UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUL 14 2017

Felicia Marcus, Chair
California State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Re: Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California - Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions

Dear Chair Marcus:

I am pleased to approve the new statewide water quality standards in the subject Provisions[1] consistent with the requirements of section 303(c) of the Clean Water Act and 40 C.F.R. Part 131. Supported by robust science and stakeholder outreach, these standards encompass specific beneficial uses to account for tribal cultural use and subsistence fish consumption, mercury water quality objectives to safeguard human health and aquatic wildlife, and flexibility to achieve permit compliance.

Summarized below are the approved standards, which take effect immediately for Clean Water Act purposes. Incorporated as part of this letter are Enclosure A, Table of Approved Standards, and Enclosure B, EPA's detailed analysis of the standards and rationale for approval.

1. New Human Health Beneficial Uses[2]

EPA approves the additions in Chapter II of three important, broadly defined human health beneficial uses applicable to all pollutants:

- Tribal Tradition and Cultural Use (CUL), which protects California Tribes' cultural, spiritual, ceremonial, and traditional uses of water;
- Tribal Subsistence Fishing Use (T-SUB), which protects non-commercial fishing by Tribal communities to meet sustenance needs; and

[1] The State's approval package, which includes State Water Resources Control Board Resolution 2017-0027, was certified by the California Office of Administrative Law on June 28, 2017 (OAL Matter 2017-0516-03) and submitted to EPA on the same date. The public process leading to the Resolution, which included notice of opportunity for public comment, a public hearing, public meetings and written response to comments, is consistent with the procedural requirements of CWA §303(c) and its implementing regulations, including 40 C.F.R. §131.20.

[2] Under CWA §303 and 40 C.F.R. Part 131, water quality standards include designated uses of the waters and water quality criteria to protect those uses. California refers to "designated use" as "beneficial use" and "water quality criteria" as "water quality objectives."

- Subsistence Fishing Use (SUB), which protects non-commercial fishing by non-Tribal communities to meet sustenance needs.

2. New Mercury Water Quality Objectives[3]

Today's action covers five new provisions for mercury water quality objectives in Chapter III. One provision (the Sport Fish Objective) is applicable both to human health use and to aquatic life and aquatic-dependent wildlife uses. There are three new human health objectives (two numeric and one narrative) and three new numeric wildlife objectives, as discussed below. The numeric objectives are measured in the amount of methylmercury, an organic and toxic form of mercury, in fish tissue. This is appropriate as bioaccumulation of methylmercury through diet is the primary route of exposure to toxic levels of mercury.

a. Human Health Mercury Objectives

The approved human health mercury objectives are:
- Tribal Subsistence Fishing Objective of 0.04 mg/kg for waters with the T-SUB use;
- Narrative Subsistence Fishing Objective, which prohibits levels of mercury in fish that cause adverse effects in people for waters with the SUB use or, in the North Coast Region, waters with the Subsistence Fishing (FISH) use; and
- Sport Fish Objective of 0.2 mg/kg for waters with the Commercial and Sport Fishing use or the CUL use.

The numeric objectives reflect consideration of detailed, site-specific fish consumption rates and default values published by EPA, and the protective narrative prohibition further provides the Regional Water Quality Control Boards flexibility to consider diverse consumption patterns and the relevant EPA default rate to translate to a numeric fish tissue value.

b. Wildlife Mercury Objectives[4]

The approved mercury objectives for the protection of aquatic life and aquatic-dependent wildlife are:
- Sport Fish Objective of 0.2 mg/kg, as applied to wildlife;
- Prey Fish Objective of 0.05 mg/kg; and
- California Least Tern Prey Fish Objective of 0.03 mg/kg.

All three objectives are for waters with one or more wildlife beneficial uses, including: Wildlife Habitat, Marine Habitat, Warm Freshwater Habitat, Cold Freshwater Habitat, Estuarine Habitat, Inland Saline Water Habitat, and/or Preservation of Rare and Endangered Species. For such waters, the Sport Fish Objective and one of the two Prey Fish Objectives will apply, depending

[3] This section provides the numeric objectives in summary form. See Enclosures A and B for their specific applications.

[4] EPA has initiated consultation on the approval of the mercury wildlife objectives under Section 7 of the Endangered Species Act and has the authority to take additional measures regarding these objectives if warranted by the consultation.

on whether the endangered California Least Tern or its habitat exists. If so, the more stringent Least Tern prey fish objective applies.

The State's detailed scientific studies, including analyses of species of concern selected from a thorough review of the federal and state listed species lists, offer clear support that these objectives are protective of California's sensitive aquatic wildlife. As certain threatened and endangered species may be particularly sensitive to mercury exposure, based on further evaluation of relevant mercury toxicity studies, California may wish to consider future adoption of site-specific criteria for waters inhabited by those species.

3. Applicability of New Mercury Objectives

Per Chapter III.D.3, the new mercury objectives apply to all inland surface waters and enclosed bays and estuaries but do not supersede the currently applicable, EPA-approved numeric objectives for the following waters:

- the San Francisco Bay;
- the Sacramento-San Joaquin Delta, including the Yolo Bypass;
- the fresh water portions of Walker Creek, Soulajule Reservoir, and tributaries (Arroyo Sausal, Salmon Creek, Chileno Creek, and Keyes Creek);
- Sulphur Creek (Schoolhouse Canyon to confluence with Bear Creek);
- Clear Lake;
- Cache Creek (including North Fork);
- Bear Creek;
- Harley Gulch; and
- the Guadalupe River Watershed (except Los Gatos Creek and its tributaries upstream of Vasona Dam, Lake Elsman, Lexington Reservoir, and Vasona Lake).

Except for lower Sulphur Creek, these waters' mercury objectives, developed with site-specific information and similar fish tissue methodology, are consistent with the new statewide objectives. Since lower Sulphur Creek has naturally occurring levels of mercury that do not support suitable fish habitat, its objectives reflect background conditions.[5]

The new mercury objectives, however, replace two less stringent objectives previously approved by EPA: the San Francisco Bay Basin Water Quality Control Plan's 25 microgram per liter water column objective and the Central Coastal Basin Water Quality Control Plan's 0.5 mg/kg fish tissue objective.

The general applicability of the new mercury objectives and the specified exceptions are reasonable and appropriate for the protection of human health and wildlife in California's waters.

4. Compliance Schedule Authorizing Provision

The mercury objectives associated with the new human health uses are significantly more stringent than those associated with current uses. California has in place an EPA-approved statewide "2008 Compliance Schedule Policy" applicable to the new mercury objectives.

[5] For further details on these site-specific, previously approved wildlife objectives, see Enclosure B, Attachment 1.

However, the State has indicated that its 2008 Policy does not apply to permits issued during the interim between the adoption of a new human health use for a waterbody with an existing mercury Total Maximum Daily Load (TMDL) and the adoption of a new mercury TMDL based on that more stringent new use, and that it adopted Chapter IV.D.2.c.2.ii. to address that gap and supplement the 2008 Policy.

EPA finds that Chapter IV.D.2.c.2.ii includes language constituting a compliance schedule authorizing provision, which EPA approves under 40 C.F.R. § 131.15, but only to the extent it authorizes granting mercury discharges not covered by the 2008 Policy a compliance schedule that is: (i) "as soon as possible" to meet final effluent limitations based on the more stringent new use, not to exceed 10 years from the time the permit first includes interim limitations consistent with the existing TMDL; and (ii) not based solely on time needed to develop a new TMDL.

I look forward to our continued partnership to protect California waters and advance human health and wildlife protection. Please call me if you would like to discuss further, or your staff may contact Diane Fleck of the Water Quality Assessment Section at (415) 972-3527 for specific questions concerning this approval.

Sincerely,

Tomás Torres July 14, 2017
Director, Water Division

Enclosures (2)
A. Table of Approved Standards
B. EPA Analysis of Approved Standards

cc: Michael Lauffer, Acting Executive Director, SWRCB
Karen Larsen, Deputy Director, SWRCB
Jacob Iversen, Environmental Scientist, SWRCB

Enclosure A

Table of Approved Standards

Beneficial Use	Discussion/Definition	
Chapter II. 2nd paragraph	Confirmation of Tribal use designation by a California Native American Tribe.	
Chapter II. 1): Tribal Tradition and Culture (CUL)	"Uses of water that support the cultural, spiritual, ceremonial, or traditional rights or LIFEWAYS of CALIFORNIA NATIVE AMERICAN TRIBES, including, but not limited to: navigation, ceremonies, or fishing, gathering, or consumption of natural aquatic resources, including fish, shellfish, vegetation, and materials."	
Chapter II. 2): Tribal Subsistence Fishing (T-SUB)	"Uses of water involving the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities of California Native American Tribes to meet needs for sustenance."	
Chapter II. 3): Subsistence Fishing (SUB)	"Uses of water involving the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities, to meet needs for sustenance."	
Water Quality Objective	**Applicable Beneficial Uses**	**Objective Value – Annual Average methylmercury in fish tissue, wet weight**
Chapter III.D.2.b: Tribal Subsistence Fishing Objective (Human Health)	Tribal Subsistence Fishing (T-SUB)	**0.04 milligrams per kilogram (mg/kg)** in 70% Trophic Level (TL) 3 fish and 30% TL 4 fish, skinless fillet.
Chapter III.D.2.c: Subsistence Fishing Objective (Human Health)	Subsistence Fishing (SUB); Subsistence Fishing (FISH – Regional Board 1)	Narrative: Waters…shall be maintained free of mercury at concentrations which accumulate in fish and cause adverse biological, reproductive, or neurological effects. (Fish consumption rate shall be site-specific; default: 142 grams/day)
Chapter III.D.2.a: Sport Fish Objective (Human Health and Wildlife)	**Human Health Uses**: Commercial & Sport Fishing (COMM); Tribal Tradition & Culture (CUL). **Wildlife Uses:** Wildlife Habitat (WILD); Marine Habitat (MAR); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Estuarine Habitat (EST); Inland Saline Water Habitat (SAL); Preservation of Rare & Endangered Species (RARE).	**0.2 mg/kg** in highest TL fish, skinless fillet; If TL 3 fish, 150 – 500 millimeters (mm) total length; If TL 4 fish, 200 – 500 mm total length.
Chapter III.D.2.d: Prey Fish Objective (Wildlife)	WILD; MAR; WARM; COLD; EST; SAL; RARE; Where least tern objective does not apply.	**0.05 mg/kg** in whole fish 50-150 mm total length, between Feb 1 – July 31.
Chapter III.D.2.e: California Least Tern Prey Fish Objective (Wildlife)	WILD; MAR; WARM; COLD; EST; SAL; RARE; Where least tern or least tern habitat exists.	**0.03 mg/kg** in whole fish < 50 mm total length, between April 1 – August 31.
Chapter III.D.3.	Interaction of Mercury Water Quality Objectives with Basin Plans	(N/A)
Compliance Schedule Authorizing Provision	**When Applicable**	
Chapter IV. D.2.c.2.ii.	Where a mercury TMDL exists and the State adopts a more stringent human health use associated with CUL, T-SUB or SUB for the same waterbody, provisions in the existing mercury TMDL may continue to apply, if certain requirements are met.	

Enclosure B

EPA Review of State Water Resources Control Board Water Quality Standards for Mercury and New Beneficial Uses

I. Background

Around 2004, the State Water Resources Control Board (SWRCB) started working on a package to adopt statewide human health and wildlife mercury water quality objectives and implementation procedures. The SWRCB subsequently added human health beneficial uses for Native American Tribes and subsistence fisherpeople to the package and conducted significant public outreach during 2014, 2015, and 2016. On December 29, 2016, the SWRCB issued a public notice entitled, *Notice of Opportunity for Public Comment, Staff Workshop, Public Hearing, and Notice of Filing*, concerning the availability of documents, workshops, and hearings for its proposal. The proposed package was posted at the SWRCB's website on January 3, 2017, and workshops were held on January 9, 2017 and February 1, 2017. A hearing to take oral public comment was held in Sacramento on February 7, 2017, and written public comment was accepted through noon on February 17, 2017. The SWRCB prepared a Response to Comment document, and posted its final proposed package at its website[1] on April 21, 2017.

At a public meeting on May 2, 2017, the SWRCB adopted Resolution No. 2017-0027, *Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (Provisions). On June 28, 2017, the State's Office of Administrative Law (OAL) completed its review of the package and approved the Resolution (see OAL Matter Number: 2017-0516-03). On June 28, 2017, EPA received a complete package from the State requesting review and approval of the beneficial uses, the water quality objectives, and a compliance schedule authorizing provision contained in the Provisions.[2]

II. Summary of Water Quality Standards at Issue

Clean Water Act (CWA) section 303(c) directs states to adopt water quality standards (designated uses, criteria, and anti-degradation requirements) for their waters that are subject to the CWA and implementing regulations at 40 CFR Part 131. This regulation requires, among other things, that a state's water quality standards specify appropriate designated uses of the waters and water quality criteria that protect those uses. California uses the term "beneficial use" to mean the same as "designated use" under the CWA and the term "water quality objective" to mean the same as "water quality criteria" under the CWA.

California's new water quality standards included in the Provisions are consistent with CWA section 303(c) and 40 CFR Part 131. The Provisions: 1) add three new human health beneficial

[1] The SWRCB's website can be found here: http://www.waterboards.ca.gov/water_issues/programs/mercury/

[2] The public process leading to the Resolution adopting the Provisions includes notice of opportunity for public comment, a public hearing, public meetings, and written response to comments, and is consistent with the procedural requirements of CWA section 303(c) and its implementing regulations, including 40 CFR §131.20.

uses for subsistence fishing and for California Native American Tribal subsistence fishing and culture to protect Tribal members and other subsistence fisherpeople; 2) add five new mercury water quality objectives to protect human health, aquatic life, and aquatic-dependent wildlife from the toxic effects of mercury through diet; and 3) add a compliance schedule authorizing provision to facilitate the implementation of the new, more stringent mercury objectives for California.

III. New Beneficial Uses

The Provisions add three new human health beneficial uses (in italics below) in Chapter II. Beneficial Uses. Chapter II. Beneficial Uses states:

> * * *
>
> *For the State Water Resources Control Board (State Water Board) or the Regional Water Boards to designate the Tribal Tradition and Culture or Tribal Subsistence Fishing beneficial uses in a water quality control plan for a particular waterbody segment and time(s) of year, a CALIFORNIA NATIVE AMERICAN TRIBE[2] must confirm the designation is appropriate.*
>
> *** * ***
>
> *1) Tribal Tradition and Culture (CUL): Uses of water that support the cultural, spiritual, ceremonial, or traditional rights or LIFEWAYS of CALIFORNIA NATIVE AMERICAN TRIBES, including, but not limited to: navigation, ceremonies, or fishing, gathering, or consumption of natural aquatic resources, including fish, shellfish, vegetation, and materials.*
>
> *2) Tribal Subsistence Fishing (T-SUB): Uses of water involving the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities of California Native American Tribes to meet needs for sustenance.*
>
> *3) Subsistence Fishing (SUB): Uses of water involving the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities, to meet needs for sustenance.*
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>
> *[2] Terms in "all cap" font (excepting the beneficial use abbreviations) are defined in Attachment A (Glossary).*

The beneficial uses are available for the SWRCB and the Regional Water Quality Control Boards (RWQCBs) to consider applying to specific waterbodies. The T-SUB use and CUL use will become effective for specific waterbodies when the SWRCB or RWQCB confirms with a California Native American Tribe that the designation is appropriate and the RWQCB and/or SWRCB adopts the use for a specific waterbody and EPA approves the State action. The SUB use will become effective for specific waterbodies when the SWRCB or RWQCB adopts the use for a specific waterbody and EPA approves the State action.

The new beneficial uses are not intended to protect or enhance fish populations or aquatic habitat, as explained in the Provisions at Chapter II. Beneficial Uses, third paragraph. Fish populations and aquatic habitats are protected and enhanced by aquatic life beneficial uses (e.g., fish spawning and warm freshwater habitat) which are designed to support habitats intended for fish reproduction and development. See Provisions, Chapter II. Beneficial Uses.

Analysis of New Beneficial Uses

The three new human health beneficial uses are reasonable and appropriate to protect California Native American Tribal traditions and culture, Tribal subsistence fishing, and other subsistence fishing. The uses are described in more detail in Chapter 6.4 of the *Final Staff Report, Including Substitute Environmental Documentation for Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (Final Staff Report). The CUL use provides protection for cultural, spiritual, ceremonial, and traditional uses of the water for California Tribal members. The protections apply to natural aquatic resources such as fish, shellfish, vegetation, and other aquatic materials. The T-SUB and SUB uses provide protection for subsistence fishing by Tribal and non-Tribal fisherpeople, respectively. The State refers to subsistence fishing as the consumption by individuals, households or communities for sustenance, and includes the non-commercial catching and gathering of natural aquatic resources such as fish and shellfish. The uses are broadly defined to cover a range of activities concerning tradition, culture and subsistence, and are intended to apply for all pollutants. Many subsistence fisherpeople use California waters for fishing and many California Native American Tribal members practice cultural traditions using California waters or resources from California waters. The uses are important for RWQCBs to consider to protect human health when adopting beneficial uses for specific waterbodies.

The State conducted extensive outreach over several years with many California Native American Tribes and environmental justice groups to develop the CUL, T-SUB, and SUB uses. See Final Staff Report, Chapter 2.6. EPA supports these collaborative efforts and the resulting beneficial uses to protect California Native American Tribal members and other subsistence fisherpeople. The beneficial uses are appropriate uses of California's waters subject to the CWA.

IV. New Mercury Water Quality Objectives

The Provisions add four new numeric mercury water quality objectives and one new narrative mercury water quality objective (in italics below) in Chapter III. Water Quality Objectives, D. Mercury, 2. Mercury Water Quality Objectives. Subsection 2. Mercury Water Quality Objectives has five subparts (a. through e.) which state:

> ***a. Sport Fish Water Quality Objective***
>
> *1) Application of the Sport Fish Water Quality Objective*
>
> *The Sport Fish Water Quality Objective for mercury applies to waters with the beneficial uses of COMM, CUL[5], WILD, or MAR.*
>
> *With respect to the WILD and MAR beneficial uses, the Sport Fish Water Quality Objective may be used to evaluate whether all species are supported only when applied to TROPHIC LEVEL 4 fish, except with respect to the California least tern (as discussed in Chapter III.D.2.e). If the objective is measured using TROPHIC LEVEL 3 fish, protection of all wildlife species within the WILD and MAR beneficial uses is not ensured. Therefore, if TROPHIC LEVEL 3 fish are used, then the Prey Fish Water Quality Objective (as described in Chapter III.D.2.d) shall be used, but if the water body is habitat for California least tern, then the California Least Tern Prey Fish Objective (as described in Chapter III.D.2.e) shall be used. However, if the Sport Fish Water Quality Objective is exceeded when applied to TROPHIC LEVEL 3 fish, that is sufficient evidence to indicate that the Prey Fish Water Quality Objective or, if applicable, the California*

Least Tern Prey Fish Objective is also exceeded without having to measure the two latter objectives (see flow chart in Attachment B).

2) Sport Fish Water Quality Objective

The Sport Fish Water Quality Objective is: The average methylmercury concentrations shall not exceed 0.2 milligrams per kilogram (mg/kg) fish tissue within a CALENDAR YEAR[6]. The water quality objective applies to the WET WEIGHT concentration in skinless fillet in TROPHIC LEVEL 3 or TROPHIC LEVEL 4 fish, whichever is the HIGHEST TROPHIC LEVEL FISH in the water body. Freshwater TROPHIC LEVEL 3 fish are between 150 to 500 millimeters (mm) in total length and TROPHIC LEVEL 4 fish are between 200 to 500 mm in total length, except for sizes specified in Attachment C, or as additionally limited in size in accordance with the LEGAL SIZE LIMIT for the species caught. Estuarine fish shall be within the LEGAL SIZE LIMIT and greater than 150 mm, or as otherwise specified in Attachment C.

b. Tribal Subsistence Fishing Water Quality Objective

1) Application of the Tribal Subsistence Fishing Water Quality Objective

The Tribal Subsistence Fishing Water Quality Objective applies to waters with the T-SUB beneficial use.

2) Tribal Subsistence Fishing Water Quality Objective

The Tribal Subsistence Fishing Water Quality Objective is: The average methylmercury concentrations shall not exceed 0.04 mg/kg fish tissue within a CALENDAR YEAR. The objective applies to the WET WEIGHT concentration in skinless fillet from a mixture of 70 percent TROPHIC LEVEL 3 fish and 30 percent TROPHIC LEVEL 4 fish as detailed in Attachment C.

c. Subsistence Fishing Water Quality Objective

1) Application of the Subsistence Fishing Water Quality Objective

The Subsistence Fishing Water Quality Objective applies to waters with the SUB beneficial use or to waters with the FISH beneficial use (see footnote 2).

2) Subsistence Fishing Water Quality Objective

The Subsistence Fishing Water Quality Objective is: Waters with the Subsistence Fishing (SUB) beneficial use shall be maintained free of mercury at concentrations which accumulate in fish and cause adverse biological, reproductive, or neurological effects in people.

The fish consumption rate used to evaluate this objective shall be derived from water body- and population-specific data and information on the subsistence fishers' rate and form (e.g. whole, fillet with skin, skinless fillet) of fish consumption.[7]

When a water quality control plan designates a water body or water body segment with the Subsistence Fishing (SUB) beneficial use, development of a region-wide or site-specific numeric fish tissue mercury water quality objective is recommended to account for the wide variation of consumption rate and fish species encompassed by the SUB beneficial use.

d. Prey Fish Water Quality Objective

1) Application of the Prey Fish Water Quality Objective

The Prey Fish Water Quality Objective applies to waters with the WILD or MAR beneficial uses. However, the objective does not apply to water body segments where the California Least Tern Prey Fish Water Quality Objective applies (see Chapter III.D.2.e). As discussed in Chapter III.D.2.a, it is not necessary to measure the Prey Fish Water Quality Objective if the Sport Fish Water Quality Objective applies to the same water body and is evaluated using TROPHIC LEVEL 4 fish. However, if the Sport Fish Water Quality Objective is exceeded when applied to TROPHIC LEVEL 3 fish, that is sufficient evidence to indicate that the Prey Fish Water Quality Objective is also exceeded without having to measure the latter objective (see flow chart in Attachment B).

2) Prey Fish Water Quality Objective

The Prey Fish Water Quality Objective is: The average methylmercury concentrations shall not exceed 0.05 mg/kg in WET WEIGHT whole fish tissue of any species between 50 to 150 mm in total length during

the breeding season. The breeding season is February 1 through July 31, unless site-specific information indicates another appropriate breeding period.

e. California Least Tern Prey Fish Water Quality Objective

1) Application of the California Least Tern Prey Fish Water Quality Objective

The California Least Tern Prey Fish Water Quality Objective applies to water with the WILD, MAR, or RARE beneficial uses at water bodies where the least tern or least tern habitat exists, including but not limited to the water bodies identified in Attachment D.

2) California Least Tern Prey Fish Water Quality Objective

The California Least Tern Prey Fish Water Quality Objective is: The average methylmercury concentrations shall not exceed 0.03 mg/kg fish tissue from April 1 through August 31. The objective applies to the WET WEIGHT concentration in whole fish less than 50 mm total length.

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[5] *If site-specific studies indicate a consumption pattern under the CUL beneficial use higher than the consumption rate used for the objective to support the COMM beneficial use, then the Regional Water Board should consider adopting a site-specific objective to protect consumption of fish under the CUL beneficial use.*

[6] *Any explicit reference in the MERCURY PROVISIONS to "CALENDAR YEAR" means a fixed period of twelve CALENDAR MONTHS (i.e., the period of months would not be moving or rolling).*

[7] *U.S. EPA recommended national subsistence fishing consumption rate of 142 grams per day (4 to 5 meals per week) shall be used to translate the narrative objective unless a site-specific numeric water quality objective is developed or an external peer-reviewed consumption study uses a different methodology to translate the narrative water quality objective.*

Attachment B, Mercury Prey Fish Decision Diagram, is a flowchart for determining when it is necessary to monitor mercury levels in prey fish. Attachment C, Fish Trophic Level Classifications, is a list of fish species and sizes associated with specific trophic levels, and Attachment D, Waters Protected by the Mercury California Least Tern Prey Fish Water Quality Objective, is a list of identified waters to which the California Least Tern Objective applies.

In footnote 3 of the Provisions, the SWRCB states that the SUB beneficial use also applies to the Subsistence Fishing (FISH) beneficial use contained in the North Coast Regional Water Quality Control Board's water quality control plan (see Water Quality Control Plan for the North Coast (May 2011), p. 2-3.00). In footnote 4 of the Provisions, the SWRCB states that any explicit reference in the Provisions to the WILD or MAR beneficial use includes the WARM, COLD, EST and SAL beneficial uses. Footnotes 3 and 4 are found in Chapter III.D.1., Applicability.

The State's mercury objectives are measured in the amount of methylmercury in fish tissue. Methylmercury is an organic and toxic form of mercury that readily bioaccumulates in living organisms. Bioaccumulation of methylmercury through diet is the primary route of exposure of toxic levels of mercury. Therefore, the amount of methylmercury in fish tissue is an appropriate surrogate for mercury, for water quality objectives. See also Final Staff Report, Chapters 4 and 6.1.

Analysis of New Mercury Water Quality Objectives

The five new mercury water quality objectives to protect human health and wildlife in California are reasonable, protective of the applicable beneficial uses, and based on sound scientific rationale. Three objectives (the Tribal Subsistence Fishing, Subsistence Fishing, and Sport Fish Water Quality Objectives) are for the protection of human health, and three objectives (the Sport Fish, Prey Fish, and California Least Tern Prey Fish Water Quality Objectives) are for the protection of aquatic-dependent wildlife.

1. Human Health Mercury Objectives

Tribal Subsistence Water Quality Objective: The Tribal Subsistence Water Quality Objective applies to waters assigned the T-SUB beneficial use, and the average methylmercury concentration in fish (skinless fillet) must not exceed 0.04 milligrams of methylmercury per kilogram of fish tissue wet weight within a calendar year. The fish must be a mixture of 70% trophic level 3 fish and 30% trophic level 4 fish, as detailed in Attachment C, Fish Trophic Level Classifications.

The SWRCB's fish tissue human health objectives in the Provisions are derived using EPA's equation for deriving fish tissue human heath criteria (USEPA, 2001):

$$FTC = BW * (RfD – RSC)/FI$$

Where:
FTC = Fish Tissue Criterion in milligrams (mg) methylmercury (mehg) per kilogram (kg) fish tissue (or mg/kg) in wet weight (ww)
BW = Body Weight of 70 kg for an average person
RfD = Reference Dose of 0.0001 mg mehg/kg body weight (EPA default value)[3]
RSC = Relative Source Contribution of 2.7×10^{-5} mg mehg/kg body weight (EPA default value); this value is subtracted from the Reference Dose to account for other sources of mehg e.g., marine fish
FI = Fish Intake, i.e., the fish consumption rate, in kilograms per day (kg/day).

The SWRCB used the same input values for BW, RfD, and RSC that EPA used in its 2001 human health CWA 304(a) recommendation for methylmercury (USEPA, 2001) in their calculations to derive the FTC, which is the Tribal Subsistence Water Quality Objective.

The most important variable in the equation is the Fish Intake, or the fish consumption rate. The consumption rate in EPA's 2001 CWA 304(a) recommendation for methylmercury for the general U.S. population (90^{th} percentile of people who do and do not eat fish) is 17.5 grams per

[3] EPA's Integrated Risk Information System (IRIS) Glossary defines Reference Dose as: an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. See: IRIS Glossary.

day (g/day), resulting in a national recommended FTC of 0.3 mg/kg[4] (USEPA, 2001). EPA's default consumption rate for subsistence fishers (99th percentile) is 142 g/day (USEPA, 2000).

The SWRCB used a subsistence consumption rate of 142 g/day, or 4 to 5 fish meals per week. This value is based on a detailed study (through a fish use/consumption survey) of California Native American Tribes conducted as part of the development of the Provisions, *California Tribes Fish-Use: Final Report. A Report for the State Water Resources Control Board and the U.S. Environmental Protection Agency, Agreement Number 11-146-250*, July 2014, by Fraser Shilling, A. Negrette, L. Biondini, and S. Cardenas (California Tribes Fish-Use Report). See Final Staff Report, Chapters 4.9 and 6.5.

The California Tribes Fish-Use Report found that the 95th percentile consumption rate of California Native American Tribes is 141.8 (142 rounded) g/day (Shilling et al., 2014, Table 6). The current California Tribal subsistence consumption rate (95th percentile) is the same value as the current EPA national default subsistence rate (99th percentile), although the California Tribal rate was independently derived using detailed information from California Native American Tribes.

Using a consumption rate of 142 g/day in the equation above results in a FTC value of 0.04 mg/kg, the Tribal Subsistence Water Quality Objective. The objective is applied to the skinless fillet (muscle) portion of fish since most people eat the fillet portion of fish. Fillets also contain the highest concentration of methylmercury compared to other edible parts of fish. The objective is an annual average value; samples collected over a calendar year will be averaged. Since the objective is a chronic objective, i.e. a long-term objective, it is appropriate to determine attainment over a longer averaging period. In addition, mercury is a bioaccumulative pollutant and accumulates in tissue from diet through the food chain. This bioaccumulation process takes time before the methylmercury is reflected in the muscle tissue. See also Final Staff Report, Appendix H. Calculation of Human Health Objective, Section H.4 Averaging Period for the Water Quality Objectives.

The SWRCB chose to determine attainment of the objective from a mixture of 70% trophic level (TL) 3 and 30% TL 4 fish to reflect the species of fish and amount consumed by Tribal members as discussed in the California Tribes Fish-Use Report. EPA's implementation guidance for the CWA section 304(a) methylmercury water quality criterion (USEPA, 2010) says that states should consider factoring the consumption of different TLs when computing the average methylmercury concentration in fish tissue. The California Tribes Fish-Use Report found that most fish currently consumed by Tribal members were TL 3 fish.

EPA national default and/or California-specific Trophic Level Ratios (TLRs) can be used to determine the methylmercury levels in TL 3 and TL 4 fish necessary to achieve attainment of the 0.04 mg/kg objective. TLRs are determined by measuring the amount of methylmercury in different TL fish (and within specific size ranges) in the same waterbody or same type of waterbody. California-specific TLRs were determined using statewide fish tissue data. See Final Staff Report, Appendix L. Derivation of Trophic Level Ratios. For example, using California TLRs, consumption of 70% TL 3 fish and 30% TL 4 fish would result in a TL 3 fish value of

[4] All fish tissue values in this document are in wet weight.

0.03 mg/kg, and a TL 4 fish value of 0.06 mg/kg to attain the objective of 0.04 mg/kg of methylmercury in fish tissue. See Final Staff Report, Appendix H. Calculation of the Human Health Objectives, Table H-4. Potential Subsistence Objectives Using Mixed Consumption Scenarios.

The calculation of the Tribal Subsistence Water Quality Objective is reasonable and appropriate, and based on sound scientific rationale: it uses local information based on a detailed study of California Tribes. The consumption rate and percentages of TL 3 and TL 4 fish consumed are specific to California Tribes. Other factors in the derivation of the objective value are based on EPA recommended values and are reasonable for California.

Subsistence Water Quality Objective: The Subsistence Water Quality Objective applies to waters assigned the SUB beneficial use, and for waters in the North Coast Region, the Subsistence Fishing (FISH) beneficial use. The objective is expressed as a narrative and states that waters shall be maintained free of mercury concentrations which accumulate in fish and cause adverse effects in people. The consumption rate shall be derived from site-specific information; in the absence of site-specific information, the EPA default subsistence consumption rate shall be used to translate the narrative objective or an external peer-reviewed consumption study using a different methodology may be used to translate the narrative objective to numeric fish tissue values.

The narrative objective prohibits levels of mercury in fish that cause adverse effects in people, and therefore, is protective of human health. Site-specific consumption rates may be used to translate the objective into a numeric fish tissue value giving the RWQCBs flexibility to consider broad and/or locally diverse consumption patterns, or EPA's default subsistence consumption rate of 142 g/day (99^{th} percentile) or 4 to 5 fish meals per week (USEPA, 2000) may be used. Appendix H. Calculation of the Human Health Objectives of the Final Staff Report provides different translations based on the percentages of TL 2, 3 and 4 fish consumed using the EPA default rate of 142 g/day. Since a default breakout is not included in the narrative objective, the breakout (if any – since the State may apply the consumption rate to 100% TL 3 or 100% TL 4 fish) would be based on site-specific information on the amounts and species of fish consumed from the waterbody by the targeted consumer group. The RWQCBs will determine whether to apply the tissue value to one or several TLs based on site-specific information on what TL fish (and in what amounts) the subsistence population is consuming from the waterbody. Appendix H, Table H-4. Potential Subsistence Objectives Using Mixed Consumption Scenarios, provides numeric fish tissue values using different percentages of TL 2, 3, and 4 fish. The calculations use TLRs to determine the allowable methylmercury levels in the different TL fish.

The narrative Subsistence Water Quality Objective is reasonable and appropriate, and based on sound scientific rationale.

Sport Fish Water Quality Objective: The Sport Fish Water Quality Objective, as applied to human health, applies to waters with the Commercial and Sport Fishing (COMM) and/or CUL beneficial use. The COMM use includes uses of water for commercial or recreational collection of fish, shellfish, or other organisms intended for human consumption. Recreational (or sport) fishing occurs on many waterbodies in California, but some waterbodies have not been

designated with the COMM use. Historically, the RWQCBs had associated sport fishing with the Water Contact Recreation (REC-1) use because its definition includes "fishing" (but not consumption). See Final Staff Report, Chapter 5.1. Where sport fishing and the consumption of fish occurs, but the COMM use has not been designated, the Sport Fish Water Quality Objective applies (R.Rasmussen, SWRCB, personal communication on March 6, 2017 with D. Fleck, J. Hashimoto, and P. Kozelka, EPA).

The objective states that the average methylmercury concentration in fish (skinless fillet) must not exceed 0.2 mg/kg within a calendar year. The concentration applies to TL 3 or TL 4 fish, whichever is the highest TL in the waterbody. Freshwater TL 3 fish must be between 150 – 500 millimeters (mm) total length, and TL 4 fish must be between 200 – 500 mm total length unless specified in Attachment C or limited by the legal size limit for the species caught. Estuarine fish must be within the legal size limit and greater than 150 mm (or as otherwise specified in Attachment C).

The objective is derived using EPA's equation for deriving fish tissue criteria for human health (USEPA, 2001) as discussed above:

$$FTC = BW * (RfD – RSC)/FI$$

Where:
FTC = Fish Tissue Criterion in mg mehg/kg fish tissue
BW = Body Weight of 70 kg for an average person
RfD = Reference Dose of 0.0001 mg mehg/kg body weight (EPA default value)
RSC = Relative Source Contribution of 2.7×10^{-5} mg mehg/kg body weight (EPA default value); this value is subtracted from the Reference Dose to account for other sources of mehg e.g., marine fish
FI = Fish Intake, i.e., the fish consumption rate, in kg/day.

The SWRCB used the same input values for BW, RfD, and RSC that EPA used in its 2001 human health CWA 304(a) recommendation for methylmercury (USEPA, 2001) in their calculations to derive the FTC, which is the Sport Fish Water Quality Objective.

The most important variable in the equation is the Fish Intake, or the fish consumption rate. The consumption rate in EPA's 2001 CWA 304(a) recommendation for methylmercury for the general U.S. population (90^{th} percentile of people who do and do not eat fish) is 17.5 grams per day (g/day), resulting in a national recommended FTC of 0.3 mg/kg (USEPA, 2001).

The SWRCB used a consumption rate of 32 g/day, or 1 fish meal (approximately 8 ounces) per week. This value was chosen after a thorough review of all sport fish consumption studies for waters in California. See Final Staff Report, Appendix G. Fish Consumption Studies. The rate was derived from a survey of anglers in San Francisco Bay completed in 2000, *The San Francisco Bay Seafood Consumption Study* by the San Francisco Estuary Institute (SFEI) (SFEI, 2000). The SWRCB stated that it was "probably one of the highest-quality studies done to date" in California (Final Staff Report, Appendix G. Fish Consumption Studies, page 1). The study (and the 32 g/day consumption rate) was used to derive mercury fish tissue objectives for the San Francisco Bay and the Sacramento-San Joaquin Delta (previously approved by EPA), as well as

the Fish Contaminant Goal for the Office of Environment Health Hazard Assessment. The value is the 95th percentile of consumption rates from anglers in the study.

Using a consumption rate of 32 g/day in the equation above results in a FTC value of 0.2 mg/kg, the Sport Fish Water Quality Objective. The objective is applied to the skinless fillet (muscle) portion of fish, since most people eat the fillet portion of fish. The objective is an annual average value; samples collected over a calendar year will be averaged. Since the objective is a chronic objective, i.e., a long-term objective, it is appropriate to determine attainment over a longer averaging period. In addition, mercury is a bioaccumulative pollutant and accumulates in tissue from diet through the food chain. This bioaccumulation process takes time before methylmercury levels are reflected in fish tissue. See also Final Staff Report, Appendix H. Calculation of Human Health Objective, Section H.4 Averaging Period for the Water Quality Objectives.

A footnote on the objective states that if site-specific studies indicate a consumption pattern under the CUL use that is higher than the consumption rate used to determine the objective (i.e., 32 g/day), the RWQCB should consider adopting a site-specific objective to protect for the consumption of fish under the CUL use. Use of a higher site-specific consumption rate is reasonable and necessary to assure that human health is protected in waterbodies with a CUL use where consumption is occurring.

The Sport Fish Objective applies to the highest TL fish in the waterbody, either TL 4 fish, or if no TL 4 fish are present in the waterbody, to TL 3 fish. The size ranges specified reflect large TL 3 and TL 4 fish within legal catch limits, because most fisherpeople desire to catch and consume large fish. Since mercury bioaccumulates up the food chain, applying the objective to larger fish results in a more stringent objective. Applying the 0.2 mg/kg objective to large TL3 and TL 4 fish will protect human health.

The Sport Fish Water Quality Objective is reasonable and appropriate, and based on sound scientific rationale. It uses a local recreational fisher consumption rate and applies to the highest TL fish in the waterbody and to the larger size ranges of each TL fish within legal size limits. Other factors in the derivation of the objective value are based on EPA recommended values.

In conclusion, the three new human health water quality objectives are consistent with CWA section 303(c) and implementing regulations at 40 CFR Part 131. The water quality objectives are appropriate for the protection of human health in California's waters subject to the CWA.

2. Wildlife Mercury Objectives

Sport Fish Water Quality Objective, Prey Fish Water Quality Objective, and the California Least Tern Prey Fish Water Quality Objective: The Sport Fish Water Quality Objective, as applied to aquatic life and aquatic-dependent wildlife, and the Prey Fish Water Quality Objective apply to waters with the following beneficial uses: Wildlife Habitat (WILD); Marine Habitat (MAR); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Estuarine Habitat (EST); and Inland Saline Water Habitat (SAL). Waters assigned the Preservation of Rare and Endangered Species (RARE) use, the Fish Migration (MIGR) use, or the Spawning, Reproduction and/or Early Development (SPWN) use are designated with at least one of the

applicable beneficial uses, i.e., WILD, MAR, WARM, COLD, EST and/or SAL (R.Rasmussen, SWRCB, personal communication on March 6, 2017 with D. Fleck, J. Hashimoto, and P. Kozelka, EPA).[5] Therefore, the Sport Fish Water Quality Objective and the Prey Fish Water Quality Objective apply to waters designated with the following beneficial uses: WILD, MAR, WARM, COLD, EST, SAL, RARE, MIGR, and SPWN. These uses are the beneficial uses that protect aquatic life and aquatic-dependent wildlife in California.

The Sport Fish Water Quality Objective of 0.2 mg/kg was calculated to protect human health, using a 32 g/day fish consumption rate and applies to large TL 3 and 4 fish, whichever is the highest TL fish in the waterbody. However, the objective also serves to protect aquatic life and aquatic-dependent wildlife because limiting methylmercury levels in large fish for human consumption results in lower methylmercury levels in smaller fish (i.e., prey fish). The SWRCB completed a thorough review to determine whether the Sport Fish Objective would sufficiently protect aquatic life and aquatic-dependent wildlife in California and found that additional protections may be necessary for some aquatic-dependent (avian) species. See Final Staff Report, Chapters 6.7 and 6.8, Appendix J. Review of Effects on Wildlife, and Appendix K. Wildlife Targets.

The Prey Fish Objective of 0.05 mg/kg applies to whole fish between 50 and 150 mm total length during the breeding season (February 1 through July 31, unless site-specific information indicates another appropriate period). The objective is an average value. The Prey Fish Water Quality Objective does not apply where the California Least Tern Prey Fish Water Quality Objective applies.

The California least tern is a small, piscivorous bird that consumes large quantities (relative to its size) of very small fish less than 50 mm, and therefore, is more vulnerable to mercury bioaccumulation in the aquatic food web. The U.S. Fish and Wildlife Service (FWS) listed them as an endangered species under the Endangered Species Act (ESA). Therefore, an additional objective is included to protect them. The California Least Tern Prey Fish Water Quality Objective applies to waters with the WILD, MAR, WARM, COLD, EST, SAL, and RARE uses (and to waters with MIGR and SPWN uses through one of the other uses), where least tern or least tern habitat exist. The Least Tern Objective of 0.03 mg/kg applies to whole fish less than 50 mm total length from April 1 through August 31. The objective is an average value.

<u>For waterbodies with wildlife beneficial uses, the Sport Fish Objective and EITHER the Prey Fish Objective OR the California Least Tern Prey Fish Objective will apply to the waterbody</u>. Although the Sport Fish Objective protects most wildlife species, it was designed to protect human health and not wildlife; therefore, one of the prey fish objectives will also apply to all waters with a wildlife use to ensure that all aquatic life and wildlife species are protected.

[5] The Final Staff Report at Chapter 5.6 Inapplicable Uses, states that the MIGR use is not applicable because mercury does not impede migration, and the SPWN use is not applicable because the wildlife objectives are not meant to protect for fish reproduction, although waters designated with the SPWN use are also designated with WILD, COLD and/or WARM and protective mercury thresholds for fish reproduction are higher than the objectives (and thus fish reproduction is protected). EPA believes that waters with MIGR and SPWN uses should be included as applicable uses. However, since waters with the MIGR or SPWN use are covered through another wildlife use, no issue remains.

Because the SWRCB determined that the Sport Fish Objective would be protective of wildlife in most but not all situations, the Prey Fish Objective must be monitored for attainment only in certain situations. The Prey Fish Objective must be monitored for attainment in water bodies: 1) where the Least Tern Objective does not apply, and 2) when the Sport Fish Objective is NOT exceeded using TL 3 fish. When a waterbody meets the Sport Fish Objective using TL 4 fish (the most stringent application), the Prey Fish Objective will also be met, and additional monitoring to determine attainment is not necessary. When the waterbody meets the Sport Fish Objective using TL 3 fish, although the Sport Fish Objective is met for human health, the Prey Fish Objective must be measured to determine whether the Sport Fish Objective is met for wildlife, i.e., the waterbody is attaining wildlife uses. When the waterbody does not meet the Sport Fish Objective using TL 3 (or 4) fish, the Prey Fish Objective is not met for wildlife and there is no need to measure it. See Final Staff Report, Attachment B. Mercury Prey Fish Decision Diagram.

Prey Fish and Least Tern Prey Fish Objective Values

In Appendix K. Wildlife Targets, of the Final Staff Report, the SWRCB explains how it developed the prey fish objectives. The SWRCB followed the FWS's methodology used in several reports prepared in collaboration with EPA and the State to evaluate methylmercury fish tissue levels to protect wildlife in California. The reports include the FWS's October 2003 report *Evaluation of the Clean Water Act Section 304(a) Human Health Criterion for Methylmercury: Protectiveness for Threatened and Endangered Wildlife in California*, prepared by Daniel Russell, USFWS, Sacramento Fish and Wildlife Service (USFWS, 2003). The report found that when EPA's CWA section 304(a) human health guidance criterion of 0.3 mg/kg was applied to a diet consisting of 100% large TL 4 fish in California (the most stringent human dietary application of the criterion), the resulting fish tissue levels in smaller TL 2 and 3 fish species (e.g., prey fish for aquatic-dependent piscivorous wildlife) would protect most California wildlife species, but would likely not protect the most sensitive listed wildlife bird species in California, the California least tern. The report concluded that the least tern would be protected with a TL 3 (prey) fish tissue value of 0.03 mg/kg. FWS prepared similar reports using the same methodology for Cache Creek and the Sacramento-San Joaquin Delta Watersheds (USFWS, 2004), and the Guadalupe River Watershed (USFWS, 2005). The FWS and the National Marine Fisheries Service (NMFS) (collectively, the Services) assisted the State and EPA on the development of other site-specific methylmercury fish tissue objectives including objectives for the San Francisco Bay. The SWRCB coordinated closely with the Services and EPA on the development of the wildlife objectives in the Provisions.

The methodology to develop wildlife objectives uses the following equation (Final Staff Report, Appendix K. Wildlife Targets, equation 1):

$$WV = RfD \times BW/FIR$$

Where:
WV = Wildlife Value in mg mehg/kg tissue (or mg/kg) in the prey of a species diet
RfD = Reference Dose of the species of concern in mg mehg/kg body weight per day (mg/kg-bw/day)
BW = Body Weight of the species of concern in kg

FIR = Food Ingestion Rate of the species of concern in kg/day of food consumed.

The WV is the average safe concentration of methylmercury in the overall diet (food) of the wildlife species necessary to keep the species' daily ingested amount at or below the RfD.

Since methylmercury bioaccumulates and biomagnifies, the SWRCB (and FWS in their previous reports to the State) focused on birds and mammals that prey directly on fish because they are generally higher-order predators that would have a greater potential for dietary exposure and subsequent toxicity than lower order aquatic and aquatic-dependent species such as reptiles or amphibians (Final Staff Report, Appendix K. Wildlife Targets)[6]. The SWRCB focused on the species of concern that the FWS focused on in their previous reports to the State. After thoroughly reviewing the current lists of federal and state listed species, the SWRCB finalized the list of species of concern for their analysis for the Provisions. The list consisted of 18 species: 3 mammals and 15 birds. The species, and associated RfD, BW, FIR, and WV values are summarized in Table K-1 in Appendix K. Wildlife Targets of the Final Staff Report, which is included below.

The SWRCB used values for RfDs, BWs FIRs and WVs that FWS used in their previous reports to the State, except for the common loon. The RfD values (one for birds and one for mammals) are from the 2003 FWS study that evaluated EPA's CWA section 304(a) human health criterion (USFWS, 2003). The FWS study used an avian RfD of 0.021 mg/kg-bw/day based on a mallard duck study (Heinz, 1979) and uncertainty factors from the Mercury Study Report to Congress (MSRC) (EPA, 1997)[7]; and a mammalian RfD of 0.018 mg/kg–bw/day based on analyses from both the MSRC and the Great Lakes Initiative (EPA, 1995) using data from Wobeser et al., 1976a,b. For the common loon, the values were taken from the analysis for Clear Lake completed by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) (Central Valley Water Board, 2002). The Services concurred on a Not Likely to Adversely Affect determination for the ESA consultation for Clear Lake.

[6] In Appendix J. Review of Effects on Wildlife, at section J.4 Exposure and Effects on Fish, the SWRCB reviewed the literature on methylmercury effects on fish. The SWRCB summarized their findings citing Crump and Trudeau, 2009 and Sandheinrich and Wiener, 2011; these authors found that effects on survival, growth, behavior and reproduction in freshwater fish occur at concentrations of 0.3 – 0.7 mg/kg or greater in whole body, and 0.5 – 1.2 mg/kg or greater in muscle (Appendix J, Final Staff Report). The SWRCB also found that Depew et al., 2012 found a dietary threshold of 0.05 mg/kg for reproductive and biochemical effects. The SWRCB concluded that top predator fish would be protected by its prey fish objective of 0.05 mg/kg in TL 3 fish since it met the lowest threshold found in the literature, i.e., Depew et al., 2012 (Appendix J, Final Staff Report).

[7] Three uncertainty factors (UFs) may be considered when developing a RfD: a UF(A) to account for interspecies uncertainty, a UF(S) to account for subchronic to chronic uncertainty, and a UF(L) to account for LOAEL to NOAEL uncertainty. (The LOAEL is the lowest observed adverse effect level and the NOAEL is the no observed adverse effect level.) A RfD = Test Dose / (UF(A) x UF(S) x (UF(L)). The MSRC (and the FWS and SWRCB) used a UF(A) and UF(S) of 1 and a UF(L) of 3 for birds.

Table K-1. Wildlife Values (mg/kg in diet) (From the Final Staff Report, Appendix K)

Species	RfD (mg/kg/day)	Body Weight (kg)	FIR (kg/day)	Wildlife Value[a] (mg/kg in diet)
Mink	0.018	0.60	0.140	0.077
River otter	0.018	6.70	1.124	0.107
Belted kingfisher	0.021	0.15	0.068	0.046
Common merganser	0.021	1.23	0.302	0.085 (0.099[b])
Western grebe	0.021	1.19	0.296	0.084
Double-crested cormorant	0.021	1.74	0.390	0.094
Osprey	0.021	1.75	0.350	0.105 (0.112[b])
Bald eagle	0.021	5.25	0.566	0.195 (0.184[c])
Peregrine falcon	0.021	0.89	0.134	0.139
Southern sea otter [FT]	0.018	19.8	6.5	0.055
California least tern [FE]	0.021	0.045	0.031	0.030
California Ridgeway's rail [FE]	0.021	0.346	0.172	0.042
Light-footed Ridgeway's rail [FE]	0.021	0.271	0.142	0.040
Yuma Ridgeway's rail [FE]	0.021	0.271	0.142	0.040
Western snowy plover [FT]	0.021	0.041	0.033	0.026
Great blue heron	0.021	2.20	0.378	0.122 [b]
Forster's tern	0.021	0.16	0.071	0.047 [b]
Common loon	0.021 [d]	4[d]	0.800 [d]	0.105

[a] from the USFWS Cache Creek Targets (USFWS 2004) and the USFWS Evaluation of the U.S. EPA Human Health Criterion (USFWS 2003), except as otherwise noted
[b] from Guadalupe River Watershed targets (USFWS 2005)
[c] the two references (USFWS 2004 and USFWS 2003) provided different values
[d] from Clear Lake analysis (Central Valley Water Board 2002)
[FT / FE] on federal list of threatened or endangered species

The Wildlife Value, or WV, is the safe prey fish concentration, if the species mostly eats one size of fish from the same TL. If the species eats different sizes of fish from multiple TLs, and/or other aquatic prey, the following equation is used to determine each safe prey fish concentration for each size category and TL (Final Staff Report, Appendix K. Wildlife Targets, equation 2):

$$WV = (\%TL2 \times [Hg]TL2) + (\%TL3 \times [Hg]TL3) + (\%TL4 \times [Hg]TL4)$$

Where:
%TL2 = Percent of trophic level 2 biota in diet
%TL3 = Percent of trophic level 3 biota in diet
%TL4 = Percent of trophic level 4 biota in diet
[Hg]TL2 = concentration in food from trophic level 2
[Hg]TL3 = concentration in food from trophic level 3
[Hg]TL4 = concentration in food from trophic level 4

Since most piscivorous wildlife eat a variety of sizes of fish, often from different TLs, the FWS in their 2003 report and the RWQCBs in their reports to derive site-specific methylmercury objectives compiled information on the diets of the species of concern from the scientific literature. The SWRCB consolidated the information from the previous FWS and RWQCB reports on diet into Table K-2 in Appendix K. Wildlife Targets.

Table K-2. Trophic Level (TL) Compositions (Expressed as Decimal Fractions) for Wildlife Species, Including Omnivorous Birds (OB), Piscivorous Birds (PB) and Other Foods (OF) (From the Final Staff Report, Appendix K)

Species	TL2	TL2/3 < 50 mm	TL3 < 150 mm	TL3 150 – 500 mm	TL4 150 – 500 mm	OB	PB	OF
Mink			1.00					
River otter			0.80		0.20			
Belted kingfisher			1.00					
Common Merganser				1.00				
Western grebe				1.00[a]				
Double-crested cormorant			1.00					
Osprey				0.90	0.10			
Bald eagle				0.58	0.13	0.13	0.05	0.11
Peregrine falcon						0.10	0.05	0.85
Southern sea otter	0.80		0.20					
California least tern		1.00						
California Ridgeway's rail	0.85		0.05					
Light-footed Ridgeway's rail	0.82		0.18					
Yuma Ridgeway's rail	0.23		0.72					0.05
Western snowy plover	0.25							.75
Great blue heron			1.00[b]					
Forster's tern		1.00[b]						
Common loon				0.80[c]				

Note: most data are from the USFWS evaluation of the U.S. EPA human health criterion (Table 4, USFWS 2003), the USFWS Cache Creek targets (Table 4, USFWS 2004) and the Sacramento-San Joaquin Delta targets (Table 4.1 and Table 4.3, Central Valley Water Board 2010), except as otherwise noted.

[a] The U.S. Geological Survey grebe study team caught fish 18 – 123 mm as representative grebe prey (Ackerman et al. 2015). Also, fish found in the stomachs of western grebes were 27 – 88 mm (1 – 3.5 in) long (CDFW 1990). In any case, the larger size (used in Table K-2) is more protective.

[b] from Guadalupe River Watershed targets (Table 4 and 5, USFWS 2005).

[c] from Clear Lake targets (Table C-3, Central Valley Water Board 2002), reclassified based on the 200 – 400 mm size and CDFW 1990. Clear Lake report has the loon diet as "TL2" but "200 – 400 mm". Because of the size the fish are shown here as TL3. The CDFW life history account for loon: "Diet varies; usually about 80% fish, with crustaceans the next largest item… Most fish eaten are not sought by humans…" Burgess and Meyer report "We sampled small fish (76 – 127 mm in length) typically consumed as prey by loons (Barr 1996)"

Using equation 2 from Appendix K, the WVs from Table K-1 and the dietary breakout of each species from Table K-2[8] (and using Food Chain Multipliers, FCMs[9], and TLRs developed for the human health objectives to calculate tissue concentrations for different TLs), the SWRCB performed extensive analyses to determine each tissue concentration for each size range and TL to protect each of the species of concern. These values are shown in Table K-3 of Appendix K of the Final Staff Report, included below.

The shaded values in Table K-3 represent the lowest necessary values for each category of TL and size range, i.e., final wildlife objectives must be at least as stringent as the shaded values to protect all the species of concern. Species of concern with shaded values are: belted kingfisher, western grebe, osprey, California least tern, light-footed Ridgeway's rail, and Yuma Ridgeway's rail. Since the shaded values are in various TLs and size ranges, the SWRCB converted each set of shaded values into the same TL and size range for comparison purposes, using FCMs and TLRs. The SWRCB converted each set of shaded gray values into TL 4 150 – 500 mm fish (values for osprey were not converted since osprey eat from that TL and size range). Once each was converted, the SWRCB could choose the lowest value as the objective, and all wildlife species would be protected.

After performing the calculations, the SWRCB found that belted kingfisher, western grebe, osprey, light-footed Ridgeway's rail, and Yuma Ridgeway's rail would be protected by an objective of 0.2 mg/kg in TL 4 fish 150 – 500 mm total length, the Sport Fish Water Quality Objective for human health. All other species in Table K-3, except the California least tern, would also be protected because each of the other species was not the most sensitive species in the TL and size range category from which it ate. See Final Staff Report, Appendix K. Wildlife Targets.

Since California least tern would not be protected by the Sport Fish Water Quality Objective when applied to TL 4 fish, the SWRCB recommended a separate, additional objective of 0.03 mg/kg in fish less than 50 mm to protect least tern (Final Staff Report, Appendix K. Wildlife Targets).

Since the Sport Fish Water Quality Objective of 0.2 mg/kg applies to the highest TL fish in the waterbody to protect human health, if TL 4 fish are not found in the waterbody, the objective applies to TL 3 fish. The objective applies to large TL 3 and 4 fish, 150 – 500 mm and 200 – 500 mm, respectively, because people prefer to catch and consume large fish. However, 0.2 mg/kg in TL 3 fish 150 – 500 mm is not protective of the species of concern in Table K-3, and thus would not provide protection to wildlife (Final Staff Report, Appendix K. Wildlife Targets).

To protect the species of concern in waters where TL 4 fish do not exist, and where the Sport Fish Objective applies to TL 3 fish, the SWRCB found that an additional objective of 0.05 mg/kg

[8] Prey food for the California Ridgeway's Rail included 10% vegetation, which was considered to have negligible methylmercury.

[9] Food Chain Multipliers (FCMs) are similar to Trophic Level Ratios (TLRs) in that they both express the relationship between TLs in a waterbody. FCMs reflect a direct predator-prey relationship between TLs, while TLRs reflect the relationship between similarly sized fish in different TLs.

for TL 3 fish 50 – 150 mm was necessary, based on the belted kingfisher in Table K-3. Based on previous calculations in the Appendix, the SWRCB found that the 0.05 mg/kg objective for TL 3 fish 50 – 150 mm was consistent with achieving 0.08 mg/kg in TL 3 fish 150 – 500 mm for the western grebe. These calculations are reasonable and based on sound scientific rationale.

In conclusion, the three new wildlife water quality objectives are consistent with CWA section 303(c) and implementing regulations at 40 CFR Part 131. The water quality objectives are appropriate for the protection of aquatic life and aquatic-dependent wildlife in California's waters subject to the CWA.

Table K-3. Protective Wildlife Targets (in mg/kg, wet weight) in Various Trophic Levels (TL), Omnivorous Birds (OB) or Piscivorous Birds (PB), and the Most Sensitive Species in Each TL Category (Shaded Gray) (From the Final Staff Report, Appendix K)

Species	TL 2	TL2/3 < 50 mm	TL3 < 150 mm	TL3 150 – 500 mm	TL4 150 – 500 m	OB	PB
Mink			0.077 a,b				
River Otter			0.04 a 0.059 b 0.067 g		0.30 b 0.36 a 0.27 g		
Belted Kingfisher			0.046 a,b,c				
Common Merganser				0.085 a,b 0.099 c (150–300 mm)			
Western Grebe				0.084 a,b (150 – 300 mm)			
Double-crested Cormorant			0.094 a,b				
Osprey				0.09 a,d,g 0.10 b,c,e	0.26 a 0.17 b 0.20 c,g 0.19 d 0.18 e		
Bald Eagle				0.11a,g 0.12 b,e 0.09 d 0.08 f	0.31 a 0.20 b 0.22 d 0.23 e 0.28 f 0.24 g	0.19 a 0.21 b 0.20 g	1.35 a 1.50 b 1.29 d 1.43 g
Peregrine Falcon				(0.17) a,b,e		0.30 a,b,e	2.17 a,b,e
Southern sea otter FT	0.028 f		0.16 f				
California least tern FE		0.03 b					
California Ridgeway's rail FE	0.037 f		0.21 f				
Light-footed Ridgeway's rail FE	0.022 f		0.12 f				
Yuma Ridgeway's rail FE	0.009 f		0.050 f				
Western snowy plover FT	0.104 f						
Great blue heron			0.12 c				
Forster's tern		0.047 c					
Common loon				0.11 d			

[a] from Sacramento-San Joaquin Delta targets (Table 4.3, Central Valley Water Board 2010)
[b] from the Cache Creek targets (USFWS 2004, Table 5 and Table 6)
[c] from Guadalupe River Watershed targets (Table 5, USFWS 2005)
[d] from Clear Lake analysis (Table C-3,C-4 Central Valley Water Board 2002).
[e] from Cache Creek targets (Central Valley Water Board 2005)
[f] calculated from information in the USFWS evaluation of the human heath criterion (USFWS 2003)
[g] calculated as part of this report for California, see text above.
FT / FE on federal list of threatened or endangered species

V. Applicability of New Human Health and Wildlife Water Quality Objectives

The Provisions add a new subsection, 3. Interaction of Mercury Water Quality Objectives with Basin Plans, in Chapter III (in italics below). Chapter III. Water Quality Objectives, D. Mercury. Subsection 3. Interaction of Mercury Water Quality Objectives with Basin Plans states:

> *The MERCURY WATER QUALITY OBJECTIVES do not supersede any site-specific numeric mercury water quality objectives established in a Basin Plan, except (i) the freshwater mercury water quality objective for chronic effects to aquatic life (0.025 µg/L) established in the San Francisco Bay Basin Water Quality Control Plan (Table 3-4, and corresponding note); and (ii) the total body burden of 0.5 µg/g wet weight established for the mercury water quality objective for aquatic organisms in the Water Quality Control Plan for the Central Coastal Basin (see note accompanying Table 3-5).*

The objectives in the Provisions apply to inland surface waters and enclosed bays and estuaries (they do not apply to ocean waters). The new mercury water quality objectives do not apply to the following waters where there are existing State-adopted and EPA-approved site-specific numeric water quality objectives for mercury in inland surface waters and enclosed bays and estuaries (with 2 exceptions as explained below):[10]

- all segments of the San Francisco Bay;
- all segments of the Sacramento-San Joaquin Delta including the Yolo Bypass;
- the freshwater portions of Walker Creek, Soulajule Reservoir, and all tributary waters (Arroyo Sausal, Salmon Creek, Chileno Creek, and Keyes Creek);
- Sulphur Creek, from Schoolhouse Canyon to its confluence with Bear Creek;
- Clear Lake;
- Cache Creek (including North Fork);
- Bear Creek;
- Harley Gulch; and
- Waters of the Guadalupe River Watershed except Los Gatos Creek and its tributaries upstream of Vasona Dam, Lake Elsman, Lexington Reservoir, and Vasona Lake.

Analysis of Applicability of New Human Health and Wildlife Water Quality Objectives

The application of the new mercury objectives to all inland surface waters and enclosed bays and estuaries except where the State has adopted, and EPA has approved, site-specific numeric water quality objectives with the two exceptions in the Provisions is reasonable. For each of the listed waters except Sulphur Creek, the State has adopted, and EPA has approved, fish tissue objectives designed to protect human health and wildlife in those areas. The objectives were developed using the same methodology as the statewide fish tissue objectives, and are similar (or identical) in value, and are protective of aquatic life and aquatic-dependent wildlife including federally listed threatened and endangered species. See Attachment A, Previously Approved Site-Specific Mercury Objectives. They are site-specific to each area, and were developed using site-specific information such as the wildlife that live in the area and consumption patterns of the population in the area.

[10] See Attachment 1: Previously Approved Site-Specific Water Quality Objectives.

For Sulphur Creek, from Schoolhouse Canyon to its confluence with Bear Creek, the site-specific mercury objectives reflect naturally occurring, pre-anthropogenic, background mercury levels. Fish do not exist in the reach because the naturally occurring conditions do not support suitable habitat. In the summer, the water in the waterbody originates from geothermal sources naturally high in mercury; in the winter, the water in the waterbody contains elevated levels of suspended solids naturally enriched with mercury from the surrounding geology.

The two exceptions listed in the Provisions are less stringent than the current statewide fish tissue objectives. Therefore, these two site-specific water quality objectives that were previously approved by EPA are superseded. The water column objective in the San Francisco Bay Basin Plan is 0.025 micrograms per liter (µg/L) or 25 nanograms per liter (ng/L), while the new fish tissue objectives, translated in Chapter IV. Implementation of Water Quality Objectives, will be either 12 ng/L or 4 ng/L in the water column depending on whether the waterbody is fast or slow moving (or if a lake or reservoir, the permitting authority will calculate the value using EPA's recommended national bioaccumulation factors and chemical translators, but even so, will be in the 4 to 12 ng/L range). The fish tissue objective of 0.5 microgram per gram (µg/g) (or mg/kg) ww in the Water Quality Control Plan for the Central Coastal Basin is clearly less stringent than the least stringent fish tissue objective, the Sport Fish Objective, of 0.2 mg/kg ww. The new statewide objectives are necessary to adequately protect human health and wildlife where these two site-specific objectives currently apply.

It is reasonable and appropriate for the SWRCB to retain the currently effective State-adopted and EPA-approved site-specific fish tissue objectives, and the site-specific objectives for Sulphur Creek, except for the two listed exceptions in the Provisions (the Provisions replace the water column objective in the San Francisco Bay Basin Plan and the fish tissue objective in the Central Coastal Basin Plan).

VI. Addition of New Compliance Schedule Authorizing Provision

Two sections of the Provisions contain language relating to compliance schedules (CSs): Chapter IV.D.2.c.2. and Chapter IV.D.2.d. As explained below, EPA's 303(c) action concerns the language included in Chapter IV.D.2.c.2.ii. that constitutes a compliance schedule authorizing provision (CSAP); other portions of Chapter IV.D.2.c.2. and Chapter IV.D.2.d. are discussed for background purposes.

Chapter IV.D.2.c.2.ii. focuses on the calculation of interim and final effluent limits issued to a discharger subject to an existing mercury TMDL who demonstrates it cannot immediately achieve compliance with more stringent limits based on new mercury water quality objectives. Chapter IV.D.2.c.2.ii. states:

> *ii. Existing mercury TMDL*
>
> *If the discharger is assigned a waste load allocation by the EXISTING MERCURY TMDL, the interim effluent limitation and final effluent limitation may be established as follows:*
>
> ***Interim effluent limitations**. If the discharger demonstrates that the discharger is not immediately able to achieve compliance with the effluent limitation calculated by applying Chapter IV.D.2.c.2.i, above, the interim effluent limitation may be based on the requirements of the applicable waste load allocation in the*

EXISTING MERCURY TMDL applicable to the discharger, so long as: (a) the discharger is subject to a time schedule to complete FEASIBLE tasks to control mercury, if any, in addition to those currently underway, including the development of a proposed schedule for future source control tasks, and (b) the discharger makes a commitment to support, participate in, and expedite the development of a TMDL to implement any of the MERCURY WATER QUALITY OBJECTIVES and associated beneficial uses (CUL, T-SUB, SUB) (i.e., referred to herein as the new mercury TMDL). The time schedule to complete the additional tasks shall be specified in the permit and shall reflect a realistic assessment of the shortest practicable time required to perform each task.

The interim effluent limitation may apply until the new mercury TMDL is in effect, provided the new mercury TMDL is in effect within ten years from the effective date of the first permit that included the interim effluent limitation.

***Final effluent limitations**. If no new mercury TMDL is in effect within ten years from the effective date of the first permit that included the interim effluent limitation, the final effluent limitation shall be calculated in accordance with Chapter IV.D.2.c.2.i and shall take effect ten years from the effective date of the first permit that included the interim effluent limitation. If a new mercury TMDL is in effect within ten years from the effective date of the first permit that included the interim effluent limitation, the final effluent limitation shall be based on the applicable waste load allocation assigned to the discharger by the new mercury TMDL for the water quality standard under evaluation.*

Chapter IV.D.2.d. clarifies that the EPA-approved SWRCB 2008 Compliance Schedule Policy applies to the new mercury objectives, and provides that such a compliance schedule may include requirements consistent with Chapter IV.D.2.c.2.ii, if applicable. Chapter IV.D.2.d. states:

4) Compliance Schedule. The PERMITTING AUTHORITY may include a compliance schedule in NPDES permits to achieve the mercury effluent limitation in accordance with the Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits (State Water Board Resolution No. 2008-0025). (Compliance Schedule Policy).

The duration of the compliance schedule in a permit may not exceed ten years from the date of the adoption, revision, or new interpretation of the applicable water quality objective, except where a compliance schedule in a permit is established in a "single permitting action" or implements or is consistent with the waste load allocations specified in a TMDL, as provided by the Compliance Schedule Policy. If a compliance schedule is authorized in a permit, interim requirements and final effluent limitation shall be included, as provided by the Compliance Schedule Policy. The compliance schedule may also include requirements consistent with Chapter IV.D.2.c.2.ii, if applicable

The Region understands it is the State's position that its 2008 Policy does not apply to permit limits issued during the interim between the adoption of a new human health use for a waterbody with an existing mercury Total Maximum Daily Load (TMDL) and the adoption of a new mercury TMDL based on that more stringent new use, and that it adopted Chapter IV.D.2.c.2.ii. to address that gap and supplement the 2008 Policy. The State has asked the Region to review and approve Chapter IV.D.2.c.2.ii. as a CSAP.

Analysis of Addition of New Compliance Schedule Authorizing Provision

In 2015, EPA promulgated revised water quality standards (WQS) regulations, which clarified issues surrounding CSAP in the WQS context. 80 Fed Reg 51019, 51041 (August 21, 2015), states:

> In 1990, EPA concluded that before a permitting authority can include a compliance schedule for a [water quality-based effluent limit] WQBEL in an NPDES permit, the state or authorized tribe must affirmatively authorize its use in its WQS or implementing regulations. In the Matter of Star-Kist Caribe, Inc. 3 EAD 172 (April 16, 1990). EPA approval of the state's or authorized tribe's permit compliance schedule authorizing provision as a WQS ensures that any NPDES permit WQBEL with a compliance schedule derives from and complies with applicable WQS as required by § 122.44(d)(1)(vii)(A). Because the state's or authorized tribe's approved WQS authorize extended compliance, any delay in compliance with a WQBEL pursuant to an appropriately issued permit compliance schedule is consistent with the statutory implementation timetable in CWA section 301(b)(1)(C).

The preamble also explained that "the authorizing provision must be consistent with the CWA and is subject to EPA review and approval as a WQS. This rule adds § 131.5(a)(5) to explicitly specify that EPA has the authority to determine whether any provision authorizing the use of schedules of compliance for WQBELs in NPDES permits adopted by a state or authorized tribe is consistent with the requirements at § 131.15." Id. The preamble to the final rule clarified that it does not change any permit compliance schedule requirements at § 122.47. 80 Fed. Reg. 51020, 51041 (Aug. 21, 2015).

Under the Provisions, where a discharger is subject to an existing mercury TMDL (i.e., one that has been "approved by the U.S. EPA for a COMM, WILD or RARE beneficial use" per the Provisions' Glossary) and the SWRCB or a RWQCB adopts one (or more) of the three new human health beneficial uses for the same waterbody (i.e., CUL, SUB or T-SUB), the discharger may seek a CS under the 2008 Compliance Schedule Policy to meet the new, more stringent mercury objectives. However, the State will need time to develop and adopt the new TMDL. The State Chapter IV.D.2.c.2.ii. addresses the question of what interim effluent limits the discharger may be required to meet until the new TMDL is developed.

Chapter IV.D.2.c.2.ii. contains both language addressing permit implementation outside EPA's 303(c) approval authority and language consisting of a CSAP under 33 CFR § 131.5. It provides that, where a mercury TMDL already exists, at the time the State adopts a more stringent human health use for the same waterbody, the permitting authority may authorize a CS and assign interim effluent limitations based on the requirements of the wasteload allocations in the existing TMDL, as described in IV.D.2.c.2.ii., where certain conditions are met. It further provides that the permitting authority may assign limitations consistent with the existing TMDL if the discharger: (i) demonstrates that it cannot immediately achieve compliance with an effluent limit based on a water quality objective for one of the new human health uses; (ii) is subject to a "time schedule" to implement "feasible" mercury control measures, including the development of a proposed schedule for future source control tasks, and (iii) "makes a commitment" to support, participate in, and expedite the development of a new TMDL to implement requirements necessary for the waterbody to attain the newly assigned human health beneficial use, among other things.

The additional time that an interim effluent limitation may be authorized under the Provisions is limited to 10 years from the effective date of the first permit that included the interim limitation. If the new mercury TMDL (that has wasteload allocations based on the new human heath uses and objectives) is not in effect within 10 years from the effective date of the first permit that included the interim limitation, the final limitation will be calculated as described in Chapter IV.D.2.c.2.i. Thus the Provisions effectively limit a CS under IV.D.2.c.2.ii. to 10 years, unless a new TMDL to attain the new beneficial use is completed earlier (i.e., within the 10 years).

It is reasonable that dischargers be accorded additional time (subject to appropriate interim and final requirements and time limitations "as soon as possible") to meet limits based on the significantly more stringent new mercury water quality objectives necessary to meet the new human health beneficial uses. For example, the T-SUB (Tribal Subsistence Fishing) fish tissue objective is 0.04 mg/kg for a mixture of TL 3 and TL 4 fish, while current site-specific fish tissue objectives in the Delta for the protection of human health (recreational fishing) are 0.08 and 0.24 mg/kg in TL 3 and TL 4 fish, respectively. The new fish tissue objective for subsistence (0.04 mg/kg) is significantly more stringent than the current fish tissue objective for recreational fishing (0.24 mg/kg in TL 4 fish and 0.08 mg/kg in TL 3 fish).

The mercury objectives associated with the new human health uses are significantly more stringent than those associated with current uses. California has in place an EPA-approved statewide "2008 Compliance Schedule Policy" applicable to the new mercury objectives. However, the State says that its 2008 Policy does not apply to permits issued during the interim between the adoption of a new human health use for a waterbody with an existing mercury Total Maximum Daily Load (TMDL) and the adoption of a new mercury TMDL based on that more stringent new use, and that it adopted Chapter IV.D.2.c.2.ii.to address that gap and supplement the 2008 Policy.

EPA finds that Chapter IV.D.2.c.2.ii includes language constituting a compliance schedule authorizing provision (CSAP), which EPA approves, under 40 C.F.R. § 131.15, but only to the extent it authorizes granting mercury discharges not covered by the 2008 Policy a compliance schedule that is: (i) "as soon as possible" to meet final effluent limitations based on the more stringent new use, not to exceed 10 years from the time the permit first includes interim limitations consistent with the existing TMDL; and (ii) not based solely on time needed to develop a new TMDL.

VII. Conclusion

The Provisions provide a sound regulatory approach to water quality standards for human health, aquatic life, and aquatic-dependent wildlife. The Provisions include new beneficial uses to protect waters for California Native American Tribal traditions and subsistence fishing, as well as for subsistence fishing by other groups. The Provisions include four new numeric methylmercury fish tissue water quality objectives for the protection of human health and wildlife and one new narrative methylmercury objective for subsistence fishing. Lastly, the Provisions include a compliance schedule authorizing provision to allow municipal and

industrial dischargers additional time, when necessary, to implement more stringent water quality mercury standards associated with the new human health beneficial uses. The Provisions will significantly enhance California waters when they are implemented.

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Attachment 1. Previously Approved Site-Specific Wildlife Objectives

The State previously adopted, and EPA previously approved, seven groups of site-specific fish tissue water quality objectives for mercury for the protection of human health and/or wildlife, and one set of site-specific objectives reflecting natural background conditions for an area naturally-enriched with mercury, a small segment of lower Sulphur Creek.

The State-adopted, EPA-approved site-specific mercury objectives are summarized in Table 1.

Table 1. State-Adopted and EPA-Approved Mercury Water Quality Objectives

Applicable Water Bodies	State Adoption /EPA Approval	Type	Definition (all values in average wet weight)
San Francisco Bay (all segments including the Delta within the San Francisco Bay Regional Water Quality Control Board)*	State Adoption 2007; EPA Approval 02/12/2008	Human Health (HH)	**0.2 mg/kg** mercury in edible portions of trophic level 3 and trophic level 4 fish 250 – 1350 mm total length (Specific species and sizes in Plan)
		Aquatic Life (AL) Wildlife (WL)	**0.03 mg/kg** mercury in whole fish 30 – 50 mm total length
Sacramento-San Joaquin Delta, including Yolo Bypass (all segments)	State Adoption 2011; EPA Approval 10/20/2011	HH, AL, and WL	**0.24 mg/kg** methylmercury in muscle of trophic level 4 fish 150 – 500 mm total length **0.08 mg/kg** methylmercury in muscle of trophic level 3 fish 150 – 500 mm total length (Specific species and sizes in Plan)
		AL and WL	**0.03 mg/kg** methylmercury in whole fish less than 50 mm in length (Specific species and sizes in Plan)
Freshwater portions of Walker Creek, Soulajule Reservoir, and all tributary waters (Arroyo Sausal, Salmon Creek, Chileno Creek, and Keyes Creek)	State Adoption 2008; EPA Approval 09/29/2008	AL and WL	**0.1 mg/kg** methylmercury in whole fish 150 – 350 mm total length **0.05 mg/kg** methylmercury in whole fish 50 – 150 mm total length
Sulphur Creek, from Schoolhouse Canyon to its confluence with Bear Creek	State Adoption 2008; EPA Approval 09/04/2009	(Naturally occurring, mercury-enriched background conditions including geothermal waters; waters do not support fish)	During low flow conditions (less than 3 cfs), instantaneous maximum total mercury concentration of 1800 ng/L; During high-flow conditions (greater than 3 cfs), instantaneous maximum ratio of total mercury to total suspended solids of 35 mg/kg.
Clear Lake	State Adoption 2003; EPA Approval 09/26/2003	HH, AL, and WL	**0.19 mg/kg** methylmercury in the muscle of trophic level 4 fish 200-400 mm in total length **0.09 mg/kg** methylmercury in the muscle of trophic level 3 fish < 300 mm total length (Specific species and sizes in Plan)
Cache Creek (including North Fork); Bear Creek; Harley Gulch	State Adoption 2006; EPA Approval 02/06/2007	HH, AL, and WL	Cache Creek and Bear Creek: **0.23 mg/kg** methylmercury in muscle of trophic level 4 fish 250-350 mm total length **0.12 mg/kg** methylmercury in muscle of trophic level 3 fish 250-350 mm total length (Specific species and sizes in Plan)
		AL and WL	Harley Gulch: **0.05 mg/kg** methylmercury in whole fish trophic level 2-3 fish 75-100 mm total length (Specific species and sizes in Plan)
Waters of Guadalupe River Watershed except Los Gatos Creek and its tributaries upstream of Vasona Dam, Lake Elsman, Lexington Reservoir, and Vasona Lake	State Adoption 2009; EPA Approval 06/01/2010	AL and WL	**0.01 mg/kg** methylmercury in whole fish trophic level 3 fish > 150-350 mm total length **0.05 mg/kg** methylmercury in whole fish trophic level 3 fish 50-150 mm total length

* The State vacated the existing water column objective of 0.025 µg/L total mercury as a 4-day average, in waters of San Francisco Bay north of the Dumbarton Bridge.