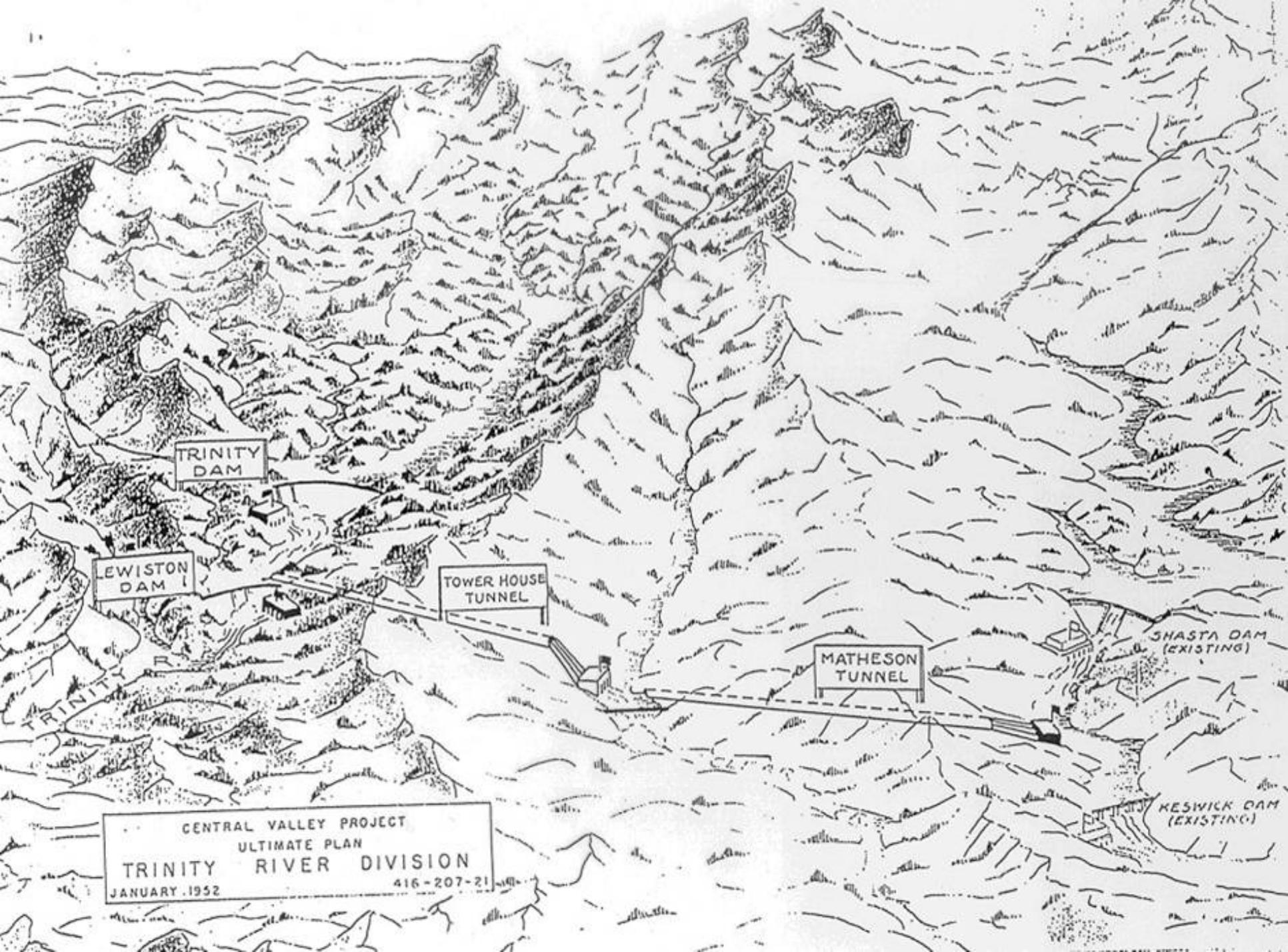


Trinity River Temperature Issues: Historical Analysis and Future Outlook

- Tom Stokely, Pacific Coast Federation of Fishermen's Associations and California Water Impact Network
- 530-926-9727
- tstokely@att.net





TRINITY DAM

LEWISTON DAM

TOWER HOUSE TUNNEL

MATHESON TUNNEL

SHASTA DAM (EXISTING)

KESWICK DAM (EXISTING)

CENTRAL VALLEY PROJECT
ULTIMATE PLAN
TRINITY RIVER DIVISION
JANUARY, 1952 416-207-21

1952: Congressman Clair Engle promises local control, Trinity County Board of Supervisors endorse the Trinity River Division

AVERVILLE, TRINITY COUNTY, CALIFORNIA, THURSDAY, FEBR

Engle Says Dam Bill to Be Under Trinity County Thumb

Rep. Clair Engle Friday evening told an audience in Weaver-ville he would withdraw his proposed congressional bill to authorize construction of the Trinity river diversion project, at any stage of its enactment, if the people of Trinity county were not satisfied with its provisions.

(Emphasizing this statement, Engle on Saturday morning told The Trinity Journal he would withdraw the bill any time Trinity county did not approve of it—if provisions protecting Trinity

erville to Trinity Center, in addition, to replacing other roads which may be destroyed.

County Can't Sell Power

Engle told a questioner that the county could not sell the power it would have reserved and take the proceeds. The bureau of reclamation would still sell the power, with proceeds to be applied to amortize the whole Central Valley project.

He told another questioner that the chances for his bill to get through congress substan-

sion, but as to the project set up in the bureau of reclamation report," which he said varied from the old state plan in ways "very important to Shasta and Tehama counties. He added that he felt that if legislation followed the bureau's report, Shasta and Tehama counties "are being sold down the river."

'Trinity Center . . . Mud Flats'

Hill said the presently planned 1,800,000 acre-foot storage reser-

TRINITY RIVER: DO NO HARM!

1955 TRINITY RIVER
ACT (PL 84-386):

“Provided, That the Secretary is authorized and directed to adopt appropriate measures to insure the preservation and propagation of fish and wildlife”

The Trinity River Basin
Fish and Wildlife
Restoration Act of 1984
(PL 98-541): **“the Secretary shall formulate and implement a fish and wildlife management program for the Trinity River Basin designed to restore the fish and wildlife populations in such basin to the levels approximating those which existed immediately before the start of the construction.”**

SWRCB WATER RIGHT ORDER 90-05 (1990)

"Permittee shall not operate its Trinity River Division for water temperature control on the Sacramento River in such a manner as to adversely affect salmonid spawning and egg incubation in the Trinity River. Adverse effects shall be deemed to occur when average daily water temperature exceeds 56OF at the Douglas City Bridge between September 15 and October 1, or at the confluence of the North Fork Trinity River between October 1 and December 31 due to factors which are (a) controllable by permittee and (b) are a result of modification of Trinity River operations for temperature control on the Sacramento River."

1992 NORTH COAST BASIN PLAN TEMPERATURE OBJECTIVES



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

13 MAR 1992

OFFICE OF THE
REGIONAL ADMINISTRATOR

Mr. W. Don Maughan, Chairman
State Water Resources Control Board
Paul R. Bonderson Building
901 P. Street, Box 100
Sacramento, CA 95801

RECEIVED

MAR 20 1992

TRINITY COUNTY PLANNING DEPT.

Dear Mr. Maughan:

The Environmental Protection Agency (EPA) has reviewed the amendment to the Water Quality Control Plan for the North Coast Region (Basin Plan) approved by the State Board in Resolution No. 91-94 on September 26, 1991. This Basin Plan amendment establishes site-specific temperature objectives and an Interim Action Plan for the Trinity River. EPA's authority to approve or disapprove state-adopted water quality standards is derived from Section 303 of the Clean Water Act.

Our review of the temperature objectives finds them to be protective of beneficial uses on the Trinity River, and to be based on sound scientific rationale; I am therefore pleased to approve these water quality objectives.

1991-1992: Trinity Temperature Objectives approved by NCRWQB, SWRCB and USEPA as Clean Water Act Standards

Daily Average Not to Exceed	Period	River Reach
60° F	July 1-Sept.14th	Lewiston Dam to Douglas City Bridge
56° F	Sept. 15 – Oct. 1	Lewiston Dam to Douglas City Bridge
56° F	Oct. 1 – Dec. 31	Lewiston Dam to confluence of North Fork Trinity River

Trinity/Shasta/Folsom Refill Potential

- Trinity Lake refill potential at 50% capacity (1.24 MAF) is only 15%
- Shasta Lake refill potential at 50% capacity (2.4 MAF) is 35%
- Folsom Reservoir refill potential at 50% capacity (500,000 AF) is 60%
- Trinity Lake is twice size of annual runoff
- CONCLUSION: ONCE TRINITY IS DRAINED, IT TAKES A LOT OF PRECIPITATION/RUNOFF TO REFILL IT

TRINITY DAM RELEASE TEMPS

- 44° - 45° F Normally
- Can exceed 60 F if reservoir low
- Powerplant Bypasses Necessary when Reservoir below 1 million AF-
- Powerplant Bypasses Ineffective if cold water pool exhausted
- **Trinity ROD and NMFS BO call for 600k AF minimum pool- 400k AF with PowerPlant Bypasses**
- **SWRCB issued minimum pools for Folsom and Shasta but not Trinity in late 2015**

Lewiston Reservoir

- 7 miles long
- Requires ~1800 cfs during summer to keep Lewiston Dam releases @ 48° - 50° F
- Trinity R. summer base flow = 450 cfs

Therefore, keeping Trinity R. cold in summer requires minimum water exports to the Sacramento River (1350 cfs)

IF NO WATER IS AVAILABLE FOR EXPORT TO THE SACRAMENTO, THE TRINITY RIVER WARMS SIGNIFICANTLY!!!

RECLAMATION

Managing Water in the West

Lewiston Temperature Management Intermediate Technical Memorandum

Lewiston Reservoir, Trinity County, California



U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region

September 28, 2012

ALTERNATIVES

Alternatives and Options

The TWG discussed several alternatives during the April 13, May 23, and June 29, 2012, meetings. It was determined that the following alternatives would be included in this memorandum:

- 1a. Removal of Lewiston Dam - Canal Water Supply
- 1b. Removal of Lewiston Dam - Pump Station Water Supply
2. Dredging of Lewiston Reservoir
- 3a. Tunnel from Trinity Dam to Lewiston Dam
- 3b. Pipeline from Trinity Dam to Lewiston Dam
4. Raise Lewiston Dam

**BEFORE THE STATE WATER RESOURCES CONTROL BOARD
WATER RIGHT PHASE OF THE BAY-DELTA ESTUARY PROCEEDINGS**

Consideration of Interim Water Rights Actions pursuant to Water Code Sections 100 and 275 and the Public Trust Doctrine to Protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

**THE NEED FOR STANDARDS FOR MINIMUM
CARRYOVER STORAGE IN TRINITY RESERVOIR**

Presented by:

Dr. Anthony Finnerty and Barry Hecht of Balance Hydrologics, Inc.

TESTIMONY
of
TRINITY COUNTY,

represented by
THE NATURAL HERITAGE INSTITUTE
as special counsel

EXHIBIT WRINT-TRICO-4

Submitted June 26, 1992

**Testimony to the State Water Resources Control Board Regarding Carryover Storage in Trinity and
Lewiston Reservoirs To Protect Public-interest Resources**

Prepared on behalf of Trinity County by Barry Hecht and Anthony A. Finnerty,
Balance Hydrologics, Inc.

BALANCE HYDROLOGICS
9/30 CARROVYER STORAGE
RECOMMENDATION:

900,000 AF

2245' ELEVATION

125' BELOW FULL

MEMORANDUM

To: Tom Stokely and Mike Deas
From: Greg Kamman
Date: May 22, 1998
Subject: Carryover Storage Analysis
Simulated (1928-1934) Period

Recently, we discussed various methods to simulate an intense drought period as part of the carryover storage analysis. As you are aware, we decided to simulate a series of representative water year-types similar to those experienced during the 1928-1934 drought. The progression of year-types experienced over this period are listed in the second column of the attached tables.

FLOW STUDY ALTERNATIVE

Year	Water Yr-type	An. delta Storage (ac-ft)	750K	1000K	1250K	1500K	1750K	2000K
			Cum. Storage (ac-ft)	Cum. Storage (ac-ft)	Cum. Storage (ac-ft)	Cum. Storage (ac-ft)	Cum. Storage (ac-ft)	Cum. Storage (ac-ft)
1928	normal	-23,515	886,160	1,136,160	1,386,160	1,636,160	1,886,160	2,136,160
1929	crit. dry	-340,823	545,337	795,337	1,045,337	1,295,337	1,545,337	1,795,337
1930	dry	-17,460	527,877	777,877	1,027,877	1,277,877	1,527,877	1,777,877
1931	crit. dry	-340,823	187,054	437,054	687,054	937,054	1,187,054	1,437,054
1932	dry	-17,460	169,594	419,594	669,594	919,594	1,169,594	1,419,594
1933	dry	-17,460	152,134	402,134	652,134	902,134	1,152,134	1,402,134
1934	dry	-17,460	134,674	384,674	634,674	884,674	1,134,674	1,384,674

Trinity Dam Enhancement

Technical Appraisal

September 2000

Prepared by:
Technical Service Center
Denver, Colorado
and
Mid-Pacific Regional Office
Sacramento, California

For:
Regional Planning Office
Mid-Pacific Region
Sacramento, California

Department of the Interior
Bureau of Reclamation



TRINITY DAM ENHANCEMENT RECOMMENDATIONS

- Under the most likely conditions of 360 to 815 thousand acre-feet (TAF) per year fish flows and a 600-TAF minimum pool, raising Trinity Dam would have no effect on the amount of water that Trinity Lake would store. Due to the higher fish flow demands, no spills would occur based on an analysis of the past 70-year period of record. Also, a higher dam and the resulting, possibly higher reservoir would require construction of a dike around the town of Trinity Center, although Trinity Lake would seldom rise to the level of the dike. Opposition to raising the reservoir has been voiced by the residents of Trinity Center. Table S-1 lists the estimated costs of raising the dam and constructing a dike.

The higher minimum pools of 900 and 1,200 TAF showed the most impact in the driest years of 1924 and 1977 with dam raises of no help because of the minimum pool requirements. In the other dry years, raising the dam shows only slight benefits to export.

Even with a minimum pool of 900 TAF, the storage benefits from raising the dam are not significant. It is not until the 1,200-TAF minimum pool level, that successive raises show corresponding increases in storage. However, again at this minimum pool level, impacts to the CVP would be severe.

LATE SUMMER/FALL RELEASES FOR LOWER KLAMATH FISH HEALTH

- Never considered in Trinity EIS/R or ROD
- Increases need for larger Trinity Lake carryover storage (25,000 -50,000 AF+)
- Absence of cold water from Trinity during adverse conditions in lower Klamath **eliminates last line of defense against future fish kill**

Assurances That Everything Is OK Are Unsubstantiated

- CALSIM Model has 20/20 hindsight
- Actual operations vary drastically from model runs
- Once cold water is gone, options are limited, but blame will be on "nature"
- Emergency drought operations similar to early 1990's will be- **"WHICH RUN OF FISH WOULD YOU LIKE US TO KILL?"**

LESSONS FROM DROUGHT

- Columnaris and Ich killed thousands of fish at TRH in 1977
- Power Production conflicts with fishery temperatures during drought
- Years of restoration work can be undone during major fish kills (2002)
- USEPA and Regional WQ Control Board consider temps a controllable factor, but it takes years of advance planning to protect fisheries from temperature-related drought impacts
- Trinity Lake cold water carryover storage should be managed for multi-year drought

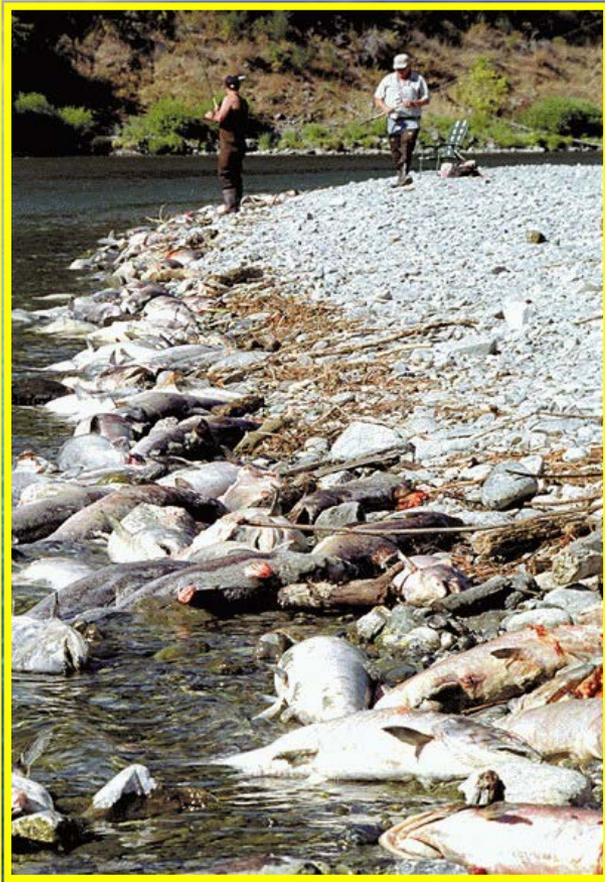
CLIMATE CHANGE

- More warm rain
- Likely warmer water in reservoirs, even if full
- Less snowpack to keep reservoir storage high all summer
- Likely result is warmer river temperatures
- Rate of change unknown

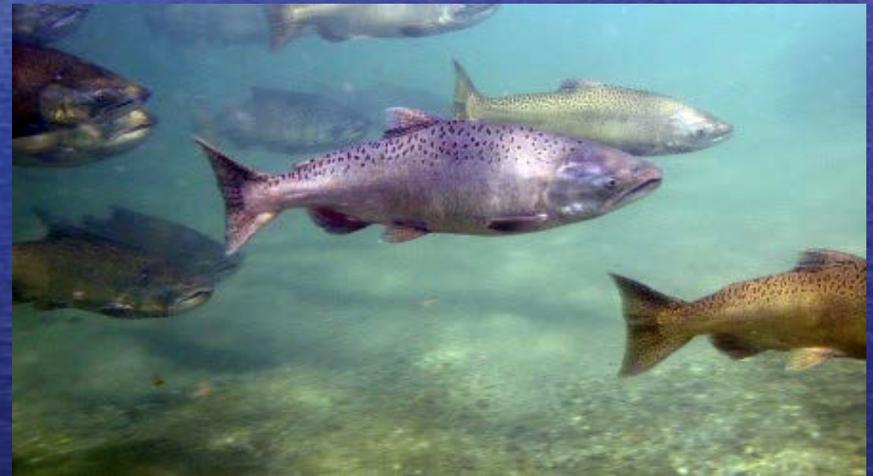
SOLUTIONS

- Higher Trinity Lake carryover storage- Trinity County and Balance Hydrologics recommend **AT LEAST** 900,000 AF on Sept 30.
- Allow water banking of Trinity ROD flows from one year to the next (CVP water contractors regularly bank water from one year to the next)
- Reduce Delta Exports and expectations of increased water contract rates of delivery during normal and wetter years

FUTURE CONDITION KLAMATH/TRINITY RIVER FISHERIES?



Lower Klamath River 2002.
Photo: California Department
of Fish and Wildlife



Central Valley fall-run Chinook
salmon in the Yuba River. Photo:
Jacob Katz