



United States
Department of
Agriculture

Forest
Service

San Bernardino National Forest
Supervisor's Office

602 South Tippecanoe Ave
San Bernardino, CA 92408
Phone: 909-382-2600
Fax: 909-383-5770
TTD: 909-383-5616

File Code: 2530-3

Date: January 15, 2009

Hope Smythe
Chief of Basin Planning, Inland Waters
Santa Ana Regional Water Quality Board
3737 Main Street, Suite 500
Riverside, CA 92501

Ms. Smythe,

Thank you for the opportunity to respond to the Big Bear Lake Technical Support Document for Mercury TMDL, and the information provided at the CEQA Scoping meeting on December 9, 2008.

Our primary concern and comment is that the proposed methods of dealing with the levels of mercury in adult large mouth bass do not include a practical or cost effective solution.

Current information shows that soils and water column levels of mercury are far below regulatory levels. The primary source is atmospheric deposition, which the San Bernardino National Forest is not responsible for.

Instead of proposing costly monitoring and sediment removal, for which there is no guarantee of success in fixing the problem, the Forest Service suggests that the Regional Board choose a solution that deals directly with the problem of too high exposure from consumption of adult large mouth bass. One solution would be to limit consumption of the affected fish species.

If the Regional Board pursues reductions in loading, then the Forest Service suggests a larger stakeholder group to incorporate parties responsible for atmospheric deposition.

We look forward to working with you during the evaluation of these comments, providing any clarification you would need. We would appreciate a full and complete review of the provided comments. Please contact Robert Taylor, Forest Hydrologist, 909-382-2660, with any concerns.

Sincerely,

/s/ JEANNE WADE EVANS

JEANNE WADE EVANS
Forest Supervisor

cc: Kurt Winchester, Mary Najera





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JEANNE WADE EVANS
Forest Supervisor

cc: Kurt Winchester, Mary Najera



Comment 1: The Forest Service disagrees with the limited number of conclusions drawn from following statement:

P.51, Section 6.2 - "Estimating a TMDL that will result in attainment of uses (specifically, acceptable concentrations of mercury in fish tissue) in Big Bear Lake requires a reduction in the MeHg exposure concentrations in the lake."

- The report gives 3 ways to achieve the needed reduction: reducing the load, reduce production and transport in the watershed, and reduce the release of stored MeHg from lake bottom sediments.
- A fourth, and most practical, method was not suggested: The requirement is to reduce MeHg exposure concentrations. The exposure occurs at the point of consumption. Reducing consumption reduces exposure.

Comment 2: The geologic information presented in the report is literature based and anecdotal in nature. Such information should be separated from local knowledge. The San Bernardino National Forest has conducted a thorough review of information from local experts and has acquired more relevant information that should be acknowledged and added to the report.

The following information was added to the Tetra Tech report in Section 4 - Sources and Section 5 - Linkage Analysis and written in such a way as to imply that these geologic sources could be valid or should be researched more.

- P.20, Section 4.2 - "Geological formation containing low-grade deposits of precious metals (e.g., gold, silver, and copper) have also often been mined using mercury as an amalgam to leach metals from the ore."
- P.21, Section 4.2.1 - "Though the geological characteristics of the watershed indicate some potential for naturally elevated mercury levels, this has not yet been confirmed."
- P.21, Section 4.2.2 - "Anecdotal information infers that while prospecting activities occurred briefly in the watershed, the larger mines were located to the north and east of Bear Valley." (no citation given)
- P.35, Section 5.1 - "Mercuric sulfide (HgS or cinnabar) is a compound formed from Hg(II) but is shown separately because it is the predominant natural ore."
- P.37, Section 5.4 - "Ultimate sources of mercury in the watershed include release from the parent rock, mercury residue from waste disposal, and atmospheric deposition onto the watershed, including deposition and storage in snowpack."

The described potential geologic sources in the Tetra Tech report are not all valid for the Big Bear Lake watershed. Though the information is true for a literature review, the Forest Service suggests that this information not be included as relevant information in the Big Bear Lake Mercury TMDL document, without local confirmation.

1. The USDA Forest Service's Certified Mineral Examiner #016, Raj Daniel, responded to these concerns (see attached and stamped letter).
 - a. The database of mineral information and the mineral potential maps showing mercury retorts (1981 Land Management Plan) show no sites containing mercury within the drainage basin of Big Bear Lake.

- b. There are no mentions of mercury in the Abandoned Mine Database prepared by the erstwhile U.S. Bureau of Mines dated 1992 on the Mountaintop District.
 - c. There are no Plans of Operation that allow cyanide or mercury for metal concentration
 - d. There are no known geologic formations hosting cinnabar mineralization in the Big Bear Lake drainage
2. George H. Kenline, PG, CHG, CEG, Mining Geologist, San Bernardino County Land Use Services Department, Environmental and Mining Section was asked about potential sources of mercury within the Big Bear Lake watershed (January 5, 2009 email)
- a. Mercury is found in the sediments emanating from Van Dusen Canyon
 - b. Starvation Flats (on the Lake shore and above the ARCO gas station) was a placer mining area in the late 1850's and again during the Depression era).
 - c. There was once a mill site below the Blue Quartz Mine along the Lake shore (now below the Big Bear Shooting Range).
 - d. Mr. Kenline also mentioned two locations with the potential for being sources, but could specify no data collection
 - i. Mineralization occurs between the vicinity of Poligue and Minnelusa Canyons
 - ii. Drainage through the old town of Big Bear and the old (historic) landfill in Knickerbocker Canyon

Comment 3: P.52, Section 6.2 - "Loading from geological sources has also not been separated from the net impacts of atmospheric deposition onto the watershed."

The Tetra Tech report identifies a number of research projects that could be completed to more accurately understand how atmospherically deposited mercury affects large mouth bass fish tissue concentrations. Further research will be costly and will not change the fact:

- that the soil and water column information collected from the watershed are below regulatory levels

Comment 4: Delivery of atmospherically deposited mercury onto the watershed is not a source that the Forest Service is responsible for. If the Regional Board is going to require reductions in atmospheric deposition loading, then the number of Stakeholders involved will need to increase many fold to capture those responsible for atmospheric deposition.

- P.33, Section 5 - "The linkage analysis defines the connection between numeric targets and identified pollutant sources."
- P.52, Section 6.2 - "needed load reductions are assigned proportionately to both direct atmospheric deposition and watershed background sources."
 - There is no method available to the Forest Service or the other local stakeholders to reduce loading from atmospheric deposition

Modeling Concerns

Comment 5: The previous HSPF model did not incorporate wildland fire return interval into the assumptions. Nor did it include vegetative cover consistent with successional growth (grass species, brush species, tree species and changing ground cover over time) following environmental events such as fires. Without these processes being added, the models predictions of sediment loading from the watershed likely underestimate long-term averages. Numerous comments were previously submitted (Big Bear Lake Nutrient and Sediment TMDL comments, 2005).

- The model should not have been used in its present form.
- The Forest Service believes that the HSPF model should be adjusted to include long-term average inputs from fire return intervals as well as the different sediment loading rates from the standard successional ecosystems that naturally occur.

Comment 6: P.47, Section 5.6 - "Precipitation events following recent forest fires also result in increased loads of total and methylmercury from the watershed and release of elemental mercury to the atmosphere which is then available for deposition."

- If the Regional Board is going to acknowledge the changing conditions that wildland fires bring to the region, then the Regional Board should adjust the model to include wildfires in the natural background condition and the effect wildland fires have on natural erosion rates.

Concentration of Mercury in the Big Bear Lake Basin

The following information responds to questions raised by the San Bernardino National Forest Hydrologist on December 17, 2008:

I have looked at the data base of mineral information and the mineral potential maps prepared by me on or about 1981 for the Forest Management Plan. There appears to be one situs (#26) that was identified as a potential mercury retort (concentration plant) constructed at a hillside near Rattlesnake Canyon. The approximate location is: T2N.,R3E.,SW1/4ofSE1/2SW1/2NW1/4 Sec.27 SBBM.

Most of the placer operations along Rattlesnake Canyon were for native gold recovery and mercury may have been used to concentrate the noble metal. Rattlesnake Canyon does not drain into Big Bear Lake.

I have also searched the Abandoned Mine Data Base prepared by the erstwhile U.S. Bureau of Mines dated 1992. No mention of mercury was reported on the Mountain Top District.

There is no Plan of Operations that allows Cyanide or Mercury for metal concentration. Larger companies mine high grade limestone on the north slopes of the San Bernardino Mountains.

There are no known geologic formations hosting cinnabar mineralization on the Mountaintop District.

Common knowledge is coal burnt in the cement kilns in LucerneValley and on the Mojave Desert have mercury emissions in parts per billion. The general direction of this flue is away from the Big Bear area. Coal burnt from Utah may have a higher concentration of mercury rather than that is shipped from Arizona.

Raj H. Daniel
Certified Mineral Examiner #016
January 5, 2009