

WATER QUALITY STANDARDS DEVELOPMENT



EPA Region 9 RTOC

Tuesday, July 29, 2014
PYRAMID LAKE PAIUTE TRIBE

Overview

- Brief History of the Real Past
- Water Issues
- Plight for the Fish
- Opening Doors
- Completing the Process

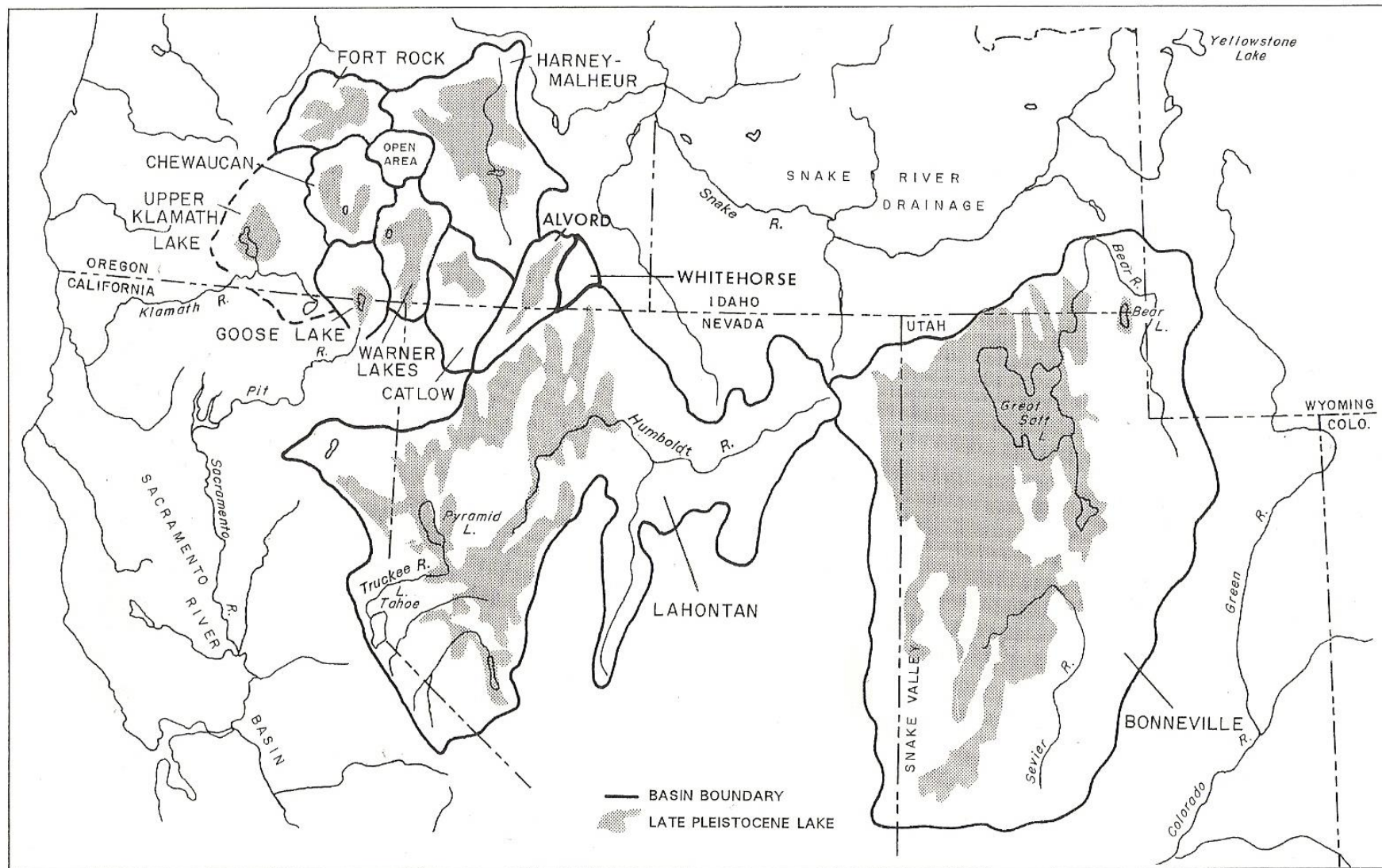


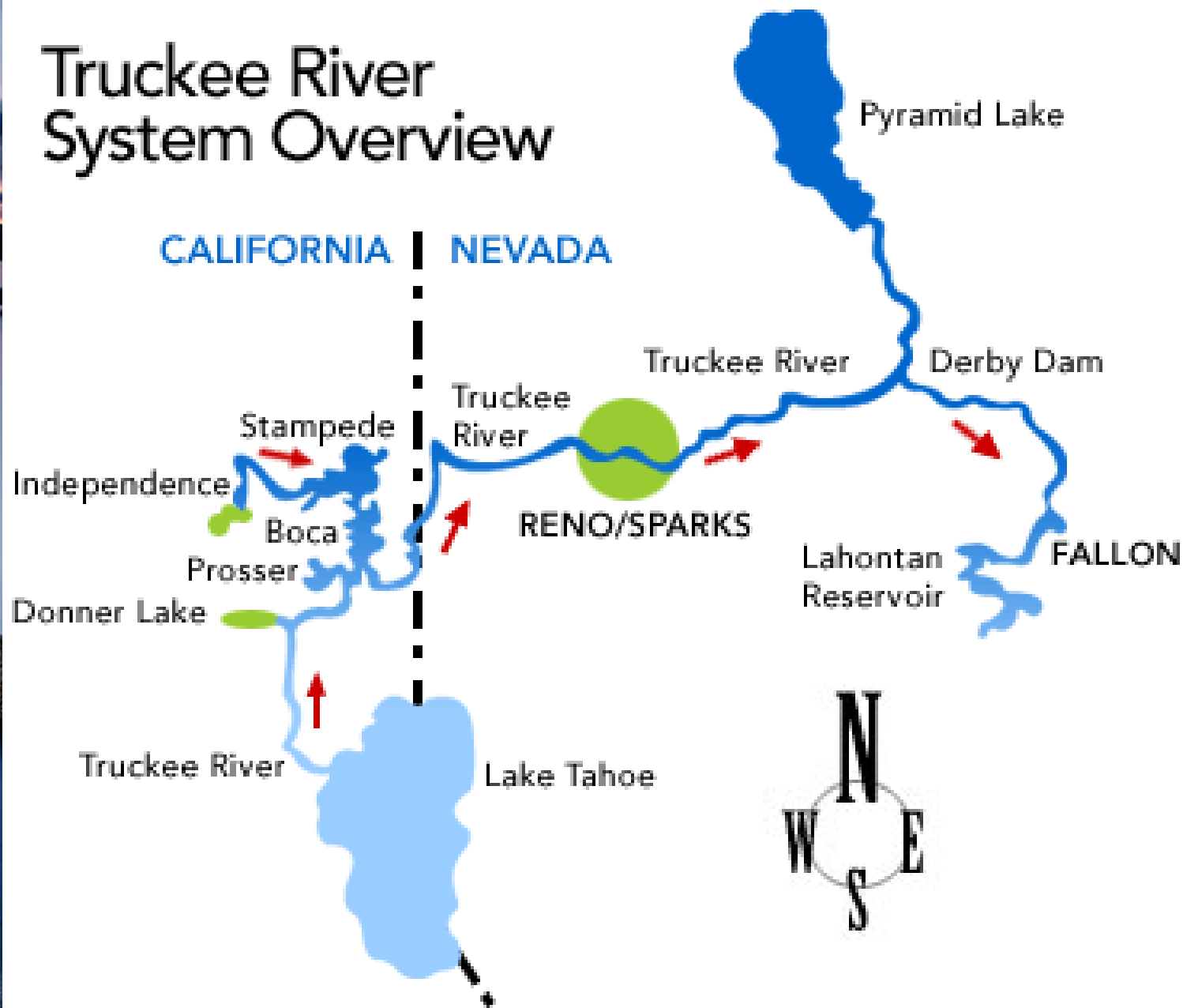
FIGURE 7.—Segments of the Great Basin known to have native trout. Shaded areas indicate the approximate maximum extent of late Pleistocene lakes. Cutthroat trout are native to the Lahontan, Bonneville, Alvord, and Whitehorse basins. Rainbow trout are native to the other basins.







Truckee River System Overview



Derby Dam

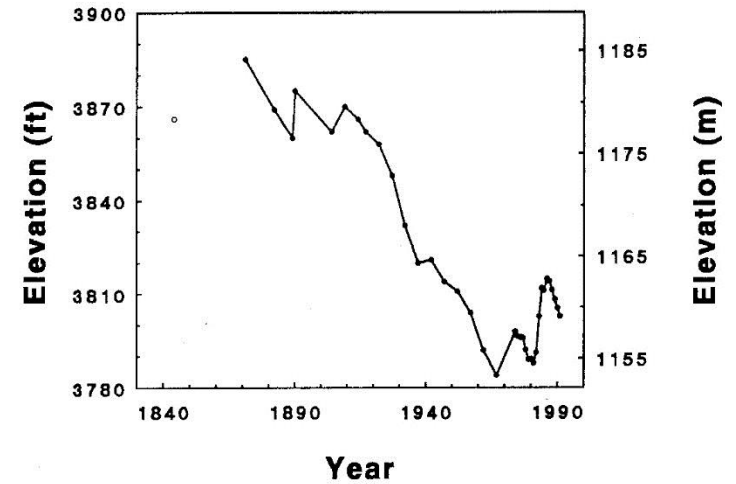
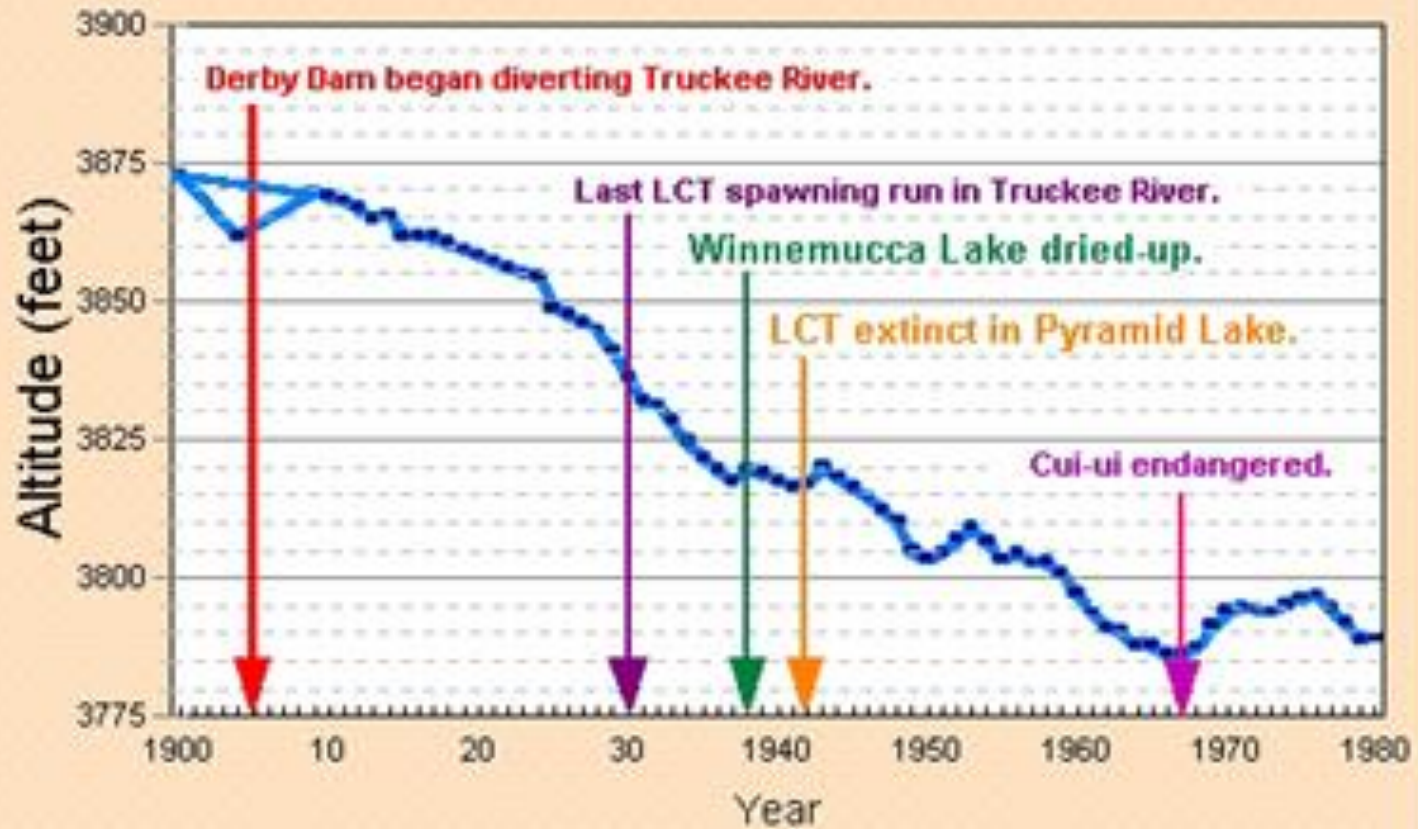


Figure 5.11. Changes in lake level of Pyramid Lake. Open circle is an estimate of lake level when the lake was discovered by John Fremont in 1844 (California Department of Water Resources 1991). Data are from the United States Geological Survey (Carson City, Nevada).

- In 1905, a dedication of Derby Dam along the Truckee River.

Historic Surface Elevations

Pyramid Lake, NV (1900-1980)





**Inflow to Mud Lake slough fell below elevation to feed
Winnemucca Lake 1920 (Harding, 1965)**



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West Pyramid Road

Pointer 39°51'56.60" N 119°22'58.30" W elev 3884 ft

Streaming ||||| 100%

Eye alt 11597 ft

Fishing at the Delta of Pyramid Lake



Property of Special Collections Dept., Univ. of Nevada, Reno Library

Image from 1950's -1960's.

Cui-ui *Chasmistes cujus* (1883 Cope)

© Peter Rissler



- Endemic fish migrated as far as Reno to spawn (Jordan and Emmermann).

Charmed with a Unique Fishery



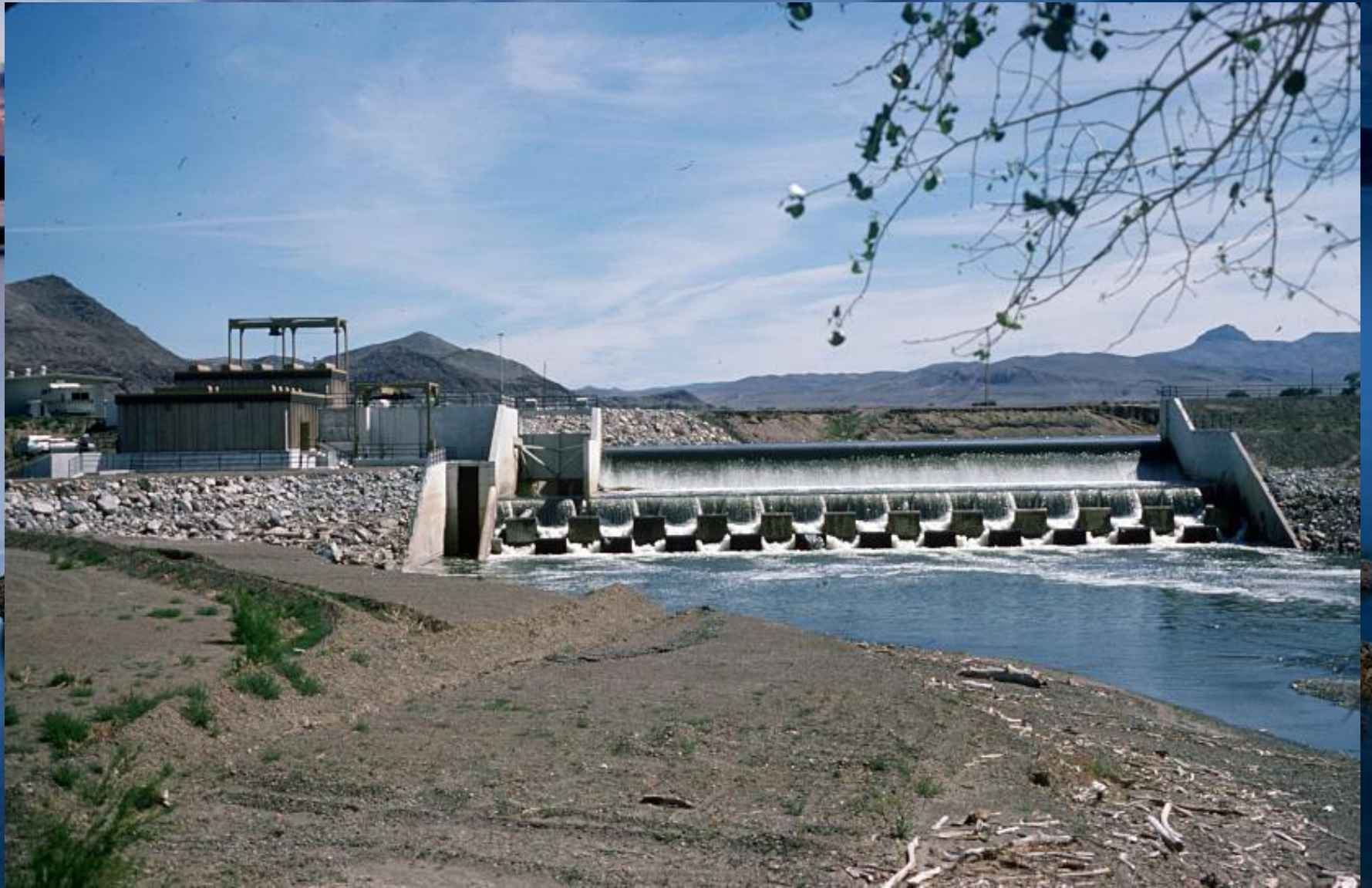
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© Peter Rissler

Cui-ui
Chasmistes cujus





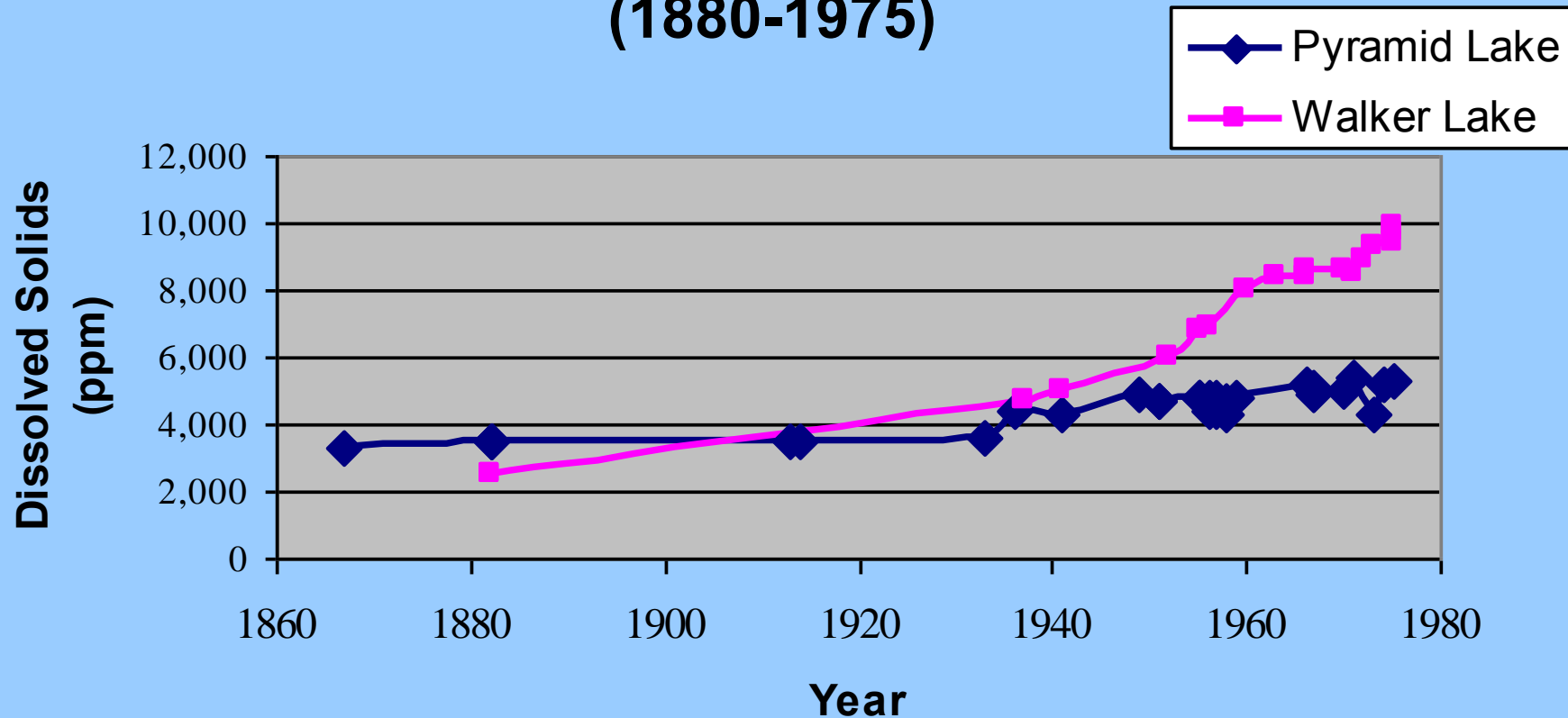
Herb Lawler, USGS (1993)



Historical Surveys and Classifications

- As early as 1913, a TDS concentration was recorded at by Jones at 3924 mg L^{-1} (currently at 5900 mg L^{-1}).

Increasing TDS in Desert Terminal Lakes (1880-1975)



FISH OF PYRAMID LAKE		
<i>Chasmistes cujus</i>	Cui-ui	Viable species
<i>Archoplites interruptus</i>	Sacramento Perch	Introduced Species
<i>Oncorhynchus clarki henshawi</i>	Lahontan cutthroat trout	Introduced strain
<i>Oncorhynchus clarki henshawi</i> <u>*41 lbs, John Skimmerhorn (1925)</u> <i>World Record</i>	Original Lahontan cutthroat trout	Extinct
<i>Tahoensis</i>	Tahoe Sucker	Viable species
<i>Gila bicolor pectinifer</i> <i>Gila bicolor obesa</i>	(2) Species of Tui chubs	Viable species
<i>Leucidius pectinifer</i>	Lake minnow	Extinct
<i>Salmo smaragdus</i>	Emerald trout	Extinct
<i>Rhinichthys osculus robustus</i>	Speckled dace	Extinct
<i>Richardsonius egregius</i>	Redside shiner	Extinct
<i>Catostomus playrhynchus</i>	Mountain sucker	
<i>Cyprinus carpio</i>	Asian Carp	Introduced species
<i>Suliformes</i>	Catfish	Extinct

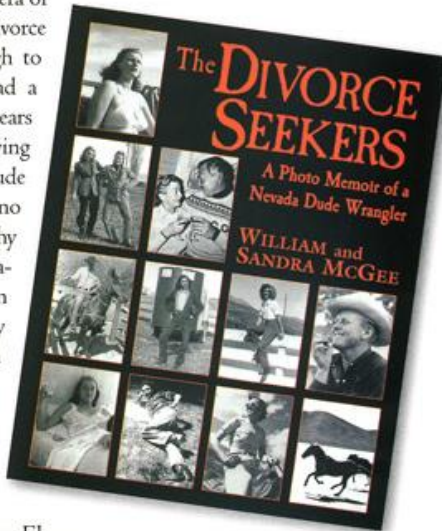
Treading Water

DIVORCE WESTERN-STYLE

One thing we can always be sure of, the West is full of fascinating, little nugget-like niches and unusual stories. Given that, former dude ranch wrangler Bill McGee may have written the ultimate Western kiss-and-tell book in his and Sandra McGee's recently released *The Divorce Seekers — A Memoir of a Nevada Dude Ranch Wrangler*. The title alone is enough to make you pick this hefty volume up, but the fact this is a firsthand account by someone who saw that epic era of the six-week Reno divorce makes this book tough to put down. McGee had a front row during his years working at the Flying ME, an exclusive dude ranch south of Reno that catered to wealthy Easterners and the occasional titled European or Hollywood celebrity — many of whom "were seeking a quick 'cure' from their matrimonial bonds." Yikes! Everyone from Clark Gable to Frank Sinatra as well as Eleanor Roosevelt shows up in this page-turner.

FYI: www.BMCPublications.com

— William C. Reynolds



George E. Hutchinson
Father of Modern Limnology
(1903-1991)

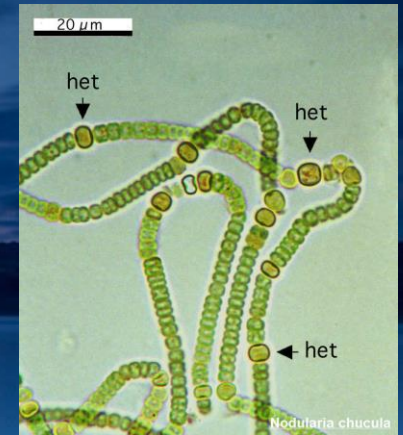
- Hutchinson first reported undertaking a limnological survey in 1933 and identified a high tolerant cladoceran found in the lake.



Moina hutchinsoni



D. L. Galat

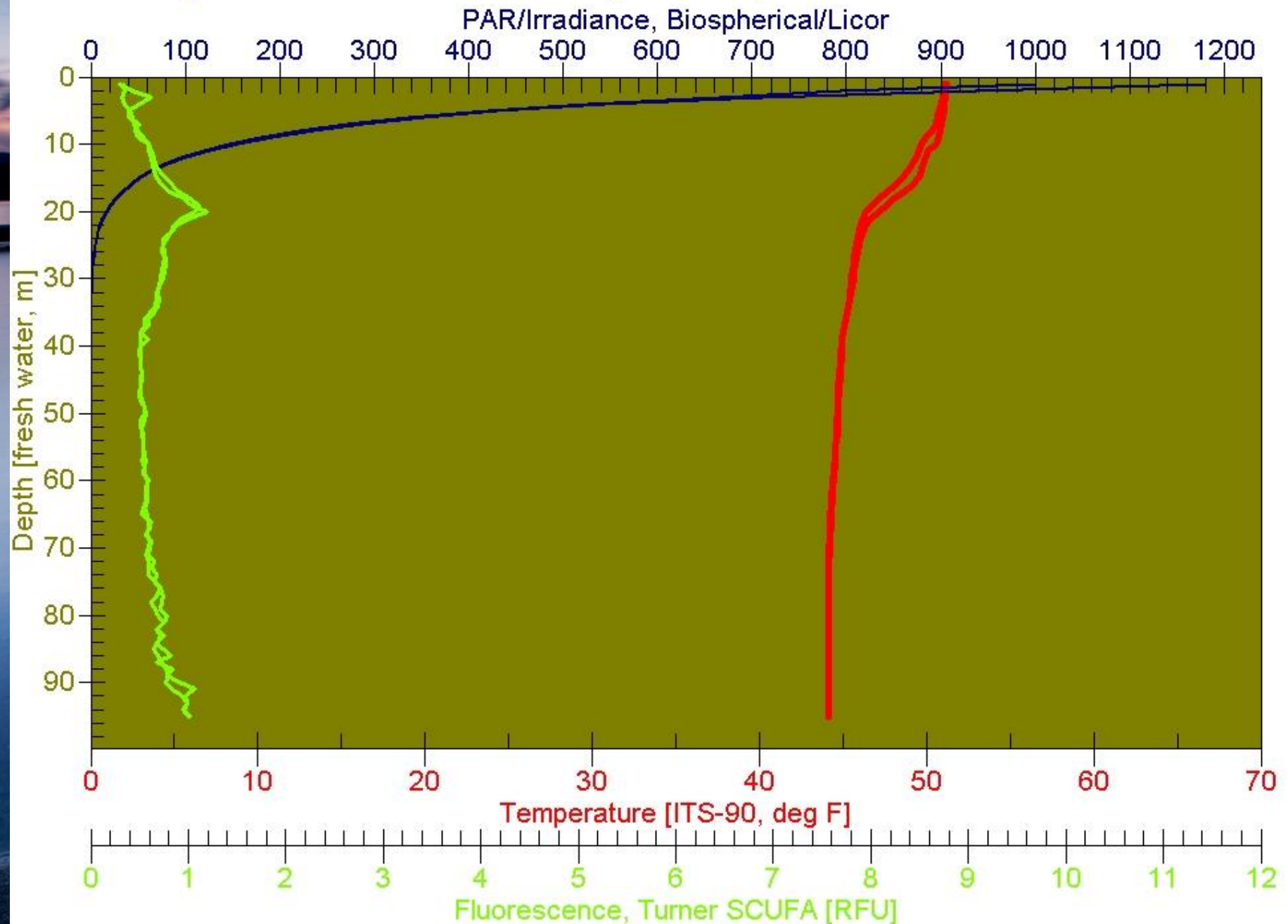


Nodularia

Inquisitive Re-entry

- Galat through the (Lockheed Study) investigated TDS concentrations that were lethal to aquatic species (fish, zooplankton, etc.)
- Intensely viewed the lake's dynamics which included primary productivity and Nodularia blooms.

Pyramid Lake Station 96, 2014Apr23Sta96FADBA.cnv



Clean Water Act

In 1972, Congress Passed the Federal Water Pollution Control Act in response to public concern.

Objective — *"To restore and maintain the chemical, physical, and biological integrity of the Nation's waters..... and, where attainable, to achieve a level of water quality which provides for the protection and propagation of fish, shellfish, wildlife and recreation in and on the water."*

New 1980's Policy Developments

■ USEPA

- Developed a new Indian policy to assist with Tribal self-determination.
- And returned to the Section 518 to expand on a policy to treat federally recognized Tribes as States (TAS).

Water Quality Standards Treatment-As-State (TAS)

- 1) Must be a federally recognized Tribe
- 2) Must have a governing body
 - *To carry out substantial duties and powers*
- 3) To demonstrate authority to manage and protect water resources.
- 4) To have capability to carry out the functions of an effective water quality program.

Funding Doors Opened

- The development of a couple of code of federal regulations (40 CFR 35 and 40), the opportunities opened for Tribe's to obtain funding for their development of water quality standards.
- In 1989, the Tribe began the Treatment-As-State (TAS) process to obtain 106 funding.
- In 1990, the Tribe submitted an application for Program Authorization.

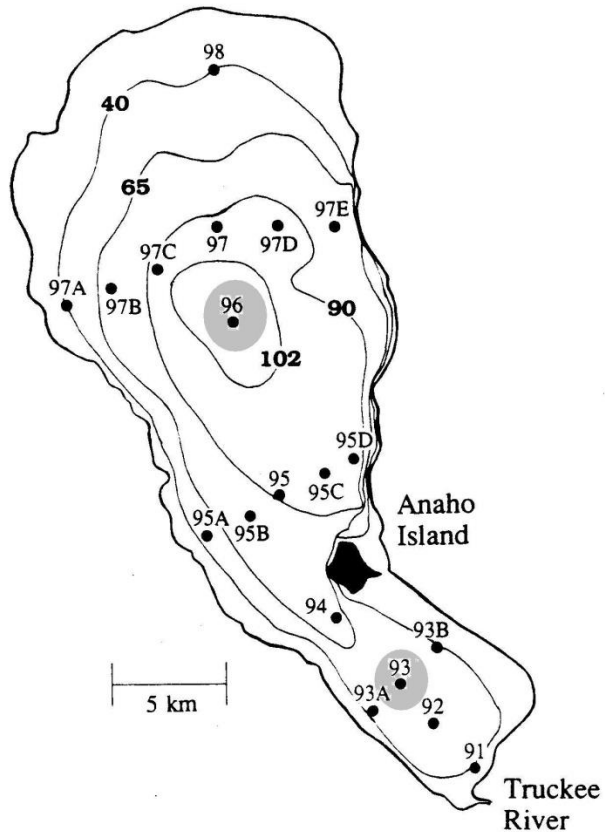
UC Davis Study (1989-1993)

- To develop a reasonable and scientifically sound set of water quality standards to:
 - Protect the beneficial uses of Pyramid Lake and the lower Truckee River.
 - Model its standards after the State of Nevada standards.

Investigations Began

- For **site-specific criteria**, a diverse and comprehensive series of investigations were required. This involved:
 - *Evaluation of historical data*
 - *Detailed limnological monitoring (PL, TR, etc.)*
 - *Field and Laboratory experiments*
 - *Limnological research*
 - *Modeling*

Spatial and Seasonal Trends



- Paleolimnology
- Internal and external loading of nutrients
- Development of nutrient budgets for C, N, and P.
- Susceptibility to anoxia
- Non-point source management and assessment
- Lake and watershed management

Tools to Develop the PLPT's WQ Standards

- Historic and current monitoring database
- New research/monitoring
- Existing State of Nevada water quality standards for the Truckee River
- And numerous criteria published by the US EPA

Tribal Ordinance Developed

- Resolution No. PL101-94 - Water Quality Enabling Ordinance (9-12-1994)
 - regulates the discharge of pollutants into waters of the reservation.
- Resolution No. PL52-04 – Water Quality Standards Implementation (6-16-2004)
 - Defines the regulatory components of how WQS will be implemented
 - **Resolution No. PL31-05-----Amended Water Quality Ordinance on April 15, 2005.**

Water Quantity

- Public Law 101-618
- Water Quality Settlement Act
- Endangered Species Act
- Truckee River Operating Agreement (TROA)

Cottonwood Recruitment and River Flow Requirements

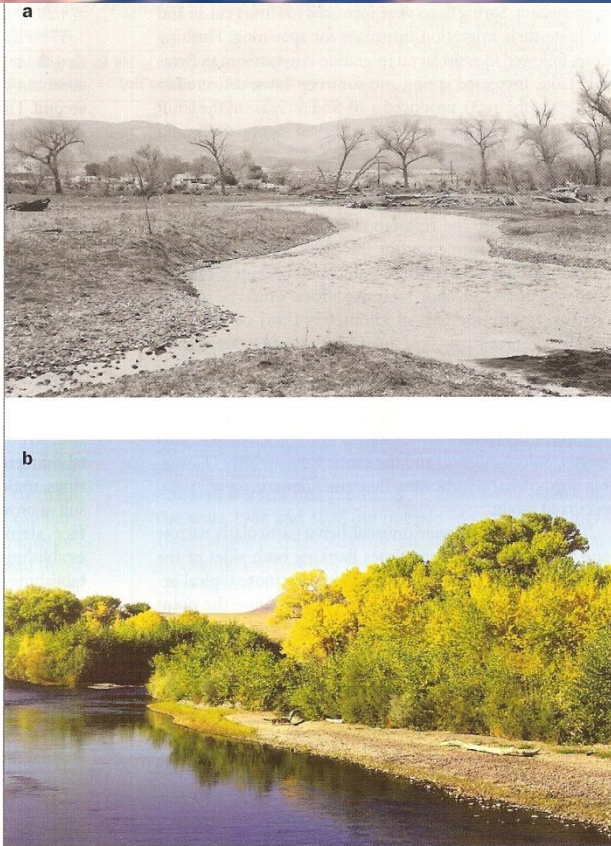


Figure 2. Photographs of the same reach of Truckee River, below Wadsworth, in 1977 (top) and 1997 (bottom). The 1977 photograph was taken in winter when leaves were absent; the 1997 photograph was taken in October. Both views are about the same distance downstream of the town, but the river channel had moved substantially over the two-decade interval. Photographs: top, Donald A. Klebenow; bottom, Stewart B. Rood.

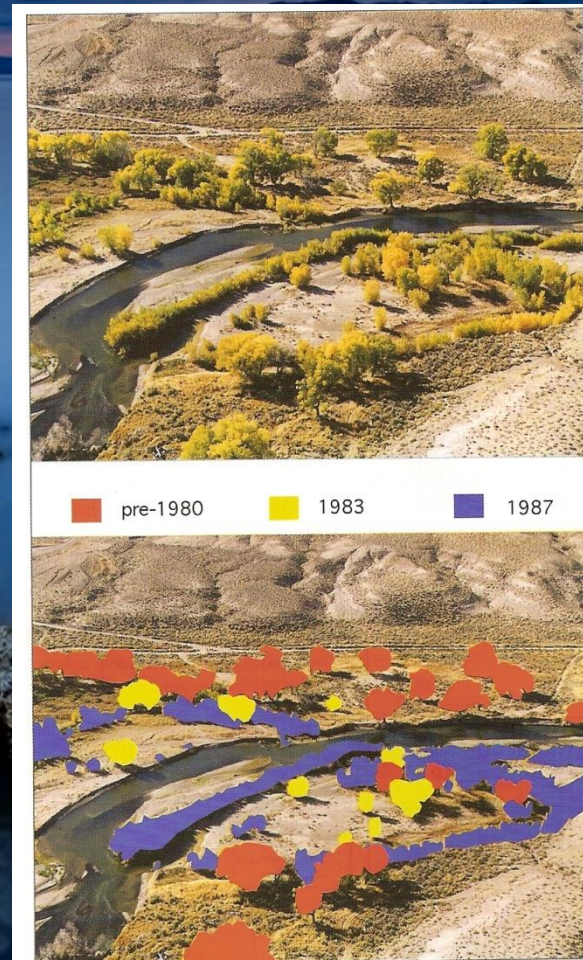


Figure 5. Top: Aerial view of the lower Truckee River, October 1997. Bottom: Same view with age groupings of riparian cottonwoods indicated. Photographs: Stewart B. Rood.

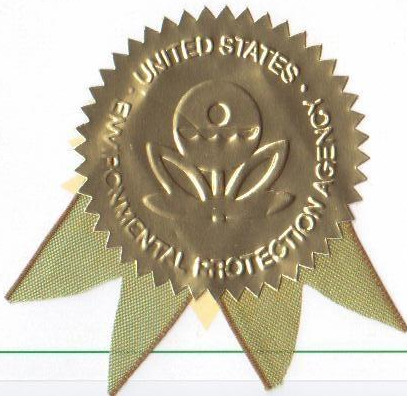
United States Environmental Protection Agency, Region 9
San Francisco, California


Certificate of Achievement

is hereby presented to the

Pyramid Lake Paiute Tribe

for approval of its Program Authorization Application under the Clean Water Act's
Section 303 - Water Quality Standards and Section 401 - Certification Programs




for Wayne Nastri
Regional Administrator

30 Jan. 2007
Date



REDISCOVER NEVADA MUSEUMS

