





Surface Water Ambient Monitoring Program Bioaccumulation Monitoring Program

Tribally-centered Fish Consumption Application

Data Management & Work Plan

June 2025



Authors

This Data Management and Work Plan (Work Plan) was prepared by the Surface Water Ambient Monitoring Program (SWAMP) and the San Francisco Estuary Institute as part of the SWAMP Bioaccumulation Monitoring Program's efforts to make its data more open, accessible, and useful for California Native American Tribes and the public who consume fish or shellfish for subsistence or cultural purposes.

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Introduction

The <u>State of California's Bioaccumulation Monitoring Program</u> (Program) was established in 2006 with a mission to conduct comprehensive, statewide monitoring to assess whether fish and shellfish found in California's streams, lakes, and coastal areas are safe to eat. The Program is implemented by the State Water Resources Control Board's <u>Surface Water Ambient Monitoring Program</u> (SWAMP). One of the main priorities of SWAMP and the Program involves developing and sharing user-centered resources, training, and tools.

Over the past five years, the Program has had the opportunity to have many conversations with California Native American Tribes (Tribes) and Tribal Organizations through efforts like the <u>Program Realignment</u> and by participating in Tribally-led efforts such as the <u>Science for Communities (SFC) Initiative</u>. California's current <u>Fish</u> <u>Consumption Advisories</u> (Fish Advisories) are a frequent topic of discussion. The Office of Environmental Health Hazard Assessment (OEHHA) utilizes Program data to develop Fish Advisories, which are guidelines that recommend how often one can safely eat fish and shellfish caught from water bodies in California. As of the publication of this Data Management and Work Plan (Work Plan), OEHHA has developed over 150 site-specific advisories for California Lakes and Reservoirs, Coastal Locations, Rivers, Streams, and <u>Creeks</u> without site-specific advice, or for <u>Fish that Migrate</u>, which are not included in a site-specific advisory.

OEHHA's Fish Advisories balance the benefits of eating fish and shellfish as part of a healthy, well-balanced diet (i.e., they provide a good source of protein and vitamins, and are a primary dietary source of heart-healthy omega-3 fatty acids) with the risks of eating fish and shellfish (i.e., consuming harmful chemicals such as mercury and PCBs can result in human health impacts). Serving advice is based on a meals per week basis as research indicates that the maximum health benefits are realized at 8-12 oz per week. OEHHA provides recommendations based on an 8 oz serving prior to cooking.

To be able to develop consistent and robust advice statewide, OEHHA's Fish Advisories make the following assumptions that people are:

- consuming fish and shellfish at a recreational rate, which equates to approximately 1 - 4 servings per week depending on the person and the species they are consuming. Frequency categories are also included for those that may consume fish and shellfish up to 7 meals per week
- consuming only the skinless fish fillet

- consuming only the crustacean meat
- consuming only the bivalves animal tissue
- cooking the fish and/or shellfish meat before consuming it

A common issue brought up by Tribal partners across conversations has been that the current OEHHA Fish Advisories do not always reflect the lived experiences of Tribal and subsistence consumers.

Specific requests have included adapting existing advice or developing new advice for those who consume fish and/or shellfish at rates and through cooking and consumption methods that are consistent with Tribal traditions, culture, and subsistence, such as:

- for people who are consuming fish and/or shellfish at a rate that is consistent with Tribal traditions, culture, and subsistence, which can be much greater than 4 - 7 servings per week
- for people who are consuming the tissue, skin, and/or organs of fish (i.e., more than just a skinless filet)
- for people who are consuming more than the meat of crustaceans
- for people who are consuming more than the animal tissue of bivalves
- for people who may not be cooking fish and/or shellfish meat before consuming it
- for people who may consume fish and/or shellfish in a way that includes tissue, skin (for fish), carapaces (for crustaceans), shells (for bivalves) and/or organs of the animal being consumed

Tribally-centered Fish Consumption Application Objectives

The Program, in partnership with the San Francisco Estuary Institute (SFEI) (collectively referred to as the Project Team) will be working with Tribes, Tribal Organizations, and select non-Tribal partners to develop an interactive and user-friendly Fish Consumption Application (Application) that includes and contextualizes bioaccumulation monitoring data, science, thresholds, advisories, and guidance associated with fish consumption and human health. The Application will be tailored to the needs of California Tribal users who consume fish for subsistence and/or cultural purposes.

The Project Team will be using the <u>Application that provides culturally tailored fish</u> <u>consumption guidelines for the Anishinaabe</u> (Ojibwe and associated Great Lakes Tribes) as inspiration and plan on engaging and working with California Tribes and Tribal Organizations to inform the development of the Application.

Project Scope

The Application provides a platform with potential to better meet the public health communication needs of Tribal communities. As a long-stated need, this Tribal Application and its assembled ambitions likely exceed what can be achieved with limited funding. Therefore, the work scoped in this project is designed to offer a very strong foundation upon which the Project Team, Tribal and non-Tribal partners may continue to build in the future, as additional resources become available.

To balance the current resource limitations with the broader goals we have for the Application, its development will be implemented using an iterative approach. For the first iteration of the Application's development, we are limiting the project scope to:

- developing an application that can be shared publicly (see the <u>Methods</u> and <u>Products</u> Sections below for more details)
- 2. prioritizing the inclusion of data, science, and thresholds related to the consumption of *fish* for Tribal subsistence and/or cultural purposes
- 3. prioritizing the inclusion of data, science, and thresholds related to health impacts that are driven by the consumption of fish that have *mercury and/or PCBs* in their tissues.

The Project Team acknowledges that this scope is limited and in no way reflects what we hope to achieve with this Application over the long term. <u>Appendix 1</u> summarizes ideas for future iterations of the Application, as of the publication of the Work Plan. The Project Team intends on expanding, refining, prioritizing and otherwise further developing this list of future work as we engage with Tribal partners. As the Project Team is able to obtain additional resources, we are committed to further development, iteration, and improvement of the Application, in partnership with Tribes and Tribal Organizations.

Application Audience

The audience for which the Application is primarily intended includes those who consume fish and/or shellfish at rates and through cooking and consumption methods that are consistent with Tribal traditions, culture, and subsistence.

Since the Application will be open and accessible to the public, documentation and communication resources will be developed to enable Tribal and non-Tribal users alike to easily learn how to use the resource appropriately.

Data Management & Work Plan Objectives

This Work Plan describes how the Application will be developed, what data and information will be used, how the data and information will be collected, processed, and managed to produce the Application and other products (as appropriate), and how those data products will be shared, managed, and maintained over the long term.

Although this Work Plan was developed by the Project Team, many aspects may be revised during the engagement process, with the guidance of the Application's Tribal Advisory Committee (TAC), and the work will be implemented as part of the Program's activities.

Work Plan Audience

The audience for which this Work Plan is primarily intended includes those who may be interested in understanding how the Project Team intends on developing the Application, and/or contributing to its development through the Tribal and non-Tribal Engagement efforts described below.

Methods

Tribal Engagement

The target audience for this engagement effort includes all California Native American Tribal governments (regardless of federal recognition status) and/or Tribal organizations that have an interest in contextualizing bioaccumulation monitoring data, science, thresholds, advisories, and guidance associated with fish consumption and human health as it relates to Tribal traditions, culture, and subsistence.



Our Tribal engagement approach will consist of six steps that we expect will be cyclical and iterative:

- 1. **Build** relationships by getting to know Tribes and their people
- 2. **Share** information and resources related to the Application, Program, and related Tribal interests
- 3. **Listen** to Tribal partners when they share their perspectives, needs, and recommendations
- 4. **Learn** from conversations and use learnings to inform future planning and decision making
- 5. **Respect** Tribal interests, priorities, and decisions that are shared during the engagement process
- 6. **Continue** communicating and engaging with Tribal partners according to their preferences, during and after this specific engagement effort

Throughout this process Tribal partners will be able to decide and direct the level of engagement they would like to have with the Project Team.

The level of engagement and amount of associated impact that engagement will have on our decision making can be represented by the <u>International Association for Public</u> <u>Participation</u> (IAP2) <u>Spectrum of Public Participation</u>. The IAP2 Spectrum was designed for public participation processes. It is important to note that this engagement effort is specific and limited to Tribal Governments and organizations – not a public participation process – and we intend to approach each step of this process accordingly. With this in mind, we have modified the IAP2 Spectrum to better reflect the intentions and goals of this Tribal engagement process (<u>Appendix 2</u>).

Although the term "Consult" is used in Appendix 2, this Tribal engagement effort is **not** a <u>formal government-to-government consultation process</u> that is required by statute (e.g., Assembly Bill 52 and Section 106 National Historic Preservation Act). However, we have developed this Tribal engagement plan in the spirit of the principles and recommendations outlined in the <u>California Water Boards Tribal Consultation Policy</u>. If a Tribe would like to initiate a formal consultation process related to this process, we would be happy to accommodate and respond to that request, and recommend the Tribe email <u>Tribal-Liaison@waterboards.ca.gov</u> and <u>anna.holder@waterboards.ca.gov</u> to do so.

We anticipate the roles Tribal partners will have during the engagement process will vary between "Inform", "Consult", "Involve", and "Collaborate" as described in Appendix 2 and depending on Tribal partner interest and availability. The only reason we did not include "Empower" in that list is because that level of decision making may not be feasible given our current level of funding and capacity.

The bottom row of Appendix 2 lists methods we anticipate will be used for each type of engagement. However, we intend on selecting, subsetting, or adding to these methods based on conversations, feedback, and preferences Tribal partners choose to share with us throughout this Tribal engagement process.

Tribal Advisory Committee

Through the Tribal engagement process, we hope to find Tribal partners with the interest and capacity to collaborate with the Project Team on the development of the Application. Specifically, the purpose of this Tribal Advisory Committee (TAC) is to help inform and/or co-create Application materials to ensure they are relevant to Tribal and subsistence consumers of fish and shellfish in California. TAC members will be asked to provide guidance related to application development decisions, features, and functionality as well as supporting the early review of the Application when it is available.

The goal is to assemble the TAC and begin meeting by December 2025. The frequency and format of TAC meetings will depend on TAC members interest and availability. See the <u>Expected Timelines</u> for more details on proposed TAC meeting frequency.

Tribally-led Meetings

In addition to regular engagement with the TAC, Program staff will be available to attend and/or present about the Application development and review efforts, and receive feedback at broader Tribally-led meetings, upon request and/or approval by meeting organizers.

We hope to provide periodic updates to Tribes by attending and presenting at Triballyled meetings, such as:

- <u>CalEPA Tribal Advisory Committee</u> (meets quarterly)
- California Issues Workgroup of the United States Environmental Protection Agency (US EPA) Region 9 <u>Regional Tribal Operations Committee</u> (meets quarterly)
- Tribal Beneficial Uses Strategic Caucus (meets monthly)
- <u>National Tribal Resilience Data Workgroup</u> (meets monthly)
- Tribal US EPA Region 9 Conference (meets annually)

Program staff are open to attending and/or presenting at other Tribally-led meetings not listed above, upon request. To request such a presentation, please reach out to the Project Lead (via <u>anna.holder@waterboards.ca.gov</u>) to discuss.

Non-Tribal Engagement

Engagement with non-Tribal partners or organizations will be limited to those who have technical and/or subject matter expertise that directly align with the project scope.

Such partners or organizations may include (but may not be limited to):

- Office of Environmental Health Hazard Assessment (OEHHA) Fish, Incident Response, Seafood Safety & Harmful Algal Bloom Section
- San Francisco Estuary Institute (SFEI) Clean Water Program
- Safe to Eat Workgroup (STEW) of the California Water Quality Monitoring Council
- California Department of Public Health (CDPH) Biomonitoring California and/or Environmental Health Investigations Branch

If a non-Tribal organization would like to be considered for inclusion in this process, please reach out to the Project Lead (via <u>anna.holder@waterboards.ca.gov</u>) to discuss.

Data & Information Inputs

The following represents a non-exclusive, non-exhaustive list of data to be considered for inclusion in the Application. Depending on the results of internal and interactive discussions, the Project Team might seek additional or a reduced set of data in the Application, once the data are put into practice. A key criterion for eligible datasets, above all else, is that any data to be included must be made public.

Below is a list of potential data and information inputs:

- SWAMP Bioaccumulation Program data from the <u>California Open Data Portal</u> or the <u>SWAMP Data Dashboard</u>
- OEHHA Fish Advisory data from the California Open Data Portal
- OEHHA equations used to develop existing advisories from their report on <u>Fish</u> <u>Contaminant Goals and Advisory Tissue Levels For Evaluating Methylmercury,</u> <u>Chlordane, DDTs, Dieldrin, PCBs, Selenium, and Toxaphene In California Sport</u> <u>Fish</u> (for a summary see <u>Slide 74</u> and the associated <u>recording</u>)
- Equations thresholds, or other considerations from other agencies (e.g., US EPA) or research (e.g., Shilling et al. (2014) report on <u>California Tribes Fish-Use</u>)
- Tribal data that is public from US EPA's <u>Water Quality Portal</u> (uploaded by Tribes via the Water Quality Exchange [WQX]) or the <u>California Environmental Data</u> <u>Exchange Network</u> (CEDEN) databases, pending consent for use by Tribes

• Culturally-centered information that Tribes would like to be integrated into the Application (e.g., Tribal art and names of species), which will be collected during the engagement process

User Experience Workflow

Below is a provisional description of the interactions that users of the Application (and others) might expect from the interface. The structure and choices are all subject to vetting and review by the TAC and other Tribal advisors, who will likely refine and revise these materials in time.

Step 1: Characterize the user

Users will be asked to furnish information anonymously that might help to inform their health risks, related to age, weight, activity levels, location type (e.g., rural, urban, suburban) and/or water body type (e.g., lake, river, coastal).

Step 2: Characterize the cultural practices

Users will be solicited information about cultural practices related to fish consumption rates and/or methods as well as non-consumptive interactions with environmental contaminants.

Step 3: Identify the species of fish and typical serving size

Users will identify the frequency and amount of fish to be consumed.

Step 4: Display thresholds for concern associated with direct consumption

Different fish consumption thresholds will be displayed, based on several factors, including the prior answers furnished and the different data sources for health advisories.

Step 5: Display thresholds for concern associated with any cultural practices that might increase exposure rates (e.g., interactions with vegetation)

Recognizing that there might be special environmental exposure associated with Tribal cultural practices, this alternative view of exposure might be associated with demographics and interactions with vegetation that might otherwise elevate exposure rates. Discretely separating consumptive and non-consumptive exposure calculations might be useful in informing any adjustments to cultural practices or consumption amounts.

Products

All products developed as part of this Work Plan aim to increase access and usability of public data in service of Tribal interests and needs, and include three core deliverables:

- Fish Consumption Application, which will be the main interface users interact with
- **GitHub Repository**, which will contain all code and documentation required to operate the Fish Consumption Application
- **Documentation**, which will include resources on how to use the Application and how it works

Fish Consumption Application

The Application will include and contextualize monitoring data, science, thresholds, and advisories associated with fish consumption and human health, based on existing environmental equations and thresholds furnished by OEHHA, US EPA, or other agencies and research, as publicly available. The Application will be tailored to the needs of Tribal and subsistence consumers of fish and shellfish in California and will be developed with a user-centered design framework to ensure it is interactive and user-friendly.

Through the <u>engagement process</u> described above, Tribal and non-Tribal partners will inform the ideation, development, and review of the Application. This will include codevelopment functional requirements to inform the Application's features and functions. Potential features and functions could include (but is not limited to): incorporating Tribal art into the aesthetics of the Application, the generation of mapping and other data products that can be readily embedded on Water Boards and other Tribal partner web pages, easy to download data that can be integrated into desktop Geographic Information System (GIS) products for offline analysis, or development of Application Programming Interfaces (APIs) of filtered or processed data to streamline and automate download of data used and/or synthesized in the Application.

GitHub Repository

All code, metadata, and documentation resources developed to create and maintain the Application will be published on a public <u>GitHub Repository</u> which is available through the Water Board's <u>California Water Board Data Center</u>. These materials will be open source and thereby available for further revision and adaptation by future technical resources skilled in the applicable programming languages.

Documentation

Documentation clearly and simply explaining how the Application works, and how to use it and the GitHub Repository will be developed as a GitHub website. The documentation on this site will have three main components:

- 1) a brief **User's Guide** to document and describe the feature interactions from a user's perspective, informing uninitiated visitors in the proper use of the resources,
- 2) an **Administrative Guide** to describe to a technical resource any dataprocessing operations and automation mechanisms, and
- 3) a **Science Guide** to describe, broadly but simply, the Application outputs, in relation to scientific standards, so that new practitioners can easily understand how to interpret them appropriately.

All documentation will be developed using R (RMarkdown and Quarto packages), RStudio, and GitHub. This will enable collaborative, transparent, and open development and maintenance of the resources. Links to the GitHub website and all other relevant resources will be provided on the <u>Program</u> and <u>STEW</u> webpages.

In addition to the three formal documentation deliverables described above, the Project Team will also compile and distribute meeting notes and functional requirements based on engagement with the TAC and other Tribal partners. These materials will, in turn, guide the development of the Application.

Maintenance & Management

The Application is not currently planned to host original data but will rather host data related to toxin exposure and presented via an interactive interface. However, if any new syntheses are to be generated, they will be made available as a consolidated dataset with complete documentation and metadata before they are published on the <u>California Open Data Portal</u>.

Maintenance and management of the Application, GitHub Repository, and all related Documentation will be led by the SWAMP Team and guided by recommendations made by the SFEI Team, TAC, and feedback received through other Tribal engagement efforts.

The frequency of Application and documentation maintenance updates will be determined during the user testing phases of the development process. The specific instructions on how partners outside of SWAMP can contribute to the maintenance and update process over the long-term will be developed by the TAC over the next two years (see the <u>Expected Timelines</u> for more details). This will enable key partners and users to lead the design of the contribution process, thus making it easier for them to meaningfully and efficiently contribute to future Application and documentation maintenance and improvements.

Expected Timelines

Engagement

Initial outreach and engagement with prospective Tribal and non-Tribal partners will begin in July 2025. Once the TAC is established, we expect to hold TAC meetings starting in Dec 2025 and then continuing at the end of each quarter through 2026 (a total of five meetings). However, frequency and format of TAC meetings will depend on TAC members' interest and availability. Additionally, the Project Team may present at other Tribally-led meetings to demonstrate how to use the application and related documentation and/or solicit feedback from meeting attendees. See the Engagement sections above for more details.

Documentation

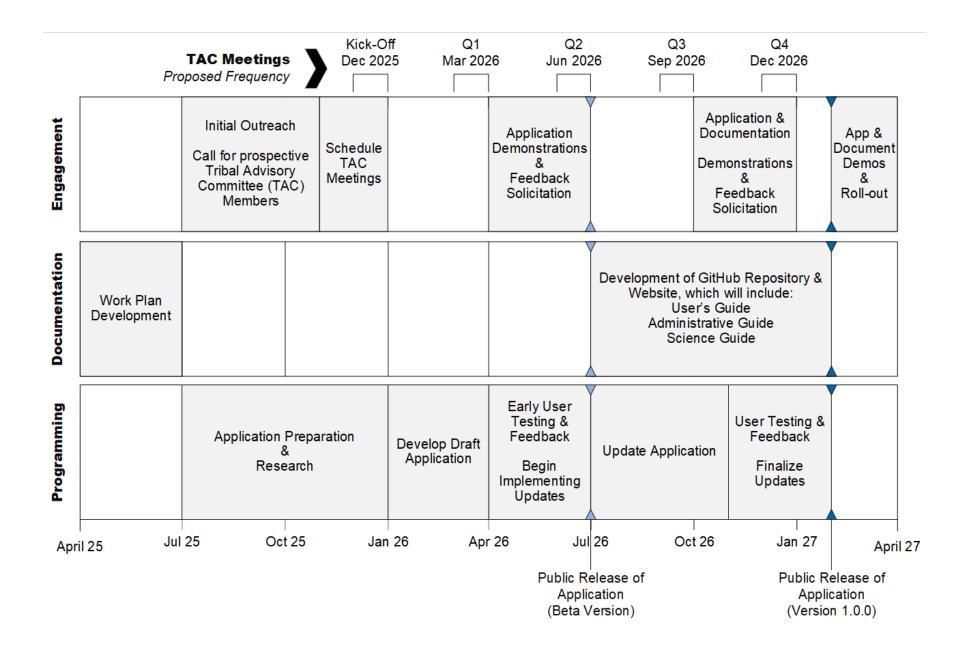
The documentation associated with the Application and GitHub Website will be developed over the course of the project, with the most intense effort towards documentation taking place between July 2026 and February 2027.

If and when meeting notes are required, they will be developed and shared with meeting attendees within two weeks of the meeting. Meeting attendees will have the opportunity to review and provide revisions or corrections to the notes to ensure what was shared during the meeting is captured appropriately. Once notes are approved, they will be posted on the Application's GitHub website. See the <u>Documentation</u> section above for more details.

Programming

Programming of the Application, in response to Tribal needs, will follow informationgathering engagements and begin by January 2026. Once underway, such programming will be iterative and focused on addressing the developed requirements.

Draft materials will be shared for review by a limited audience in April - June 2026 and November - January 2027, whereas the final product will be distributed to the public for general use beginning in February 2027.



Appendix 1: Future Work

As described in the <u>Project Scope</u> section above, what the Project Team hopes to achieve by developing this Application cannot be fully realized in this first iteration of development and resources. This Appendix summarizes ideas for future iterations of the Application, including incorporating data, science, and thresholds related to:

- the consumption of shellfish (i.e., crustaceans and bivalves) for Tribal subsistence and/or cultural purposes
- health impacts that are driven by the consumption of fish and/or shellfish containing other chemicals or emerging contaminants in their tissues, such as Perfluoroalkyl and polyfluoroalkyl substances (PFASs) and/or cyanotoxins
- consumption methods of those who may not be cooking the meat before eating it
- consumption practices of those who may consume fish and/or shellfish in a way that includes tissue, skin (for fish), carapaces (for crustaceans), shells (for bivalves) and/or organs of the animal being consumed
- natural aquatic resources and species, other than fish and shellfish, that are consumed by individuals, households, or communities as part of their Tribal traditions, culture, and/or subsistence

The Project Team intends on expanding, refining, prioritizing and otherwise further developing this list of future work as we engage with Tribal partners. As the Project Team is able to obtain additional resources, we are committed to further development, iteration, and improvement of the Application, in partnership with Tribes and Tribal Organizations, over the long-term.

Appendix 2: Spectrum of Tribal engagement

Modified from the International Association for Public Participation (IAP2) Spectrum of Public Participation.

INCREASING LEVEL OF IMPACT ON DECISION MAKING

ENGAGEME NT TYPE	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Engageme NT GOAL	To provide balanced and objective information to assist Tribes in understanding problems, alternatives, opportunities and/or solutions.	To obtain feedback on analysis, alternatives and/or decisions.	To work directly with Tribes throughout the process to ensure that their concerns and aspirations are consistently understood and considered.	To partner with Tribes each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the Tribe(s).
OUR PLEDGE TO TRIBES	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how Tribal input influenced decisions.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how Tribal input influenced decisions.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

INCREASING LEVEL OF IMPACT ON DECISION MAKING

ENGAGEME NT TYPE	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Engageme NT Methods	 Emails or letters via broad email lists (e.g. <u>Tribal Matters email</u> <u>list</u>) Web pages Fact sheets or other educational materials Presentations or Webinars 	Inform Methods + - 1-on-1, or small group meetings or conversations - Surveys or polls	Consult Methods + - Direct communication via email or phone - Public meetings - Tribal meetings (upon invitation only)	Involve Methods + - TAC Meetings - Document development, review, and feedback - Consensus or participatory decision making	All methods may apply