flow for outlet inspections would have no impact on terrestrial habitat.

5.1.7 Aquatic Habitat:

Dry Creek is an incised and confined channel. In-stream water temperature during the time of inspections in September is maintained in a range of 50 to 52 degrees, which is optimal for salmonids. Chinook salmon do spawn in the lower reaches of Dry Creek using the gravel in the main channel but mitigation measures that are in place ensure the ramping of flows (pre and post inspection) minimizes the potential for impacts on endangered or threatened species or their respective critical habitats (NMFS 2008).

5.1.8 Special Aquatic Sites:

The change in flow for outlet inspections would have no impact on wetlands, mudflats, coral reefs, sanctuaries and refuges or other special aquatic sites. Impacts on shallows, pool and riffle areas are discussed above in Aquatic Habitat.

5.1.9 Organisms:

Birds

The river habitat of the project site is utilized by many species of waterfowl and water birds. For a brief time, as the water levels drop, fish eating birds would become more prevalent as prey species are concentrated in shallow water. Once normal flows return this situation would revert to the normal prey and predator relationship.

Mammals

There are many species of mammals that utilize the area within and around Lake Sonoma. The most abundant species are as jack rabbits, deer, wild turkey and feral pigs. The reduction of flow in Dry Creek may have a short term impact on those that feed directly on the margins of Dry Creek. However, the reduction in flow for the inspections are no different than the existing (baseline) day to day flow changes coming from the dam.

Invertebrates

There are also many invertebrates species in the this area. The impact from the flow reduction might have short term temporary impacts on the feeding patterns of marine and non-marine invertebrates. Marine invertebrates and their habitat react to changes in water quality (See *Section 5.1.1. Water* for impacts discussion). Any impact to their habitat will be short and temporary. Again, the reduction in flow for the inspections are no different than the existing (baseline) day to day flow changes coming from the dam.

Fish

The Russian River and its estuary support a community of fish species that includes both resident and anadromous species, as well as native and introduced species. To date, 29 species, including 16 native species, have been collected or observed during Sonoma County Water Agency (SCWA) monitoring activities in the lower Russian River during the 1999 and 2000 sampling seasons. Three species not documented during SCWA monitoring activities have been historically reported and recorded in the Russian River: white sturgeon *Acipenser transmontanus*, green sturgeon *Acipenser medirostris*, and pink salmon *Oncorhynchus gorbuscha*. Historically, white and green sturgeon occasionally entered the Russian River, although these species apparently did not spawn or rear their young in the river. Stray pink salmon and chum salmon *Oncorhynchus keta* may occasionally be seen but are not known to reproduce in the Russian River. Abundant resident species inhabiting the main stem Russian River include smallmouth bass *Micropterus dolomieu*, Sacramento sucker *Catostomus occidentalis*, hardhead *Arius felis*, tule perch *Hysterocarpus traskii*, and California roach *Hesperoleucus symmetricus*.

Recent fish surveys downstream of Warm Springs Dam in 2008 and 2009 identified the following species in Dry Creek

California roach *Hesperoleucus symmetricus*, fathead minnow *Pimephales promelas*, hardhead *Arius felis*, Sacramento pikeminnow (squawfish) *Ptychocheilus grandis*, Pacific lamprey *Lampetra tridentata*, western brook lamprey *Lampetra richardsoni*, prickly sculpin *Cottus asper*, riffle sculpin *Cottus gulosus*, three-spine stickleback *Gasterosteus aculeatus*, Sacramento sucker *Catostomus occidentalis*, bluegill *Lepomis macrochirus*, green sunfish *Lepomis cyanellus* and Russian River tule perch *Hysterocarpus traskii* *pomo*.

On a few occasions, dead juvenile sculpin and stickleback have been found stranded and/or dead on top of exposed gravel bars. The minimization and mitigation measures used for “ramping” the flows during the inspections reduce but do not eliminate the small amount of mortality and stranding for fish species below the dam.

Endangered and Threatened Species

The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have provided USACE with lists of federally endangered, threatened and species of concern that may occur in the vicinity of, or be affected by, the proposed project.

The only federally endangered or threatened species that may be impacted by the two-hour inspection are the Central California Coast steelhead trout, the California Coastal Chinook salmon, Central California Coast Coho salmon, and their respective designated critical habitats. A formal Section 7 Endangered Species Act consultation has been done for this project and mitigation requirements have been incorporated into the project actions for annual inspections.⁹

"The continuous 25 cfs minimum bypass flow at WSD will likely avoid stranding and beaching of juvenile steelhead or coho salmon during annual pre-flood and five year periodic inspections... A pre-flood or periodic inspection of dam structure and operating systems also occurs during August or September at WSD. The Corps conducts inspections of WSD at specific times of the year and manner to avoid adverse effects to juvenile and adult salmonids... The Corps provides a minimum bypass flow of 25 cfs, but actual flows measured by the U.S. Geological Survey-Water resources Division (Ukiah Field Office) are typically 40 cfs. Inspections are conducted in late August or September to allow juvenile steelhead to reach a sufficient size to avoid stranding impacts during the ramp down of flow to the minimum stream levels maintained during the inspection. Surveys conducted by NMFS and the Corps during the inspections have not found stranding of juvenile salmonids. Conducting inspections in late August or September also allows the Corps to avoid Chinook salmon spawning in Dry Creek that usually begins in October..."

*By avoiding adverse effects to juvenile steelhead and adult Chinook salmon with inspection timing and bypass flows, the Corps has obtained NMFS' yearly concurrence (since 1998) that these activities are not likely to adversely affect listed salmonids or their critical habitats. NMFS expects that future inspections at WSD will also not likely adversely affect listed salmonid species or critical habitat, unless the Corps changes the manner in which the WSD inspections are carried out..."*¹⁰

⁹ In 1998, with the Federal listing of Central California Coast Coho salmon, USACE and NMFS developed "interim ramping rates" to minimize effects to listed salmonids, until Section 7 consultation could address the effects from dam operations in the Russian River. The Section 7 Consultation concluded with the issuance of the final B.O. for the Russian River in September 2008, which included revised “ramping rates” developed by USACE and NMFS. NMFS has determined that these “ramping rates” would create conditions downstream that would not significantly impact or adversely affect the continuing existence of steelhead, coho or Chinook salmon or their critical habitat.

¹⁰ Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by USACE, SCWA, and MCRRFID in the Russian River Watershed. September 24, 2008 (NMFS)

NMFS examined the potential for flow ramp-downs associated with flood releases and inspections at WSD that could to adversely affect rearing habitat in the main stem of Dry Creek. USACE continues to use ramping rates of 250 cfs/hr when flows are between 250 and 1,000 cfs, and 25 cfs/hr when flows are less than 250 cfs. When WSD releases flows of 1,000 cfs or greater, the ramping rates are limited to not more than 1,000 cfs on the ramp down, and no more than 2,000 cfs when ramping up. NMFS and USACE staff conducted surveys of Dry Creek during pre-flood inspections to determine if these operations have a high potential to cause intermittent flow and/or dewatering of Dry Creek during ramp downs. NMFS and USACE concluded that these impacts will be limited due to the relatively steep banks and the general lack of side-channels and other areas where flows could become intermittent or scarce.¹¹

Mitigation measures (timing and ramping rates) have been in place for several years to ensure the ramping of flows for the inspections minimizes the potential for impacts on endangered or threatened species and their respective critical habitats.

5.1.10 Air Quality

The California Clean Air Act is designed to safeguard the public interest by an intensive, coordinated state, regional, and local effort to protect and enhance the ambient air quality of the state. To foster a regional approach, the state is divided into air basins/districts. Each air district shall establish standards for the emission of identifiable odor-causing substances. Exceptions or variances may be granted from such standards in a manner provided by each district. No person shall discharge from any source any contaminant which violates such standards. This project lies in the area regulated by the Northern Sonoma County Air Pollution Control District. The proposed action has no construction component and would have no impacts to air quality.

5.1.11 Geology and Soils

The change in flow for outlet inspections would have no impact on geology and soils.

5.1.12 Mineral Resources

The change in flow for outlet inspections would have no impact on mineral resources.

5.1.13 Noise

The change in flow for outlet inspections would have no impact on noise parameters.

5.1.14 Recreation

The developed recreational areas above the dam will not be adversely affected by this action as there would be no change in water surface elevation from normal operational conditions. There are no recreational impacts identified by this temporary reduction in flow.

¹¹ Based on annual surveys conducted by NMFS [REDACTED] and USACE [REDACTED] 2007.

5.1.15 Land Use Classification

The change in flow for outlet inspections would have no impact on land use classification.

5.1.16 Transportation and Traffic

The change in flow for outlet inspections would have no impact on transportation or traffic.

5.1.17 Navigation

The change in flow for outlet inspections would have no impact on navigation.

5.1.18 Prime and Unique farmland

The change in flow for outlet inspections would have no impact on prime and unique farmland.

5.1.19 Aesthetics/Visual Impact

The reduction in flow for outlet inspections would not impact the aesthetics of Dry Creek.

5.1.20 Public Facilities, Utilities and Services

The hydroelectric power project at Lake Sonoma makes no changes to the storage capacities of the reservoir and does not alter the timing or quantity of releases from the reservoir. Its principal purpose is to use current releases to generate power. The requirements of all prior water rights will still be met. All water diverted by the power plant will be returned immediately to the river downstream of the power plant.

5.1.21 Public Health and Safety

The change in flow for outlet inspections would have no negative impact on the dam's flood control functions (see 5.1.3 Flood Control Functions) and will not negatively impact public health and safety. The dam inspections have a strong beneficial impact on public health and safety, by assuring the safety, continued structural integrity, and operational adequacy of Warm Springs Dam, while ensuring early identification of any deficiencies that may be addressed prior to each year's flood season.

5.1.22 Hazardous and Toxic Materials

The change in flow for outlet inspections would convey no hazardous or toxic material into the project area.

5.1.23 Energy - Consumption or Generation

The inspections require that the hydroelectric power plant go offline during the inspection period when the flows are reduced to 25 cfs from its normal operational flows on the day of the inspections.¹²

This is an unavoidable impact for assuring the continued safe operations of the dam. The impact is not considered significant because, without the safe operation of the dam, the power plant would not be operational.

5.1.24 Historic monuments, parks, national seashores, wild & scenic rivers, wilderness area, research sites, etc.

The change in flow for outlet inspections would have no impact on historic monuments, parks, national seashores, wild and scenic rivers, or wilderness areas. The inspections take place in September, outside the migration window for steelhead and salmon; therefore there will be no impact to the DCFH site.

5.1.25 Archaeological Sites

No significant cultural resources will be impacted by the temporary reduction in flows for this project.

5.1.26 Socio-Economic Impacts

Environmental Justice

The change in flow for outlet inspections would have no impact on environmental justice.

Growth Inducing Impacts - Community Growth, Regional Growth

The existence of Warm Springs Dam and Lake Sonoma has a beneficial secondary and continuing impact of helping to preserve the area's present rate of economic growth.

Conflict with Land Use plans, Policies or Controls

The change in flow for outlet inspections would not be in conflict with land use plans, policies, or controls.

Irreversible Changes, Irretrievable Commitment of Resources

The change in flow for outlet inspections will cause no irreversible changes or irretrievable commitment of resources.

¹² SCWA power plant requires a minimum 70 cfs flow to operate.

5.2 Potential Impacts on Other Agencies and Individual Interests:

5.2.1 Sonoma County Water Agency (SCWA)

Since the lake level rarely exceeds the conservation space during September, SCWA has jurisdiction over the releases. SCWA currently holds four permits (12947A, 12949, 12950, and 16596) that allow SCWA to appropriate water from the Russian River, the East Fork Russian River, and Dry Creek for domestic, industrial, municipal, irrigation, and recreational uses. To avoid violating the terms of Permit 12947A as a result of USACE inspection and maintenance activities, SCWA must petition the State Water Resources Control Board (SWRCB) to obtain a temporary order that would reduce the minimum in-stream flow requirements. SWRCB Decision 1610 issued 17 April 1986, dictates that a minimum flow of 25 cfs is required immediately below Warm Springs Dam. The minimum in-stream flow requirement for the Russian River between the confluence with the East Fork Russian River and the confluence with Dry Creek varies depending on whether the year is classified as wet, dry, or critical. This is detailed in *Exhibit A* of the WCM.

6.0 SUMMARY OF INDIRECT AND CUMULATIVE EFFECTS

6.1 Indirect Effects

6.1.2 Endangered and Threatened Species

An inventory of listed and proposed endangered and threatened species and candidate species that may occur in the project area was requested from the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). These inventories are provided in Appendix D. Species under the jurisdiction of USFWS were determined by USACE and USFWS to not be impacted by this project. However, three species under the jurisdiction of NMFS were determined to be affected directly by the proposed project. These species and their respective critical habitat are the steelhead trout, coho salmon, and Chinook salmon.

USACE initiated formal consultation under Section 7 of the Endangered Species Act (ESA) with the Endangered Species branch of NMFS in 1998. All avoidance and minimization measures as well as terms and conditions in the Biological Opinion of 2008 were incorporated into the proposed project.

6.2 Cumulative Effects

NEPA requires that an environmental evaluation discuss project effects which, when combined with the effects of other past, present, or foreseeable future projects, could result in significant cumulative effects.

6.2.1 Negative Cumulative Effects.

The reduction in flows from Warm Springs Dam for two hours could affect the upper mile of Dry Creek downstream of the dam. The water surface elevation decreases about 1 to 1-1/2 feet (the wetted width does not significantly change) during the shutdown and quickly rises back to pre-project conditions after the completion of the inspections.

Some fish species, in the same area, may become dewatered from the higher gravel bars in the main channel of the river or from the bank margins that may be exposed during the ramping down of flows phase. The timing of this project has been scheduled for the fall of each year, where the size of most of the fish species are large enough to maneuver away from areas affected by the reduction in water surface elevation in the outer margins of the river.

Reservoir storage is expected to remain approximately the same during the reduction in outflow and during the inspection. These changes are not likely to result in significant cumulative effects on water supply and quality or other resources.

Based on these analyses, the proposed action would not result in any significant negative cumulative effects.

6.2.2 Positive Cumulative Effects

The outlet works inspections result in significant beneficial cumulative effects, ensuring the continued safety, continued structural integrity, and operational adequacy of Warm Springs Dam, while ensuring early identification of any deficiencies that may be addressed prior to each year's flood season. The safety of the dam becomes more important each year as the region downstream of the dam becomes ever more populated. USACE estimates that a Warm Springs Dam failure would cause between \$2 to 14 billion in damages alone. The population at risk ranges from 14,000 to 85,000 people, and loss of life is estimated between 0 to 100 people.¹³

The presence of Warm Springs Dam and Lake Sonoma offers not only flood control protection, hydropower, water supply, and recreation but continues to have a beneficial secondary and continuing impact of helping to preserve the areas present rate of economic growth. None of these beneficial impacts would be possible without the dam's yearly inspections.

Based on these analyses, the proposed action would result in significant positive cumulative effects.

¹³ Documentation for Screening for Warm Springs Dam, May 24, 2006 (USACE).

6.3 Other Cumulative Effects Not Related to Proposed Action

The two-hour inspection periods would have no foreseeable significant negative cumulative effects on the following parameters not related to the proposed action:

1. Occurred on-site historically.
2. Likely to occur within the foreseeable future.
3. Contextual relationship between the proposed action and historic and future impacts.

7.0 ENVIRONMENTAL COMPLIANCE

Table 7.1 Environmental Compliance

Statute	Status of Compliance
National Environmental Policy Act (NEPA) of 1969 (42 USC §4341 <i>et seq</i>) Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR 1500-1508) dated July 1986	This EA has been prepared for continuing compliance with NEPA. All agency and public comments will be considered and evaluated. If appropriate, a FONSI will be signed with a conclusion of no significant impacts from this proposed action.
Clean Air Act (42 USC §7401 <i>et seq</i>)	No aspects of the proposed project have been identified that would result in violations to air quality standards. A conformity determination in accordance with the Clean Air Act is not required.
Clean Water Act of 1972 (33 USC §1251 <i>et seq</i>)	The proposed action would not involve the placement of dredged or fill material in waters of the U.S. Consequently, assessments under Sections 404 and 401 of the Clean Water Act are not required.
Rivers and Harbors Act of 1899 (33 USC §403)	N/A
Executive Order 11988, Floodplain Management (42 Fed. Reg. 26,951, 1977)	This order directs Federal agencies to avoid adverse effects associated with occupancy or modification of flood plains, and direct or indirect support of development in the flood plain. The proposed action would not increase occupancy, modify, or create development in flood plains.
Executive Order 11990, Protection of Wetlands, (42 Fed. Reg. 26,961, 1977)	This order directs Federal agencies to avoid adverse effects associated with destruction or modification of wetlands, and to avoid support of new construction in wetlands. The proposed action would not result in the destruction or adverse modification of wetlands.
Executive Order 12898, Environmental Justice (59 Fed. Reg. 7,629, 1994)	This order requires Federal agencies to identify and address “disproportionately high and adverse human health or environmental effects” of Federal actions on minority and low-income populations. The proposed action would not disproportionately affect any minority or low-income populations.
Endangered Species Act of 1973 (16 USC §1531, as amended)	An inventory of listed and proposed endangered and threatened species and candidate species that may occur in the project area was requested from the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). These inventories are provided in Appendix D. Species under the jurisdiction of USFWS were determined not to be impacted by this project. USACE initiated formal consultation under Section 7 of the Endangered Species Act (ESA) with the Endangered Species branch of NMFS in 1998. All avoidance and minimization measures as well as terms and conditions in the Biological Opinion of 2008 for this action was incorporated into the proposed project and NMFS has stated that "The continuous 25 cfs minimum bypass flow at WSD will likely avoid stranding and beaching of juvenile steelhead or coho salmon during annual pre-flood and five-year periodic inspections.""
Fish and Wildlife Coordination Act (16 USC §§661-666c)	N/A: There is no construction component for this project.
Magnuson-Stevens Fishery Conservation and Management Act Fishery Conservation Amendments of	The proposed action has been coordinated with NMFS as part of the Russian River Project, which covered all current USACE actions

Warm Springs Dam and Lake Sonoma
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1996, (16 USC §1801 <i>et seq</i>) – Essential Fish Habitat (EFH)	including conduit inspection procedures. An EFH consultation has been done and recommendations are currently in the initial study phase for implementation by USACE.
Migratory Bird Treaty Act (16 USC §§703-711)	N/A
Marine Mammal Protection Act (16 USC §1361 <i>et seq</i>)	N/A
National Marine Sanctuaries Act (16 USC §1431 <i>et seq</i>)	N/A
Marine Protection Research and Sanctuaries Act of 1972 (33 USC §1401 <i>et seq</i>) Or Ocean Dumping Ban Act of 1988 (Pub. L. No. 100-688; § 2030)	N/A
National Historic Preservation Act (16 USC §470 and 36 CFR Part 800): Protection of Historic Properties	The potential impact areas are not listed or are eligible for listing on the National Register of Historic Places.
E.O. 11593: Protection and Enhancement of the Cultural Environment	See NHPA above
Archaeological and Historic Preservation Act of 1974, (16 USC §469 <i>et seq</i>)	See NHPA above.
Abandoned Shipwreck Act of 1987, (43 USC §2101 <i>et seq</i>)	N/A
Farmland Protection Policy Act of 1981 (7 USC §4201 <i>et seq</i>)	This order directs Federal agencies to conserve prime and unique farmlands. The proposed project would not result in the conversion of any prime, unique, state, or locally important farmland to nonagricultural uses.
Submerged Lands Act, (Pub. L. No. 82-3167; 43 USC §1301 <i>et seq</i>)	N/A

N/A = non-applicable

8.0 AGENCIES CONSULTED AND PUBLIC NOTIFICATION

8.1 Section 7 Consultation

Formal Section 7 Endangered Species Act consultation has been done for this project and mitigation requirements have been incorporated into the project actions for annual inspections (see Section 9.0). These mitigation measures were developed by USACE and NMFS and were based on results of annual surveys dating back to 1997.

8.2 Agency and Public Participation

The notification process includes mailing a project notice to agencies and other stakeholders regarding the availability of this EA, and the EA will be posted on the USACE web site for public access.¹⁴ The following agencies are listed as placeholders; summary of the comments will be entered after the comment period has ended. A complete list of notified agencies is located in Appendix C.

A. Federal agencies:

- 1) U.S. Fish and Wildlife Service
- 2) National Marine Fisheries Service
- 3) Federal Energy Regulatory Commission

B. State and local agencies:

- 5) North Coast Regional Water Quality Control Board
- 6) California Department of Fish and Game
- 7) Sonoma County Water Agency
- 8) State Water Resources Control Board

9.0 MITIGATION MEASURES

Mitigation measures for this project have been developed and refined by USACE and NMFS over ten years since the inception of the MOU for the Section 7 consultation on the Russian River in 1997 and are now standard operating criteria required for this project, as analyzed and referenced in the Biological Opinion for this project issued in 2008.

The criterion is to use ramping rates of 250 cfs/hr when flows are between 250 and 1,000 cfs, and 25 cfs/hr when flows are less than 250 cfs. When WSD releases flows of 1,000 cfs or greater, the ramping rates are limited to no more than 1,000 cfs on the ramp down, and no more than 2,000 cfs when ramping up

¹⁴ http://www.spn.usace.army.mil/project_programs/project_a_z.html

In summary, NMFS has determined that these ramping rates would create conditions downstream that would not significantly impact or adversely affect the continuing existence of steelhead, coho or Chinook salmon or their critical habitat.

10.0 DETERMINATION AND STATEMENT OF FINDINGS

A Finding of no Significant Impact (FONSI) (33 CFR Part 325) is anticipated.

The FONSI will be prepared after agency and stakeholder comments to this EA area addressed. A draft FONSI is attached as Appendix A.

11.0 LITERATURE CITED

1. U.S. Army Corps of Engineers. Water Control Manual Warm Springs Dam and Lake Sonoma, Dry Creek, Appendix II To Master Water Control Manual, Russian River Basin, California, Sacramento District September 1984.
2. SWRCB (California State Water Resources Control Board). 1986. Russian River Project, Decision 1610. Application 19351 and Petitions on Permits 12947A, 12949, 12950, and 16596, Issued on Applications 12919A, 15736, 15737, and 19351 of Sonoma County Water Agency. East Fork Russian River, Russian River, and Dry Creek in Mendocino and Sonoma Counties. April 17, 1986.
3. U.S. Army Corps of Engineers. Water Control Manual Coyote Valley Dam and Lake Mendocino, Appendix I To Master Water Control Manual Russian River Basin, California, Sacramento District August 1986.
4. U.S. Army Corps of Engineers. Sediment Transport Studies, Dry Creek, Sacramento District Office Report. 1987.
5. U.S. Army Corps of Engineers, Revision to Water Control Manual, Warm Springs Dam, Lake Sonoma, Dry Creek, California, Exhibit A - Standing Instructions To The Project Operators For Water Control Warm Springs Dam, Lake Sonoma, September 2003.
6. U.S. Army Corps of Engineers, Revision to Water Control Manual, Coyote Valley Day, Lake Mendocino, California, Exhibit A - Standing Instructions To The Project Operators For Water Control Coyote Valley Dam, Lake Mendocino, September 2003.
7. NOAA Fisheries. Biological Opinion for Coyote Valley Dam Periodic Inspection (2004 – 2009). September 14, 2004.
8. Entrix. Biological Assessment for the Russian River, September 29, 2004.
9. Sonoma County Water Agency, Dry Creek MOTIV Test Fisheries Survey, June 24, 2008.
10. National Marine Fisheries Service, Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed, September 24, 2008.
11. National Marine Fisheries Service, Addendum to Incidental Take Statement for the Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed, March 30, 2009

Additional References

1. U.S. Army Corps of Engineers, (August 1986). *Coyote Valley Dam and Lake Mendocino Water Control Manual*, Sacramento District, Sacramento, CA
2. U.S. Army Corps of Engineers, (September 2003). *Russian River Flood Control Projects*,
a. *Exhibit A*, Sacramento District, Sacramento, CA
3. U.S. Army Corps of Engineers (May 2006). *Documentation for Screening for Warm Springs*.
4. U.S. Department of Commerce, (September 2005). *Biological Opinion for Pre-flood Inspections at Coyote Valley Dam 2005-2009*, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region.
5. U.S. Department of Commerce, (September 2008). *Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance Conducted by the U.S. Army Corps of Engineers and the Sonoma County Water Agency in the Russian River Watershed*, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region.

Existing Documents and Environmental Documents

1. *The Warm Springs Dam and Lake Sonoma Water Control Manual. Russian River, California* is prepared and updated in accordance with instructions contained in Engineering Regulation (ER) 1110-2-240, Engineering Manual (EM) 1110-2-3600, and Engineering Technical Letter (ETL) 1110-2-251.
2. USACE Engineering Regulation (ER) 1110-2-100 *Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures* states that structures must be periodically inspected and evaluated to ensure their structural integrity, safety, and operational adequacy if failure or partial failure could jeopardize the operational integrity of the project, endanger the lives and safety of the public or cause substantial property damage.

APPENDICES

Appendix A:

DRAFT Finding Of No Significant Impact (FONSI)

Draft Finding Of No Significant Impact (FONSI)

Environmental Assessment

Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections

Action. USACE proposes to reduce the flows from Warm Springs Dam to no less than 25 cfs for a period of two hours in the fall of each year to conduct dam safety inspections inside the conduit, which conveys water from Lake Sonoma into Dry Creek for the purposes of flood control, water supply and hydroelectric power. This action enables a dam inspection safety team to visually inspect the dewatered tunnel, gates, and stilling basin for any structural problems that could compromise the safety of the dam. These procedures have been documented as *Exhibit E – Warm Springs Dam and Lake Sonoma Operational Requirements for Pre-flood and Periodic Inspections and Maintenance Activities (November 2009)*, which is an amendment to the *Water Control Manual – Coyote Valley Dam and Lake Mendocino, Russian River, California*.

II. Additional References. *Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed (NMFS 2008)*.

III. Factors Considered. Factors considered for this FONSI are impacts on air and water quality, fish and wildlife, endangered/threatened species, cultural resources, aquatic resources, and aesthetics. In addition, indirect and cumulative impacts were addressed in the attached Environmental Assessment for this action.

IV. Conclusion. Based on the information obtained in the preparation of the Environmental Assessment for this action, the mitigation measures identified in the document, and the associated permits, it is concluded the proposed action will not have a significant impact on the quality of the human environment. Therefore, the preparation of an Environmental Impact Statement is not required.

Date



Appendix B:

Environmental Compliance

Environmental Compliance

1.0 Project history of NEPA compliance and other associated studies

The actions and procedures used for preparing the tunnel for inspections has historically been determined to be a routine operation and maintenance action that would not result in substantial change to existing environmental conditions or result in any significant individual or cumulative impacts on the human environment. For that reason, it has been deemed consistent with 40 CFR Part 1508.4, and Department of Army procedures in Engineer Regulation (ER) 200-2-2.

The inspections falls under the provisions of 33 CFR § 230.9 (b), Corps of Engineers – Procedures for Implementing NEPA, that state activities at completed Corps projects that carry out the authorized project purpose, such as routine operation and maintenance when considered individually and cumulatively do not have significant effects on the quality of the human environment, are categorically excluded from NEPA documentation. It has been determined that this activity is a routine operation and maintenance action and 33 CFR § 230.9 (b) applies. It is noted this does not exempt the proposed project from compliance with other Federal laws.¹⁵

2.0 Endangered Species Act (ESA) and Magnuson-Stevens Fishery Conservation and Management Act

Programmatic Russian River Biological Assessment (1997 – 2023)¹⁶

In December 1997, a MOU between SCWA, NMFS, and USACE was signed to jointly accomplish a watershed wide Russian River ESA Section 7 consultation that would result in a Biological Opinion for the threatened Chinook salmon, steelhead, and endangered Coho salmon. Over time this consultation panel grew to include California Department of Fish and Game (DFG) and Mendocino County water agencies.

The existing operations at the project did not affect listed species under the jurisdiction of the US Fish and Wildlife Service and thus no consultation was required with them.

This Section 7 Consultation included the deviations associated with the pre-flood and periodic inspections at Warm Springs Dam and Coyote Valley Dam.

After almost 11 years of analysis and multiple scientific investigations by NMFS, SCWA, DFG, and SPN, a multi-agency team worked together to develop the eight Reasonable and Prudent Alternatives (RPA) modifications, eight Reasonable and Prudent Measures (RPM), and seven Conservation Recommendations that would allow the project to operate without jeopardizing the continued existence of endangered species or their critical habitat.¹⁷

¹⁵ This action was reviewed by USACE Office of Counsel in 1993, 1996 and 2006 to affirm that an EA was not required.

¹⁶ On September 14, 2004, NMFS provided to USACE, a five-year biological opinion which covered the deviations at Coyote Valley Dam. This was incorporated into the Final BO dated September 24, 2008..

¹⁷ The inspections at Warm Springs Dam are not subject to the RPAs and/or RPMs in the Biological Opinion.

The final Biological Assessment was completed and submitted to NMFS on September 29, 2004.

The final BO and Essential Fish Habitat Conservation Recommendations were released on September 24, 2008. The two agencies primarily responsible for the implementation of the terms and conditions within the BO are SPN and SCWA. A March 30, 2009 amendment was issued by NMFS, which included clarification on SCWA activities.

4.0 Clean Water Act (CWA)

Sec 404 (b)(1) Analysis : **N/A**

Sec 401 – Water Quality Certification or Waiver: **N/A**

5.0 Clean Air Act (CAA)

Conformity Analysis/Determination: **N/A**

6.0 Coastal Zone Management Act (CZMA)

Consistency of Determination: **N/A**

7.0 Fish and Wildlife Coordination Act (FWCA)

Planning Aid Report (PAR): **N/A**

Appendix C:

Agency and Public Participation

AGENCY AND PUBLIC PARTICIPATION

1.0 Mailing Lists

U.S. Fish and Wildlife Service

National Marine Fisheries Service

Federal Energy Regulatory Commission

North Coast Regional Water Quality Control Board

California Department of Fish and Game

Sonoma County Water Agency

State Water Resources Control Board

2.0 Agency Comments

Include all agency comments received (and dates) that were summarized in section 7.1

3.0 Public Comments/Responses [if applicable]

Include all public comments and responses (and dates) that were summarized in section 7.1.

Appendix D:

Joint Federal Species List for Lake Mendocino and Lake Sonoma

JOINT FEDERAL SPECIES LIST FOR LAKE SONOMA/ LAKE MENDOCINO
Sacramento Fish & Wildlife Office Species List

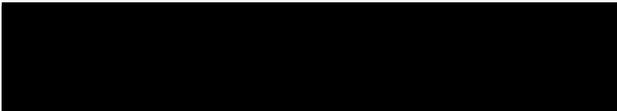


United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



June 23, 2009

Document Number: 090623105433



Subject: Species List for Water Control Manual Deviations for Annual Inspections of Lake Sonoma and Lake Mendocino



We are sending this official species list in response to your June 23, 2009 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be September 21, 2009.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested
Document Number: 090623105433
Database Last Updated: January 29, 2009

Quad Lists

WARM SPRINGS DAM (519A)

Listed Species

Invertebrates

Syncaris pacifica
California freshwater shrimp (E)

Fish

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Northern California steelhead (X) (NMFS)
Northern California steelhead (T) (NMFS)

Oncorhynchus tshawytscha
California coastal chinook salmon (T) (NMFS)
Critical habitat, California coastal chinook salmon (X) (NMFS)

Birds

Brachyramphus marmoratus
marbled murrelet (T)

Strix occidentalis caurina
northern spotted owl (T)

Ukiah (550B)

Listed Species

Fish

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)

Oncorhynchus tshawytscha
California coastal chinook salmon (T) (NMFS)
Critical habitat, California coastal chinook salmon (X) (NMFS)

Sacramento Fish & Wildlife Office Species List

Birds

Brachyramphus marmoratus
marbled murrelet (T)

Strix occidentalis caurina
northern spotted owl (T)

Plants

Lasthenia burkei
Burke's goldfields (E)

Candidate Species

Mammals

Martes pennanti
fisher (C)

County Lists

No county species lists requested.

Key:

- (E) *Endangered* - Listed as being in danger of extinction.
- (T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
- (P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.
- Critical Habitat* - Area essential to the conservation of a species.
- (PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
- (C) *Candidate* - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Sacramento Fish & Wildlife Office Species List

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service. During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Sacramento Fish & Wildlife Office Species List

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be September 21, 2009.

Appendix E:

Consultation History

CONSULTATION HISTORY

1. National Marine Fisheries Service. Letter. Emergency Consultation for EWSL. August 22, 1997.
2. National Marine Fisheries Service. Biological Opinion. Repair of the Emergency Fish Hatchery Water Supply Pipeline and completion of an annual pre-flood Inspection at Warm Springs Dam/Lake Sonoma Dam. September 30, 1997.
3. U.S. Army Corps of Engineers. Letter. Request Section 7 Consultation for EWSL testing. November 25, 1997.
4. U.S. Army Corps of Engineers. Supplement to: Biological Assessment for the repairs of the 20-inch Emergency Water Pipeline, Pre-Flood Inspections, and Vibration Analysis at Warm Springs Dam, Sonoma County, California November 1997.
5. U.S. Army Corps of Engineers. Exhibit A: Standing Instructions to the Project Operators for Water Control, Warm Springs Dam, Lake Sonoma. Water Control Manual, Warm Springs Dam, Lake Sonoma. 1998.
6. National Marine Fisheries Service. Letter. Consultation for EWSL. January 8, 1998.
7. U.S. Army Corps of Engineers. Letter. Formal Consultation for EWSL. January 21, 1998.
8. National Marine Fisheries Service. Letter. Consultation for EWSL. January 28, 1998
9. U.S. Army Corps of Engineers. E-Mail. Proposal to fix and reinstall damaged flashboards at Warm Springs Dam. April 23, 1998.
10. National Marine Fisheries Service. E-Mail. Concurrence and ramping rates for flashboard repairs. April 24, 1998.
11. National Marine Fisheries Service. Letter. Recommended interim ramping rates. March 24, 1998.
12. National Marine Fisheries Service. Letter. Vibration Testing. April 3, 1998.
13. National Marine Fisheries Service. Letter. Vibration Analysis. June 17, 1998..
14. National Marine Fisheries Service. Letter. Scheduling of Periodic Inspections. July 22, 1998.
15. U.S. Army Corps of Engineers. Letter. Request Section 7 Consultation for Periodic Inspections. July 24, 1998.

16. U.S. Army Corps of Engineers. Biological Assessment. Periodic Inspections for Warm Springs Dam, Sonoma County and Coyote Valley Dam, Mendocino County. July 1998.
17. National Marine Fisheries Service. Letter. Periodic Inspections. July 27, 1998.
18. U.S. Army Corps of Engineers. Letter. Periodic Inspections. August 21, 1998.
19. National Marine Fisheries Service. Biological Opinion. Periodic Dam Inspections at Warm Springs Dam and Coyote Valley Dam. September 4, 1998.
20. National Marine Fisheries Service. Letter. Stream Monitoring Survey Results performed by National Marine Fisheries Service staff. November 3, 1998.
21. National Marine Fisheries Service. Letter. Consultation prior to flood season activities. November 4, 1998.
22. U.S. Army Corps of Engineers. Letter. Submission of Biological Assessment for Flood Control Operations of Coyote Valley Dam, Mendocino County and Warm Springs Dam, Sonoma County Russian River Basin, California. November 17, 1998.
23. U.S. Army Corps of Engineers. Biological Assessment. Flood Control Operations Of Coyote Valley Dam, Mendocino County and Warm Springs Dam, Sonoma County, Russian River Basin, California. Incorporates the monitoring reports and recommendations from the most recent pre-flood inspections, maintenance activities and five-year periodic inspection. 1998.
24. U.S. Army Corps of Engineers. Letter. Proposal to remove flashboards from stilling basin at Warm Springs Dam. December 4, 1998.
25. U.S. Army Corps of Engineers. Letter. Supplemental Information for proposal to remove flashboards from stilling basin at Warm Springs Dam. December 9, 1998.
26. National Marine Fisheries Service. NLAA Determination. Flashboard Removal at Warm Springs Dam. December 9, 1998.
27. U.S. Army Corps of Engineers. Biological Assessment, Flood Control Operations of Coyote Valley Dam, Mendocino County and Warm Springs Dam, Sonoma County, 1999.
28. U.S. Army Corps of Engineers. Letter. Request change of NLAA determination. February 2, 1999.
29. National Marine Fisheries Service. NLAA Determination. Flashboard Removal at Warm Springs Dam. February 3, 1999.

30. U.S. Army Corps of Engineers. Letter. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam and Warm Springs Dam in the Russian River Basin. May 4, 1999.
31. U.S. Army Corps of Engineers. Letter. Additional Information Coyote Valley Pre-Flood Inspection, June 1999. May 17, 1999.
32. National Marine Fisheries Service. Biological Opinion. Pre-flood Inspections at Coyote Valley Dam and Warm Springs Dam 1999. June 8, 1999.
33. National Marine Fisheries Service. Amendment to Biological Opinion for Pre-flood Inspections at Coyote Valley Dam and Warm Springs Dam 1999. June 10, 1999.
34. U.S. Army Corps of Engineers. Emergency Inspection of EWSL at Lake Sonoma / Warm Springs Dam Project. February 22, 2000.
35. National Marine Fisheries Service. NLAA Determination. Emergency Water Supply Line inspection. February 23, 2000.
36. U.S. Army Corps of Engineers. Letter. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam and Warm Springs Dam in the Russian River Basin. March 17, 2000.
37. National Marine Fisheries Service. Biological Opinion. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam and Warm Springs Dam in the Russian River Basin. May 9, 2000.
38. U.S. Army Corps of Engineers. Pre-Flood Inspection Report – Observations and Lessons Learned. May 11, 2000.
39. U.S. Army Corps of Engineers. Rescheduling of FY 2000 Pre-Flood Inspection / Gate Testing for Coyote Valley Dam and Sonic Meter Installation at Warm Springs Dam. Summer 2000.
40. National Marine Fisheries Service, Biological Opinion. Rescheduling of FY 2000 Pre-Flood Inspection / Gate Testing for Coyote Valley Dam and Sonic Meter Installation at Warm Springs Dam. October 11, 2000.
41. U.S. Army Corps of Engineers. Results of the USACE, NMFS, SCWA Interagency Stream Survey Report for Pre-Flood Inspections. November 2000.
42. U.S. Army Corps of Engineers. Letter. Pre-Flood Inspections and Dam Safety Repairs for Warm Springs Dam in the Russian River Basin. July 11, 2001.
43. U.S. Army Corps of Engineers. Letter. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam in the Russian River Basin. July 24, 2001.

44. National Marine Fisheries Service. Concurrence with NLAA Determination. FY 2001 Pre-Flood Inspections for Warm Springs Dam. October 27, 2001.
45. U.S. Army Corps of Engineers. Pre-Flood Inspections for Warm Springs Dam. March 28, 2002.
46. U.S. Army Corps of Engineers. FY 2002 Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam in the Russian River Basin. August 22, 2002.
47. National Marine Fisheries Service. Concurrence for Warm Springs Pre-Flood Inspections. August 14, 2002.
48. National Marine Fisheries Service. Biological Opinion and EFH Consultation for 2002 Coyote Dam Periodic Inspections and Incidental Take Permit. September 25, 2002.
49. Sonoma County Water Agency. Flow Measurements from Coyote Pre-flood Inspections. November 27, 2002.
50. Draft Biological Assessment – Russian River Part 1, Entrix, Inc. June 13, 2003.
51. U.S. Army Corps of Engineers – Periodic Inspections for Warm Springs Dam. June 25, 2003.
52. U.S. Army Corps of Engineers – Pre-flood Survey Results 2001-2002, July 2003.
53. Field Notes and Flow Data Charts. SCWA, USACE, NMFS (NOAA Fisheries). 2001-2002.
54. NOAA Fisheries. NLAA Concurrence Letter for Periodic Inspections at Warm Springs Dam. July 22, 2003.
55. U.S. Army Corps of Engineers – Periodic Inspection Reschedule for Warm Springs Dam. August 6, 2003.
56. U.S. Army Corps of Engineers – Periodic Inspections for Coyote Valley Dam. August 7, 2003.
57. NOAA Fisheries. Biological Opinion for Coyote Valley Dam Periodic Inspection. September 15, 2003.
58. Entrix. Draft Biological Assessment – Russian River – Internal Review Draft, November 21, 2003.
59. Entrix, Flow-Habitat Assessment Study, November 21, 2003

60. U.S. Army Corps of Engineers. FY 2004 Pre-Flood Inspections for Coyote Valley Dam in the Russian River Basin. July 8, 2004.
61. U.S. Army Corps of Engineers. FY 2004 Pre-Flood Inspections for Warm Springs Dam. July 8, 2004.
62. National Marine Fisheries Service. Concurrence for Warm Springs Pre-Flood Inspections. August 14, 2002.
63. NOAA Fisheries. NLAA Concurrence Letter for Periodic Inspections at Warm Springs Dam. September 2, 2004.
64. NOAA Fisheries. Biological Opinion for Coyote Valley Dam Periodic Inspection (2004 – 2009). September 14, 2004.
65. U.S. Army Corps of Engineers. Transmittal of Biological Assessment for Russian River Activities and Request for Biological Opinion for Existing Activities. September 29, 2004.
66. Entrix. Biological Assessment for the Russian River, September 29, 2004.
67. U.S. Army Corps of Engineers. FY 2007 Pre-Flood Inspections for Warm Springs Dam. July 13, 2007.
68. U.S. Army Corps of Engineers. FY 2008 Periodic Inspections for Warm Springs Dam utilizing MOTIV. June 17, 2008.
69. National Marine Fisheries Service, Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed, September 24, 2008.
70. U.S. Army Corps of Engineers, Comments on Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed. January 30, 2009.
71. U.S. Army Corps of Engineers. Memorandum for Record - NEPA Compliance - Deviations at Coyote Valley Dam, February 18, 2009.
72. National Marine Fisheries Service, Addendum to Incidental Take Statement for the Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Corps of Engineers, the Sonoma County Water

Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed, March 30, 2009

73. U.S. Army Corps of Engineers, Water Control Manual, Coyote Valley Dam and Lake Mendocino, Russian River, California. Draft Exhibit E – Operational Requirements for Pre-Flood and Periodic Inspections and Maintenance Activities, Sacramento District, May 2009.
74. U.S. Army Corps of Engineers. Memorandum for Record – Lake Mendocino Power Plant Transitioning Recommendations and MOTIV testing for future pre-flood and periodic inspections. May 1, 2009
75. U.S. Army Corps of Engineers. Environmental Assessment and Finding of No Significant Impact – Coyote Valley Dam and Lake Mendocino Operational Requirements for Pre-flood and Periodic Inspections. December 29, 2009.

Appendix F:

“Exhibit E”

WARM SPRINGS DAM AND LAKE SONOMA OPERATIONAL REQUIREMENTS FOR PRE-FLOOD AND PERIODIC INSPECTIONS AND MAINTENANCE ACTIVITIES

WATER CONTROL MANUAL
WARM SPRINGS DAM AND LAKE SONOMA
Russian River
California

EXHIBIT E
WARM SPRINGS DAM AND LAKE SONOMA
OPERATIONAL REQUIREMENTS
FOR
PRE-FLOOD AND PERIODIC INSPECTIONS AND
MAINTENANCE ACTIVITIES

U.S. Army Corps of Engineers
Sacramento District
Sacramento, California

November 2009

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WARM SPRINGS DAM AND LAKE SONOMA
RUSSIAN RIVER, CALIFORNIA

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EXHIBIT E

WARM SPRINGS DAM AND LAKE SONOMA OPERATIONAL REQUIREMENTS FOR PRE-FLOOD AND PERIODIC INSPECTIONS AND MAINTENANCE ACTIVITIES

E-01. Purpose.

Corps regulation, ER 1110-2-100 (Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures) states that structures must be periodically inspected and evaluated to ensure their structural integrity, safety, and operational adequacy if failure or partial failure could jeopardize the operational integrity of the project, endanger the lives and safety of the public or cause substantial property damage. This Exhibit (Exhibit E) documents 1) the operation and monitoring requirements associated with the Warm Springs Dam annual pre-flood inspections, maintenance activities, and the five-year periodic inspections. This guidance also outlines the notification, coordination and consultation process that must take place prior to this activity. While the water control plan governs how and when water is stored and released from a project under normal operations, Exhibit E governs those instances when maintenance and inspection activities require changes to the normal release for time periods ranging from a few hours to a few days.

E-02. Background.

Warm Springs Dam and Lake Sonoma is located on Dry Creek, Sonoma County, California, approximately 14 miles above the confluence with the Russian River. The project is situated approximately 14 miles northwest of Healdsburg and approximately 90 miles northwest of San Francisco. Sonoma County Water Agency (SCWA) owns the water conservation storage space. During normal operations, SCWA schedules the releases from the water supply pool in Lake Sonoma. The U.S. Army Corps of Engineers (Corps) takes control of the release decisions when the water surface enters into the flood storage reservation space.

In 1997, the National Marine Fisheries Service (NMFS) designated the rivers entering the ocean along the coasts of Mendocino, Sonoma, Marin, San Mateo, and Santa Cruz counties as critical habitat for the threatened Central California Coast (CCC) Evolutionarily Significant Unit (ESU) steelhead trout, the threatened California Coast (CC) Chinook salmon, and the endangered CCC ESU coho salmon. Pursuant to section 7 of the Endangered Species Act of 1973 (ESA), all Federal agencies are directed to use their existing authorities to conserve threatened and endangered species. All Federal agencies must ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. The Corps entered into formal consultation with NMFS in December 1997 regarding the impact of Warm Springs Dam operations on the federally listed species. Both NMFS and the U.S. Fish and Wildlife Service (USFWS) share responsibility for implementing the ESA. The Biological Opinion did not have

specific Terms and Conditions for the WRS inspections. NMFS concluded that the annual pre-flood and five-year periodic inspections at Warm Springs Dam are unlikely to strand or kill listed salmonid in Dry Creek. This is due to a combination of factors such as the Corps maintaining a release of at least 25 cfs, the steep banks and lack of side channels not being conducive to stranding, and the timing of the inspection being later in the year after the Chinook salmon, coho salmon, and steelhead juveniles have had time to grow. **Plate E-1** provides a record of the stream flow conditions during past inspections held during mid-September (water years 2001 through 2008).

The operational requirements specified in this Exhibit were coordinated with NMFS, which issued their letter of concurrence and biological opinion on September 2008. The incidental take statement in 4(b) says "NMFS does not anticipate take associated with Preflood/periodic inspections at WSD conducted in late August or September." These terms and conditions will remain in effect until September 2023 unless new information surfaces, which would require the Corps to reinitiate formal consultation. Exhibit E is to be incorporated into the most recent approved Warm Springs Dam and Lake Sonoma, Russian River, California Water Control Manual, the latest of which is dated September 1984, as well as any subsequent revisions to the water control manual.

E-03. Considerations

The planned inspection and maintenance activities must take into consideration the prevailing conditions such as the potential flood threat, the condition of the lake and watershed, the effect on the environment, as well as, the effect on water control and the effect on other agencies and individual interests.

a. Description of Activity. The Corps' inspection and maintenance activities only occur in September. **Table E-1** summarizes the flow requirements below Warm Springs Dam during the fall.

TABLE E-1
SCWRB Decision 1610 Minimum Flow Requirements below Warm Springs Dam

Reach	Cumulative Inflow to Lake Pillsbury (Acre-Feet) [±]		
	> 160,000 Normal	< 160,000 Dry	< 75,000 Critical
Dry Creek Warm Springs Dam to Russian River	80 cfs	25 cfs	25 cfs
Russian River Mouth of Dry Creek to Mouth of Russian River	125 cfs	85 cfs	35 cfs

[±] Water Supply Conditions Prevailing on 6/1 Apply Through 12/31

The minimum flow requirements on both Dry Creek and on the Russian River below the Dry Creek confluence are outlined in Decision 1610, which the State Water Resources Control Board issued in 1986. Note that the minimum flow requirement will vary depending on whether it is a critical, dry, or normal year. Warm Springs Dam can provide downstream flows ranging from 25-40 cfs during the inspections or other maintenance activities. Despite the fact that the EWSL was damaged in 2004, it can still carry flow. By driving motorized vehicles within the outlet tunnels during the inspections, the outlet tunnel flow does not have to cease. Although Warm Springs Dam can satisfy the minimum flow requirement on Dry Creek during critical and dry years, the 25-40 cfs is not enough to meet the 80 cfs requirement during normal years. SCWA is responsible for maintaining these in stream flows at all times.

b. Effect on Flood Control. During mid-September, the effect on Corps flood control operations would not be an issue. About 95% of the time, the lake level would normally reside about 6-7 ft below the bottom of the flood control pool (see **Plate E-2** and **E-3**). **Plate E-2** shows the storage variation occurring during September. Based on the historical daily record, the percentage of years in which the water surface is contained within the conservation space on any given day in September is fairly high. Similarly, **Plate E-3** indicates that for the same period of record, the pool elevation has not entered the flood control pool during September. In the event that an inspection temporarily delayed flood control operations, the rise in pool elevation during the inspection would likely be insignificant or easily managed.

c. Potential Flood Threat. The average monthly precipitation for selected stations is shown in Table E-2.

TABLE E-2

Month	Average Monthly Precipitation					
	Healdsburg		Warm Springs Dam ±		Venado.±	
	(Elev 335')		(Elev 735')		(Elev 1,260')	
	Inches	%	Inches	%	Inches	%
October	2.21	4.95	2.59	5.67	2.16	5.14
November	5.29	14.29	5.98	13.10	5.58	13.29
December	8.20	19.16	8.89	19.48	8.03	19.13
January	8.92	20.82	9.18	20.11	9.19	21.89
February	7.40	16.60	7.30	15.99	6.95	16.57
March	5.55	13.40	5.96	13.06	5.48	13.06
April	2.68	6.20	2.96	6.49	2.62	6.25
May	1.10	2.23	1.52	3.33	0.93	2.21
June	0.31	0.64	0.41	0.90	0.30	0.70
July	0.04	0.11	0.06	0.13	0.05	0.13
August	0.13	0.39	0.17	0.37	0.14	0.34
September	0.38	1.17	0.62	1.36	0.43	1.03
Annual	42.13	100.0	45.60	100.0	41.96	100.0
November-April	38.04	90.3	40.27	88.2	37.85	90.2
Source:	USACE 1958-2008		NOAA 1937-2008		NCDC 1948-1952	

± Climatological Data Summary.

Monthly Average Precipitation (updated December 2008) retrieved 01 November 2009 from National Climatic Data Center, U.S. Department of Commerce:

<<http://www.ncdc.noaa.gov/>>

Almost 90% of the annual precipitation in the watershed above Warm Springs Dam occurs from November through April. Therefore, the threat of flood producing storms occurring in September is negligible. From July-October, the potential for flooding is also below normal; the ground is drier at this time of year and would absorb the majority of any rainfall. At Warm Springs Dam, the average monthly precipitation in September is about 0.62-inches, which is 1.4 % of the average annual precipitation.

d. Reservoir Level. See **Plate E-3** for the pool elevation duration curve; see **Plate E-4** with regards to exceedance curves describing inflow and outflow durations. During September, the pool elevation is at or below 444 ft around 90% of the time; the lake level may be 6 to 7 ft below the bottom of the flood control pool. The reservoir level is expected to remain nearly constant during the maintenance and inspection routines.

e. Effects on the Environment. The District is aware of its responsibility to comply with any and all relevant laws and regulations (e.g., Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Water Act, etc.). Inspection and maintenance routines are required to carry out the project purpose. These activities ensure

the integrity and safety of the dam structure. These activities are covered by 33 C.F.R. § 230.9(b) (2006), Corps of Engineers – Procedures for Implementing NEPA which states activities at completed Corps projects that carry out the authorized project purpose, such as routine operation and maintenance, general administration, equipment purchases, custodial actions, erosion control, painting, repair, rehabilitation, replacement of existing structures and facilities such as buildings, roads, levees, groins and utilities, and installation of new buildings utilities, or roadways in developed areas, when considered individually and cumulatively do not have significant effects on the quality of the human environment, are categorically excluded from NEPA documentation. It has been determined that these activities are routine operation and maintenance actions and 33 C.F.R. § 230.9 (b) applies. The described activity will result in a no emissions increase, therefore it will not exceed the thresholds established in 40 C.F.R. § 93.153(e) (2006). This action is in compliance with the Clean Air Act Section 176. 42 USCS § 7506 (2006).

NOAA Fisheries issued a 15-year biological opinion (BO) on 24 September 2008 which addresses a broader set of Corps actions or activities. Prior BOs, specific to the inspection and maintenance activities, indicated that the annual inspections are not likely to jeopardize the continued existence of the CCC steelhead trout and are not likely to modify or destroy critical habitat for the CCC coho salmon, the CCC steelhead, or the CC Chinook salmon. NMFS anticipates some incidental take of federally-listed steelhead; therefore, an Incidental Take Statement is also included. The Incidental Take Statement includes reasonable and prudent measures that are necessary and appropriate to minimize project impacts. In addition to the biological opinion, an Essential Fish Habitat (EFH) consultation for Pacific coast salmon calls for specific terms and conditions of the biological opinion's Incidental Take Statement to be adopted as EFH Conservation Recommendations. This BO is in effect through September 2023.

f. Effect on Other Agencies and Individual Interests Since the lake level rarely exceeds the conservation space during September, SCWA has jurisdiction over the releases. SCWA currently holds four permits (12947A, 12949, 12950, and 16596) that allow SCWA to appropriate water from the Russian River, the East Fork Russian River, and Dry Creek for domestic, industrial, municipal, irrigation, and recreational uses. To avoid violating the terms of Permit 12947A as a result of the Corps' inspection and maintenance activities, SCWA must petition the SWRCB to obtain a temporary order that would reduce the minimum in-stream flow requirements. Per State Water Resources Control Board (SCWRB) Decision 1610 issued 17 April 1986, a minimum flow of 25 cfs is required immediately below Warm Springs Dam. The minimum in-stream flow requirement for the Russian River between the confluence with Dry Creek and the mouth of the Russian River will vary depending on whether the year is classified as wet, dry, or critical.

E-04. Operation Plan for Routine Inspection and Maintenance Activities. Plate E-4 provides a supplemental operation schedule for routine inspection and maintenance activities and includes key terms and conditions coordinated with NMFS. Pre-flood inspections must be conducted annually in late August or September. Generally, the Corps conducts the inspections around mid-September. The release schedule is coordinated with SCWA due to operation of the power

plant. After the power plant is taken off-line, the low flow gates are used to regulate the flows in conjunction with the Emergency Water Supply Line (EWSL). Past monitoring surveys have not found any evidence of stranding or adverse affects to juvenile steelhead and adult Chinook salmon and none are expected in the future. Normal outflow will be restored in accordance with rates deemed acceptable by the District and NMFS to minimize adverse impacts along the East Fork Russian River. The release will be ramped up at no greater than 100 cfs per hour.

E-05 Coordination and Review Requirements. The District will continue to follow the coordination process established since 1997 for the routine inspections and maintenance activities. The following lists the correspondence and other documents that must be filed at the District following the completion of the maintenance or inspection activities:

- a. SPN's notification to SCWA of the pre-flood inspection schedule (copies will be furnished to the City of Ukiah and NCPA)
- b. SCWA's petition to SWRCB Division of Water Rights for exemption from minimum stream flow requirements due to the Corps' action
- c. After-Action Report (AAR) documenting the effects of the Corp's action: This report is provided to NMFS by 15 January of each year following the pre-flood inspection and describes fish mortalities, fish relocations, stream temperatures, and stream flows
- d. Quality Certification Checklist

TABLE E-3

QUALITY CERTIFICATION CHECKLIST

WARM SPRINGS DAM AND LAKE SONOMA
(Inspection Date)

Action	Notes
1. Inspection Description Pre-Flood <input type="checkbox"/> Use of MOTIV <input type="checkbox"/> Periodic <input type="checkbox"/> RGAC Testing <input type="checkbox"/>	Describe any concurrent maintenance activity or special monitoring efforts.
2. Potential Flood Threat	None <input type="checkbox"/> Minor <input type="checkbox"/> Significant <input type="checkbox"/> Based on projected inflow, the storage projection is _____ ac-ft with a pool elevation around _____ feet. This includes the period of time needed to reduce releases to the required flow rates.
3. Notification Letters	Sonoma County Water Agency <input type="checkbox"/>
4. Other Coordination Letters	State Water Resources Control Board <input type="checkbox"/>
5. Minimum stream flow requirements on June 1st per Decision 1610 as issued by the State Water Resources Control Board on 17 April 1986	Year Type: Normal <input type="checkbox"/> Dry <input type="checkbox"/> Critical <input type="checkbox"/> _____ cfs Dry Creek _____ cfs Russian R between Dry Cr confluence to mouth of Russian R
8. Overall Evaluation and/or Lessons Learned	

LIST OF REFERENCES

U.S. Army Corps of Engineers, (August 1984). *WARM SPRINGS Dam and LAKE SONOMA Water Control Manual*, Sacramento District, Sacramento, CA

U.S. Army Corps of Engineers, (September 2003). *Russian River Flood Control Projects, Exhibit A*, Sacramento District, Sacramento, CA

U.S. Department of Commerce, (September 2005). *Biological Opinion for Pre-flood Inspections at WARM SPRINGS Dam 2005-2009*, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region.

U.S. Department of Commerce, (September 2008). *Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance Conducted by the U.S. Army Corps of Engineers and the Sonoma County Water Agency in the Russian River Watershed*, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region.

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Appendix G:

Warm Springs Dam Plates

Appendix H:

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