Attachment D5

PCWA Alternative Condition No. 28 – Monitoring Program
Mercury Bioaccumulation Monitoring Plan

Placer County Water Agency
Middle Fork American River Project
(FERC Project No. 2079)

MERCURY BIOACCUMULATION MONITORING PLAN

Placer County Water Agency
P.O. Box 6570
Auburn, CA 95604

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List of Acronyms

BIOMP	Bioaccumulation Monitoring Plan
Cal/EPA	California Environmental Protection Agency
CDFG	California Department of Fish and Game
FERC	Federal Energy Regulatory Commission
MFP	Middle Fork American River Project
OEHHA	Office of Environmental Health Hazard Assessment
PCWA	Placer County Water Agency
Project	Middle Fork American River Project
RWQCB	Regional Water Quality Control Board
SD	Supporting Document
State Water Board	State Water Resources Control Board
USDA-FS	United States Department of Agriculture-Forest Service
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This Mercury Bioaccumulation Monitoring Plan (BIOMP) was developed for the Placer County Water Agency's (PCWA) Middle Fork American River Project (MFP or Project) located on the west slope of the Sierra Nevada range, primarily in Placer County, California. The monitoring plan is designed to periodically monitor methylmercury concentrations in sport fish muscle tissue in the vicinity of the MFP.

1.1 BIOMP ORGANIZATION

The BIOMP is organized into the following sections:

Section 2.0 BIOMP Objective: This section defines the purpose of the BIOMP.

Section 3.0 Monitoring Approach: This section describes the locations, schedule, and sampling and analytical methods for monitoring methylmercury concentrations in sport fish muscle tissue over the term of the new license.

Section 4.0 Reporting and Consultation: This section outlines reporting that will be required over the term of the new license and describes agency consultation that would be conducted following the completion of each monitoring period.

Section 5.0 Literature Cited: This section provides a list of documents or other resources that are referenced in the BIOMP.

2.0 BIOMP OBJECTIVE

The objective of the BIOMP is to monitor methylmercury concentrations in sport fish muscle tissue in specified reservoir locations and in the Middle Fork American River peaking reach associated with the MFP over the term of the new license.

3.0 MONITORING APPROACH

This section describes the approach for monitoring methylmercury concentrations in sport fish muscle tissue over the term of the license, including monitoring locations and schedule, sampling methods, and analyses methods. The monitoring approach is based on the studies completed for the relicensing of the MFP (AQ 11 – Water Quality Technical Study Report – 2007 [AQ 11 – TSR] and AQ 11 – Contingency Water Quality TSR: Methylmercury Fish Tissue Sampling – 2007–2009; Supporting Document [SD] B) (PCWA 2011a and 2011b; SD B).

3.1 MONITORING LOCATIONS AND SCHEDULE

Methylmercury concentrations in sport fish muscle tissue will be monitored in Hell Hole Reservoir, French Meadows Reservoir, Ralston Afterbay, and the Middle Fork American

River near Otter Creek[1] (BIOMP Table 1). These monitoring locations are shown on BIOMP Map 1.

Monitoring will be conducted every five years for the term of the license, beginning in year 3 after license issuance.

3.2 MONITORING METHODS

Resident fish will be collected and analyzed for methylmercury concentrations as described below.

3.2.1 Fish Sampling

A total of 9–12 edible sized sport fish of each target species from each location will be collected as specified in BIOMP Table 1. The legal and edible size limits for the target fish species are provided in BIOMP Table 2. If PCWA is unable to collect the target number of individuals, then PCWA will consult with the United States Department of Agriculture-Forest Service (USDA-FS), California Department of Fish and Game (CDFG), State Water Resources Control Board (State Water Board), Regional Water Quality Control Board (RWQCB), and Office of Environmental Health Hazard Assessment (OEHHA) to determine how to proceed.

Fish will be caught using a combination of methods, including clean gill nets, electrofishing, and hook-and-line. All fish will be handled with polyethene gloves. An identification number will be assigned to each fish caught for analysis. For each, the fork length, total length, and weight of each fish will be recorded. In addition, the date and time of each fish caught will be recorded. Each fish will be placed in a labeled zipper-closure bag (double bagged and double labeled) and immediately placed on ice in a cooler for delivery to the analytical lab. Frozen fish may be stored for a short period of time in a freezer prior to shipment to an analytical laboratory. Fish will be shipped in a cooler packed with ice and delivered by an overnight courier to an analytical laboratory with a chain of custody form specifying the sample identification number and collection date and time of each sample.

3.2.2 Fish Analysis

Field sampling and fish handling procedures will be consistent with those used for the 2007–2009 fish sampling (PCWA 2011a and 2011b; SD B) and in accordance with the General Protocol for Sport Fish Sampling and Analysis developed by the California Environmental Protection Agency (Cal/EPA) (2005). Analysis methods will be comparable to those used at the Department of Fish and Game Marine Pollution Studies Laboratory at Moss Landing for methylmercury (Method #MPSL – 102a) (e.g., MPSL 2005) or total mercury (Davis et. al. 2010).

[1]If road access to the Middle Fork American River near Otter Creek is not available, an alternative sampling site on the Middle Fork American River at Drivers Flat Road or Cache Rock will be used.

3.3 ANALYSES METHODS

Fish samples will be submitted to an analytical laboratory for individual fish muscle tissue analysis (fillets). The results of the fish muscle tissue analyses will be compiled with data collected during previous monitoring surveys and summarized in a table, and will include the fish identification number, date and time collected, total and fork length, weight, and methylmercury concentration. Average methylmercury concentrations by species for each location will be calculated and summarized with data from previous monitoring periods in a table. The methylmercury concentrations will also be presented relative to fish weight in graphical format. Methylmercury concentrations will be compared to appropriate OEHHA and/or United States Environmental Protection Agency (USEPA) screening value guidelines for methylmercury (e.g., Cal/EPA 2005; Klasing and Brodbery 2006).

4.0 REPORTING AND CONSULTATION

A Mercury Bioaccumulation Monitoring Report summarizing the methylmercury concentrations in sport fish muscle tissue will be prepared by PCWA and distributed to the USDA-FS, State Water Board, CDFG, RWQCB, and OEHHA for review and comment within 120 days following the end of the year of each monitoring period. The reports, where appropriate, will follow the general presentation layout used in PCWA's earlier fish methylmercury reports (e.g., PCWA 2011a and 2011b; SD B). A 60-day review period will be provided to the agencies. Based on the results of the monitoring and/or comments received during the review process, PCWA and the agencies may call a meeting to discuss the results or modify the target species, numbers of individuals, and/or sampling approach. Within 60 days of receipt of comments, or 60 days following any meeting, comments will be addressed and the final report will be filed by PCWA with USDA-FS, State Water Board, CDFG, RWQCB, OEHHA (or its successor), and the Federal Energy Regulatory Commission (FERC).

5.0 LITERATURE CITED

California Environmental Protection Agency (Cal/EPA). 2005. General Protocol for Sport Fish Sampling and Analysis. Pesticide and Environmental Toxicology Branch, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. December 2005.

Davis, J.A., A.R. Melwani, S.N. Bezalel, J.A. Hunt, G. Ichikawa, A. Bonnema, W.A. Heim, D. Crane, S. Swenson, C. Lamerdin, and M. Stephenson. 2010. Contaminants in Fish from California Lakes and Reservoirs, 2007–2008: Summary Report on a Two-Year Screening Survey. A Report of the Surface Water Ambient Monitoring Program (SWAMP). California State Water Resources Control Board, Sacramento, CA.

Klasing, S. and R. Brodberg. 2006. Draft Development of Guidance Tissue Levels and Screening Values for Common Contaminants in California Sport Fish: Chloradane, DDTs, Dieldrin, Methylmercury, PCBs, Selenium, and Toxaphene. Pesticide and Environmental Toxicology Branch Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. http://www.oehha.ca.gov/fish/gtlsv/pdf/draftGTLSVchddt.pdf

Marine Pollution Studies Laboratories (MPSL). 2005. Sampling marine and freshwater bivalves, fish and crabs for trace metal and synthetic organic analysis. Method # MPSL-102a.

Placer County Water Agency (PCWA). 2011a. AQ 11 – Water Quality TSR (2007). Available in PCWA's Application for New License – Supporting Document B.

____. 2011b. AQ 11 – Contingency Water Quality TSR: Methylmercury Fish Tissue Sampling (2007–2009). Available in PCWA's Application for New License – Supporting Document B.

TABLES

BIOMP Table 1. Fish Species Targeted for Methylmercury Monitoring by Location.

Sampling Location	Species	Target Number
French Meadows Reservoir	Brown Trout	9-12
	Rainbow Trout	9-12
Hell Hole Reservoir[1]	Brown Trout	9-12
	Lake Trout	9-12[2]
	Kokanee	9-12
Ralston Afterbay	Brown Trout	9-12
	Rainbow Trout	9-12
Middle Fork American River (Otter Creek)	Brown Trout	9-12
	Rainbow Trout	9-12

[1]Rainbow trout are rare in Hell Hole Reservoir and therefore will not be targeted for tissue methylmercury analyses.

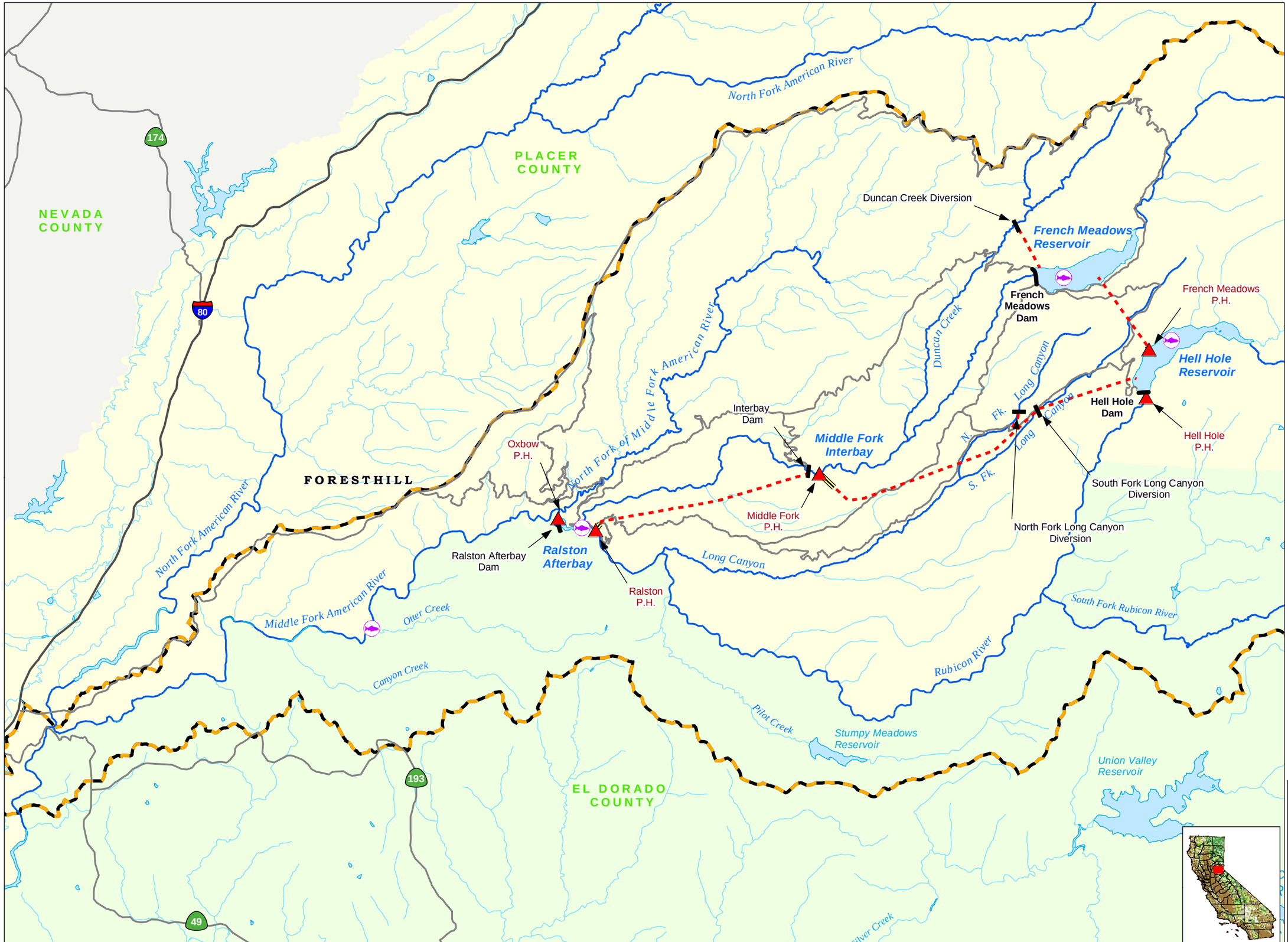
[2]Low abundance of this species may make it difficult to collect the target number of individuals; a good-faith effort will be made to collect the target number of individuals.

BIOMP Table 2. Legal and/or Edible Size Limits for Target Fish Species.

Legal/edible Size Limits[1]	Minimum Size (mm)
Brown Trout	200
Rainbow Trout	200
Lake Trout	350
Kokanee	200

[1]Legal and/or edible size limits for targeted species will be updated as appropriate prior to each monitoring period.

MAPS



Project Facilities

- Powerhouse
- Dam
- Tunnel
- Penstock

Transportation

- Major Road
- Minor Road

Hydrography

- Watercourse
- Water Body
- Middle Fork American River Watershed*

*Modified from Calwater Ver. 2.2 to represent drainage above high-water mark of Folsom Lake

Fish Methylmercury Monitoring Locations

- Monitoring Location

PCWA

Placer County Water Agency
Middle Fork American River Project

BIOMP Map 1

Fish Methylmercury Monitoring Locations

Date: 2/2/11

1 0.5 0 1 2 Miles

Projection: CA State Plane, Zone 2
Datum: NAD 83

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