

Final California 2010 Integrated Report(303(d) List/305(b) Report)

Supporting Information

Regional Board 1 - North Coast Region

Water Body Name: Trinity Lake (was Claire Engle Lake)
Water Body ID: CAL1064007420020720144409
Water Body Type: Lake & Reservoir

DECISION ID 5525

Region 1

Trinity Lake (was Claire Engle Lake)

Pollutant: Mercury
Final Listing Decision: Do Not Delist from 303(d) list (TMDL required list)
Last Listing Cycle's Final Listing Decision: List on 303(d) list (TMDL required list)(2006)
Revision Status: Revised
Sources: Atmospheric Deposition | Natural Sources | Resource Extraction | Source Unknown
Expected TMDL Completion Date: 2019
Impairment from Pollutant or Pollution: Pollutant

Conclusion: Mercury in Trinity Lake is being considered for placement on the Section 303(d) list under Sections 4.1 and 4.5 of the Listing Policy. Two lines of evidence are available in the administrative record to assess this pollutant. Fourteen out of 57 total mercury composite samples of fish tissue taken from Trinity Lake exceed the evaluation guideline used to interpret the toxicity water quality objective. The evaluation guideline is the tissue residue criterion of 0.3 mg/kg from the "Water Quality Criterion for the Protection of Human Health: Methylmercury" (USEPA 2001), which is same value as the 0.3 mg/kg screening value established by the California Office of Environmental Health Hazard Assessment (OEHHA 1999). Total mercury is usually analyzed for most fish studies and assumed to be 100% methylmercury for the purposes of risk assessment (Klasing & Brodberg 2008).

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification against removing this water segment-pollutant combination on the Section 303(d) List (i.e., sufficient justification to not de-list). This conclusion is based on the staff findings that: (1) The data used satisfies the data quality requirements of section 6.1.4 of the Policy. (2) The data used satisfies the data quantity requirements of section 6.1.5 of the Policy. (3) Fourteen of the 57 samples exceeded the evaluation guideline, and this exceeds the allowable frequency listed in Table 4.1 of the Listing Policy. (4) Pursuant to Section 4.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

RWQCB Board Staff Decision: After review of the available data and information, North Coast Regional Water Board staff concludes that the water body-pollutant combination should not be removed from the Section 303(d) List because applicable water quality standards for the pollutant are not being attained.

SWRCB Board Staff Decision: After review of this Regional Board decision, SWRCB staff recommend the decision be approved by the State Board.

USEPA Action (if applicable): USEPA approved the listing of this water body as a water quality limited segment requiring a TMDL for this pollutant.

**Line of Evidence (LOE) for Decision ID 5525, Mercury
Trinity Lake (was Claire Engle Lake)**

Region 1

LOE ID:	31002
Pollutant:	Mercury
LOE Subgroup:	Pollutant-Tissue
Matrix:	Tissue
Fraction:	Fish fillet
Beneficial Use:	Commercial or recreational collection of fish, shellfish, or organisms
Number of Samples:	4
Number of Exceedances:	0
Data and Information Type:	Fish tissue analysis
Data Used to Assess Water Quality:	Fish were collected for tissue analysis at four locations from Trinity Lake. A total of 4 sample composites were generated from one species: Rainbow trout. Details of the compositing protocol can be found in the March 2009 report entitled: "Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Study" (SWAMP, 2009). A total of 0 out of 4 samples exceeded the OHHEA fish tissue screening value for human health.
Data Reference:	Data associated with report entitled: Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Survey. A Report of the Surface Water Ambient Monitoring Program (SWAMP). California State Water Resources Control Board, Sacramento, CA Contaminants in Fish from California Lakes and Reservoirs: Technical Report on Year One of a Two-Year Screening Survey. A Report of the Surface Water Ambient Monitoring Program (SWAMP). California State Water Resources Control Board, Sacramento, CA Cruise Report for the Surface Waters Ambient Monitoring Program (SWAMP) Bioaccumulation Screening Study in California Lakes and Reservoirs, Sampling Dates: June 2007- March 2008
Water Quality Objective/Criterion:	Per the Basin Plan (NCRWQCB 2007): All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Water Board.
Objective/Criterion Reference:	Water Quality Control Plan (Basin Plan) - North Coast Region (Region 1)
Evaluation Guideline:	Office of Environmental Health Hazard Assessment (OEHHA) Screening Value of 0.3 mg/kg to protect human health when consuming fish (OEHHA, 1999).
Guideline Reference:	Prevalence of Selected Target Chemical Contaminants in Sport Fish From Two California Lakes: Public health designed screening study. Sacramento, CA: Office of Environmental Health Hazard Assessment
Spatial Representation:	Samples were collected from four locations in Trinity Lake. As discussed in the Lakes and Reservoirs Report (SWAMP, 2009), individual sample locations consisted of an area within a given waterbody with an approximate one-mile diameter, from which multiple fish tissue samples were collected. The number of sample locations per waterbody was based on the overall size of the waterbody. Specifics of individual sampling locations can be found in the supplemental report entitled "Cruise Report for the Surface Waters Ambient Monitoring Program (SWAMP) Bioaccumulation Screening Study in California

Lakes and Reservoirs, Sampling Dates: June 2007- March 2008" (SWAMP, 2008).

Temporal Representation: Samples were collected on August 14, 2007

Environmental Conditions: There are no known environmental conditions (e.g., seasonality, land use practices, fire events, storms, etc.) that are related to these data.

QAPP Information: Samples were collected, processed, and analyzed in accordance with the methods described in "Quality Assurance Project Plan Screening Study of Bioaccumulation in California Lakes and Reservoirs." (SWAMP, 2008).

QAPP Information Reference(s): [Quality Assurance Project Plan Screening Study of Bioaccumulation in California Lakes and Reservoirs. Moss Landing Marine Labs. Prepared for SWAMP BOG, 49 pages plus appendices and attachments](#)

Line of Evidence (LOE) for Decision ID 5525, Mercury**Region 1****Trinity Lake (was Claire Engle Lake)**

LOE ID: 21170

Pollutant: Mercury

LOE Subgroup: Pollutant-Tissue

Matrix: Tissue

Fraction: Fish fillet

Beneficial Use: Commercial or recreational collection of fish, shellfish, or organisms

Number of Samples: 3

Number of Exceedances: 3

Data and Information Type: Fish tissue analysis

Data Used to Assess Water Quality: All 3 of 3 total mercury composite samples of fish from Trinity Lake exceed the evaluation guideline. Sample composite concentrations range from 0.45 mg/kg to 1.02 mg/kg. Sample composites were made from fish of each species of approximately the same size. For Trinity Lake, 3 sample composites were made as follows: 6 white catfish that range in fork length size from 362 mm to 412 mm, 6 small mouth bass from 400 mm to 439 mm; and 6 small mouth bass from 344 mm to 367 mm. Sample composites were analyzed for total mercury with the assumption that 100% of the total mercury value represents the methylmercury content of tissue. Data is summarized by the California Department of Water Resources (DWR 2001; DWR 2007).

Data Reference: [Mercury Contamination in Fish from Northern California Lakes and Reservoirs. State of California. The Resources Agency. Department of Water Resources. Northern District. July 2007](#)
[Data for Mercury Tissue in Northern California Lakes, 2000-2001](#)

Water Quality Objective/Criterion: Per the Basin Plan (NCRWQCB 2007): All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Water Board.

Objective/Criterion Reference: [Water Quality Control Plan \(Basin Plan\) - North Coast Region \(Region 1\)](#)

Evaluation Guideline: Per the Water Quality Criterion for the Protection of Human Health: Methylmercury (USEPA 2001): the Ambient Water Quality Criterion for methylmercury is the tissue residue criterion of 0.3 mg methylmercury per kg of fish (0.3 mg/kg). This is the concentration in fish tissue that should not be exceeded to protect human health based on a total fish and shellfish consumption-weighted rate of 0.0175 kg fish/day. Total mercury is usually analyzed for most fish studies and assumed to be 100% methylmercury for the purposes of risk assessment (Klasing & Brodberg 2008).

Guideline Reference:

[Development of Fish Contaminant Goals and Advisory Tissue Levels for Common Contaminants in California Sport Fish: Chlordane, DDTs, Dieldrin, Methylmercury, PCBs, Selenium, and Toxaphene](#)
[Water Quality Criterion for the Protection of Human Health: Methylmercury. Final. United States Environmental Protection Agency Office of Science and Technology Office of Water. EPA-823-R-01-001. January 2001](#)

Spatial Representation: Samples were collected in North Trinity Lake.
 Temporal Representation: Samples were collected on the 13th and 20th of September 2001.
 Environmental Conditions: There are no known environmental conditions (e.g., seasonality, land use practices, fire events, storms, etc.) that are related to these data.
 QAPP Information: Samples were collected, processed, and analyzed in accordance with the methods described in "Mercury Contamination in fish from Northern California Lakes and Reservoirs" (DWR 2007), which closely follows the Quality Assurance Management Plan for the State of California's Surface Ambient Monitoring Program (Puckett 2002).
 QAPP Information Reference(s): [Quality Assurance Management Plan for the State of California's Surface Water Ambient Monitoring Program. Sacramento, CA. State Water Resources Control Board. SWAMP. December 2002 \(1st version\)](#)
[Mercury Contamination in Fish from Northern California Lakes and Reservoirs. State of California. The Resources Agency. Department of Water Resources. Northern District. July 2007](#)

**Line of Evidence (LOE) for Decision ID 5525, Mercury
 Trinity Lake (was Claire Engle Lake)**

Region 1

LOE ID: 664

Pollutant: Mercury
 LOE Subgroup: Pollutant-Tissue
 Matrix: Tissue
 Fraction: Total

Beneficial Use: Commercial or recreational collection of fish, shellfish, or organisms

Number of Samples: 50
 Number of Exceedances: 11

Data and Information Type: Fish tissue analysis
 Data Used to Assess Water Quality: Eleven out of 50 samples exceeded. Filet composite and individual samples were collected. Species collected were brown trout, rainbow trout, chinook salmon, largemouth bass, smallmouth bass, and white catfish. Two individual samples of chinook salmon, 8 individual samples of smallmouth bass, and 1 composite of smallmouth bass exceeded the guideline (TSMP, 2002).

Data Reference: [Placeholder reference 2006 303\(d\)](#)

Water Quality Objective/Criterion: North Coast RWQCB Water Quality Control Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

Objective/Criterion Reference: [Placeholder reference 2006 303\(d\)](#)

Evaluation Guideline: 0.3 µg/g (OEHHA Screening Value).
 Guideline Reference: [Placeholder reference 2006 303\(d\)](#)

Spatial Representation: One station located along the east fork of the lake.
 Temporal Representation: Samples were collected in 9/24/2002, 9/25/2002, and 9/27/2002.
 Environmental Conditions:
 QAPP Information: Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program, 2001-2002, Department of Fish and Game.
 QAPP Information Reference(s):

