

COOPERATIVE AGREEMENT AMONG CALIFORNIA DEPARTMENT OF FISH AND GAME, NATIONAL MARINE FISHERIES SERVICE, UNITED STATES BUREAU OF RECLAMATION AND UNITED STATES FISH AND WILDLIFE SERVICE TO IMPLEMENT ACTIONS TO BENEFIT WINTER-RUN CHINOOK SALMON IN THE SACRAMENTO RIVER BASIN.

This COOPERATIVE AGREEMENT (CA) is made by and between the Department of the Interior, Bureau of Reclamation (Bureau), and Fish and Wildlife Service (Fish and Wildlife), the Department of Commerce, National Marine Fisheries Service (Service), and the State of California, Department of Fish and Game (Fish and Game). The purpose of this CA is to implement actions to improve the status of winter-run chinook salmon in the Sacramento River Basin, California.

I. BACKGROUND

Chinook salmon, Oncorhynchus tshawytscha, is an important species of fish in terms of its economic, recreational and aesthetic values. Considerable effort has been expended by state and federal management agencies (i.e. Fish and Game, the Service, the Bureau and Fish and Wildlife) in managing this valuable species and its habitat.

There are four distinct spawning populations, or runs, of chinook salmon, each designated by the approximate time of the year that the sexually mature adults migrate upstream to spawn. These runs are the fall, late fall, winter and spring runs. The Sacramento River Basin is unique in providing habitat for these four distinct runs. The parties to this CA have recognized this unique aspect and are attempting to sustain all four runs in viable condition.

Prior to the construction of Shasta Dam in 1945 and Keswick Dam in 1950 winter-run chinook salmon migrated upstream into the McCloud River where they spawned. In most years, the McCloud River provided cold water habitat that enabled the salmon eggs to develop properly and the young fish to survive

until they were ready to migrate downstream. Similar spawning habitat was not then available elsewhere in the Sacramento River. Winter-run chinook salmon populations at that time were probably small due to the limited amount of spawning habitat available in the McCloud River.

Shasta and Keswick dams effectively blocked upstream migration of salmon past the damsites, thereby preventing the winter-run from reaching their historic spawning habitat. Operation of the dams, however, altered the water temperature gradient downstream from Keswick Dam. Consequently, the water temperatures downstream from Keswick Reservoir during the winter-run spawning and incubation period are generally colder than they would be in the absence of the operation of these dams. Water temperatures in the 44-mile reach of the Sacramento River from Keswick Dam downstream to Bend are suitable in most years for winter-run chinook spawning and incubation and thus there is a larger amount of spawning habitat for the winter-run than existed prior to the construction and operations of the dams. Some of this habitat has subsequently been degraded but could be restored.

In 1966, installation of Red Bluff Diversion Dam (RBDD) was completed approximately 50 miles downriver from Keswick Dam. Population estimates for adult winter-run chinook salmon are available only since 1967, when counts of salmon migrating upstream past RBDD were initiated. These estimates are contained in Exhibit A. The data indicate that the adult population declined from a mean of 86,509, for the three-year period 1967-1969, to 2,393 for the six-year period 1982-1987.

The presence and operation of RBDD and instream temperatures have been identified by the fisheries agencies as primary problems affecting the habitat of the winter-run chinook salmon. The dam impedes the upstream migration of adult winter-run chinook. Delay in their migration is potentially stressful to

adult salmon, particularly when water temperatures along their migration corridor approach the upper limits of their temperature tolerance. A halt in their migration can result in fish spawning downstream of RBDD in water too warm for optimal incubation of eggs and/or rearing of winter-run chinook.

Other factors that have been identified as restraining winter-run population levels include: (1) inadequate water flow levels in the Sacramento River system; (2) increased predation resulting from man-induced changes in the Sacramento River system; (3) the impacts of acid-mine drainage into the Upper Sacramento River from the inactive Iron Mountain minesite in the Spring Creek watershed, which enters the Sacramento River immediately upstream of Keswick Dam; (4) the limited presence of gravels for spawning and incubation in the Upper Sacramento River; (5) fish losses due to entrainment at water diversion structures; and (6) commercial and sport harvest levels.

II. AGENCY ACTIONS AND RESPONSIBILITIES

The Service, Fish and Game, California Department of Water Resources (Water Resources), United States Army Corps of Engineers (Corps), the Bureau and Fish and Wildlife have developed a ten-point program to benefit winter-run chinook salmon populations. Actions will be taken by the various agencies on this ten-point program and the Parties agree to continue to pursue the following ongoing restoration initiatives for the protection and rehabilitation of the winter-run chinook salmon population in the upper Sacramento River basin:

A. Raise Red Bluff Diversion Dam Gates from December 1 to April 1.

1. The Bureau raised the gates at RBDD for most of the period December 1986-April 1987 and did so again between December 1987-April 1988. The Bureau will continue to raise all the gates at RBDD from December 1 to April 1,

annually, to the full open position. The timing for raising the gates will be designed to optimize to the maximum extent practicable benefits for upstream migrating winter-run chinook salmon. The Bureau will attempt to meet the request for the Tehama-Colusa Canal (TCC) deliveries by releasing water from Black Butte Reservoir during the time the gates at RBDD are open.

2. Periodic closure of the RBDD gates between December 1 and April 1 may be necessary depending on hydrologic conditions and the agricultural water demands of water users in the Corning Canal and/or TCC Service areas that have water delivery contracts with the Bureau. For the protection of the canal lining, enough water must be maintained in the TCC to offset hydrostatic pressure which builds up behind the canal lining. It may also be necessary for the Bureau to temporarily lower the gates to refill the reach of the TCC from the headworks to Stony Creek due to evaporation and/or seepage losses or to meet contractual commitments because of insufficient supplies available from Black Butte Reservoir. The gate closure may be necessary to increase Lake Red Bluff's water surface elevation sufficient to create a hydraulic head required for diversion by gravity flow into the TCC.

3. The lowering and raising of the gates at RBDD will be done in a manner that will be safe for public use both in the Lake Red Bluff area and the downstream river channel, and that will minimize sloughing of Lake Red Bluff shoreline.

4. Fish and Wildlife will obtain water for the Sacramento Valley National Wildlife refuges from non-CVP sources during the period when the RBDD gates are raised. However, refuge water supply from Black Butte Reservoir may be made available by the Bureau through an intertie between the Orland Water Users Association Lateral 40 overpass and the TCC.

5. Fish and Wildlife will not operate the Dual-Purpose Canal and Spawning Channel and the Single Purpose Spawning Channels for salmon spawning in seasons when the RBDD gates are raised.

6. Fish and Game, the Service and Fish and Wildlife will fund annual monitoring to evaluate the effectiveness of raising the gates at RBDD in increasing the winter-run chinook salmon population. Each evaluation will be provided in an annual report to the Bureau by July 15 each year.

7. The Bureau will announce its plan of operation of RBDD within thirty (30) days of receiving the annual evaluation report from the fisheries agencies (Item II.A.6.). If the Bureau cannot announce its plan within 30 days of the report the Bureau will inform the Service of the date it can expect to receive the plan of operation.

8. Should it be necessary for the Bureau to lower the gates in RBDD at any time during the period December 1 through April 1, the Bureau will give five (5) days advance notice of such action to the Service and confer with the Service on the potential impacts on the winter-run of lowering the gates. If the Service recommends that the gates not be lowered at a particular time because of concerns about the impacts on winter-run, the Bureau may defer to the Service and not lower the gates.

9. Should the Bureau or any other Party to this CA not comply with Item II.A.8., or any of the other provisions of this CA, the Service will consider the necessity of listing the species under the emergency provisions of the Endangered Species Act.

B. Develop Water Temperature Control for Warm Water Years.

The Bureau will develop, implement and fund structural and/or operational solutions to winter-run chinook water temperature control problems associated with operation of Shasta Dam. This will include installation of a device in

Shasta Reservoir to control the ranges of depth of water withdrawals. This device is scheduled to be installed in Shasta Reservoir by 1990. Other measures, including cold water releases from Shasta Dam, will be taken, where practicable, to control water temperature prior to the installation of the device. The device is expected to facilitate cold water releases from Shasta Dam without bypassing power generation facilities.

C. Develop Measures to Control Squawfish Predation at Red Bluff Diversion Dam.

The Service will develop and fund a squawfish control program.

D. Correct Spring Creek Pollution Problem

The Bureau, under a funding agreement with the Environmental Protection Agency (EPA), will develop the water management portion of the Spring Creek pollution control program. The EPA is developing the program to correct the toxic acid-mine pollution problem at Spring Creek. Implementation of the program and its funding will be provided by sources other than the Parties.

E. Restore Spawning Habitat in Redding Area

Fish and Game will develop and fund a winter-run chinook salmon spawning habitat restoration program.

F. Correct Salmon Related Problems at Anderson-Cottonwood Irrigation District Diversion Dam.

Fish and Game will develop a solution to the salmon-related problems at ACID Diversion Dam. Fish and Game has begun efforts to replace the Anderson-Cottonwood Irrigation District (ACID) diversion dam with an alternate method of supplying water to the district.

G. Restrict In-River Harvest of Winter-Run Chinook Salmon

1. Fish and Game will continue to fund a program to develop recommendations for in-river harvest of winter-run chinook salmon.

2. Fish and Game will submit the harvest recommendations developed in item II.G.1. to the California Fish and Game Commission as soon as practicable if Commission action is required.

H. Develop a Winter-Run Chinook Salmon Propagation Program at Coleman National Fish Hatchery.

Fish and Wildlife will develop, fund and implement the winter-run chinook salmon propagation program, including the necessary facilities and operations at Coleman National Fish Hatchery (NFH) to meet the hatchery production goals. Fish and Wildlife has initiated rehabilitation and modification of Coleman NFH.

I. Modify the Keswick Fish Trap to Prevent Mortality to Winter-Run Chinook Salmon.

The Bureau will continue modification of the fish trap begun in 1986.

J. Continue and Expand Studies on Winter-Run Chinook Salmon.

The parties will fund, develop and implement studies to identify additional management actions to improve the status of winter-run chinook salmon in the Sacramento River Basin.

K. The Parties will develop fish passage alternatives to raising the RBDD gates.

III. OTHER INITIATIVES

In addition to the foregoing, the parties agree to pursue the following ongoing initiatives that are expected to incidentally benefit the winter-run population:

The Service has organized the Winter-Run Chinook Salmon Restoration Team (Restoration Team) which includes representatives of the signatories hereto, Water Resources, the Corps, plus a representative each from the American Fisheries Society and United Anglers of California.

The Bureau initiated and has funded since 1983 the RBDD Fish Passage Action Program with the objective of improving passage for salmon migrating upstream past the dam and improving the survival of downstream migrant salmon enroute to the estuary. This program is scheduled for completion in 1989.

The Bureau initiated and has funded since 1983 the TCC Diversion and Fish Problems Study which includes the design and construction of new fish screening facilities to replace the existing inefficient facilities at the TCC headworks. Construction of the replacement facilities is currently scheduled to be initiated by July 1988.

The EPA is in the process of implementing major pollution control measures for the Iron Mountain Mine pollution in the upper Sacramento River. The acid-mine waste control measures are scheduled to be funded through the EPA Superfund Program. The Bureau is now, and expects to continue, working under contract with EPA to design and assist in constructing some of these measures.

The California State Legislature enacted legislation (Senate Bill 1086) instituting development of an upper Sacramento River fisheries and riparian habitat management plan. This plan is currently being developed by a group comprised of representatives from government agencies and interested groups which will submit the final plan and proposed implementation program to the Legislature by January 1, 1989.

Fish and Game is developing a salmon and steelhead restoration program on Clear Creek that includes instream flow reservations.

Fish and Game and Water Resources are jointly heading an instream flow evaluation on the upper Sacramento River which is scheduled for completion and release of a final report in early 1989.

IV. PROGRAM GUIDANCE AND COORDINATION

A. Technical Guidance

1. The Restoration Team will be responsible for monitoring the actions in section II of this CA and making recommendations to the Service on the implementation of those actions.

2. The Restoration Team Chairperson will convene meetings of the Restoration Team, as appropriate, but at least quarterly, to remain current on the status of the winter-run chinook salmon population in the Sacramento River Basin and on the actions identified in this CA.

3. The Restoration Team Chairperson will report, in writing, to all Restoration Team members the Restoration Team meeting minutes.

B. Policy Guidance

1. The directors of the Parties will meet at least annually to review the status of items in section II of this CA.

2. Decisions related to funding and implementation of items in section II of this CA will be made at the annual directors' meeting.

C. This CA may be modified, based upon written concurrence of all Parties.

1. The CA will be updated at least annually.

2. The terms of this CA will be binding for four (4) years following its effective date.

D. Any party may terminate its relationship with this CA upon providing notice of such intention to all other Parties at least ninety (90) days in advance of such termination.

V. GENERAL LIMITATIONS


A. Appropriations

The Parties recognize that the ability of each party to fulfill its respective responsibilities under this CA will be limited by the availability of appropriations for the purpose of this CA.


B. Enforcement

A party's failure to comply with any of the terms of this CA shall not create any cause of action by or against any party to this CA. This provision, however, shall not operate to restrict any authority of any party to this CA to take action authorized by law with respect to the subject matter of this CA.

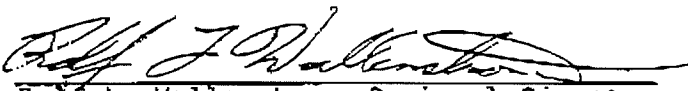
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United States Bureau of Reclamation


Date: 5-20-88


E. Charles Fullerton, Regional Director
National Marine Fisheries Service

Date: 5-20-88


Rolf L. Wallenstrom, Regional Director
United States Fish and Wildlife Service

Date: 5/20/88


Peter F. Bontadelli, Director
California Department of Fish and Game

Date: 5-20-88

EXHIBIT A

Estimates of Adult Winter-Run Chinook Salmon Migrating Upstream Past
Red Bluff Diversion Dam*

<u>Year</u>	<u>Number</u>
1967	57,306
1968	84,414
1969	117,808
1970	40,409
1971	53,089
1972	37,133
1973	24,079
1974	21,897
1975	23,430
1976	35,096
1977	17,214
1978	24,862
1979	2,364
1980	1,156
1981	20,041
1982	1,242
1983	1,831
1984	2,663
1985	3,962
1986	2,422
1987	2,236

*Data developed by California Department of Fish and Game.