

# Laboratory Committee

Sensitive Species  
Screening

April 23, 2024



**B A C W A**  
**B A Y A R E A**  
**C L E A N W A T E R**  
**A G E N C I E S**

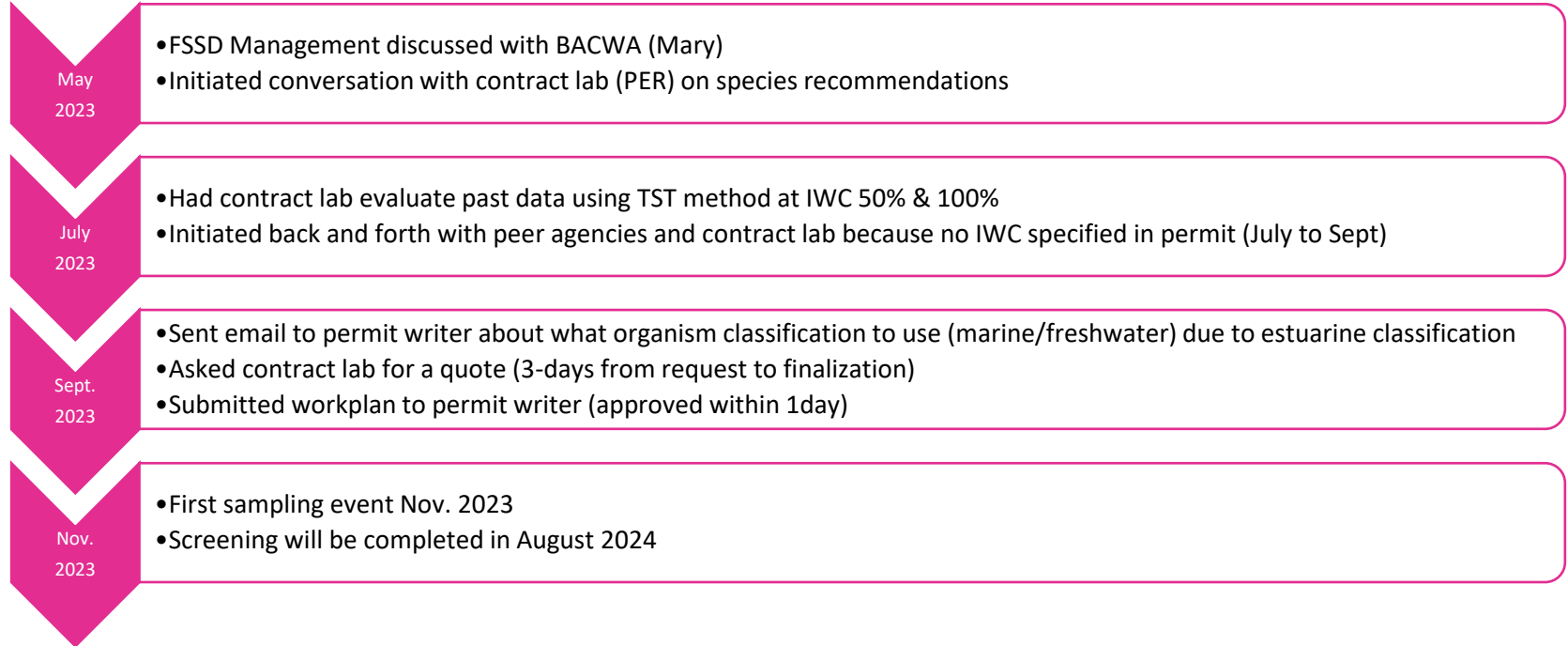
# Agenda

- Basic Timeline
- Process for preparing a proposal
- Species Selection Tips
  - Plant
  - Invertebrate
  - Fish
- Proposal Review Tips
- Regional Board review and acceptance
- Contract Lab experiences
- Results review

# What is the Basic Timeline?

- Proposal development from contract lab
- Proposal acceptance by waterboard
- Start of testing
  
- FSSD Timeline example
- SMCSD Timeline example

# FSSD Timeline



# SMCSD Timeline

Nov.-Dec.  
2023

- Initiated conversation with two contract labs (Enthalpy and McCampbell) for quotes and proposal preparation assistance
- Performed initial screening to determine viability of freshwater green algae (instead of Giant Kelp, due to availability issues). Results - only the 100% dilution resulted in a failing result, so it was determined ok to proceed with green algae.
- Received completed study proposal from contract lab

Jan.  
2024

- Submitted proposal to and received approval from the regional board (approval took a few weeks)
- Only comments from regional board were to include 10% and 50% dilution results in the report of screening study (both dilutions were in the submitted proposal)

Feb.  
2024

- Scheduled first quarter of testing (will test in May, August, and November 2024)

# What was the process for preparing the proposal?

- Information to know before discussing with contract lab
  - Receiving water salinity (Fresh Water, Estuarine, Marine) – Fact sheet of permit
    - If receiving water salinity <1ppt 95% of the time (use Fresh water species)
    - If receiving water salinity >1ppt 95% of the time (use Marine species)
    - Estuarine receiving water – Ask your permit writer if they have a preference of Fresh, Marine or either
  - IWC (Instream Waste Concentration) & Cyanide Dilution Ratio
  - Surveillance monitoring concentration(s)
- Have contract lab evaluate past data using the TST method
- Give yourself about 3-5months to prepare the proposal
- Contract Lab will prepare the proposal for you!
  - You are not alone!

# What are your Species Selection Tips?

- Freshwater species are allowed for estuarine waters
  - If your effluent has higher salinity you may want to run a pre-screen on freshwater species you are considering.
- Tier 2 species are allowed if there is reasonable explanation for substitution
  - Topsmelt availability issues
  - Needs approval from the regional board

# Plant Species Selection Anecdotal Tips

Species	Tier	Marine/Fresh	Possible issues to consider
Green Algae (Selenastrum Capricornutum)	I	Fresh	Sensitive to salinity, may want to do a salinity screen before selecting if you are an estuarine discharger with salinity on the higher side.
Giant Kelp (Macrocystis Pyrifera)	I	Marine	Seasonality issues, have to be collected the day before testing.



# Invertebrate Species Selection Anecdotal Tips

Species	Tier	Marine/Fresh	Possible issues to consider
Water Flea (Ceriodaphnia Dubia)	I	Fresh	Lab variability issues.
Purple Urchin/Sand Dollar (Strongylocentrotus purpuratus/ Dendraster excentricus)	I	Marine	(did not have any agency examples to reference)
Red Abalone (Haliotis rufescens)	I	Marine	Availability issues and labs can't 'stock up' like they can with Mussels. Contract lab has failures in the summer, recommend testing early in summer.
Mussels/ Oysters (Mytilus Sp./Crassostrea gigas)	I	Marine	Although some seasonality issues, the lab can stock up on cultures to last through the summertime (Pacific EcoRisk). Contract lab can have failures in the summer, recommend testing early in summer. Aqua-Science does not offer this invertebrate, but said they could add it to their certification.
Mysid (Americamysis Bahia)	II	Marine	Would need approval from waterboard to use. Some agencies listed as backup in proposal (and proposal was accepted).

# Fish Species Selection Anecdotal Tips

Species	Tier	Marine/Fresh	Possible issues to consider
Fathead Minnow (Pimephales Promelas)	I	Fresh	
Topsmelt (Atherinops Affinis)	I	Marine	Only one vendor in the entire country, if they are sold out or experience a culture downturn there isn't an alternative vendor
Inland Silverside (Menidia Beryllina)	II	Marine	Would need approval from waterboard to use.

# Agency Examples

Agency	Receiving water	Fish	Invertebrate	Plant	Dilution Series	Lab used
FSSD	Suisun (Estuarine)	Fathead Minnow (Tier I, Fresh)	Mussel (Tier I, Marine)	Green Algae (Tier I, Fresh)	0, 6.25, 12.5, 25 (CN Dilution ratio), 50, 100% (no IWC in permit)	Pacific EcoRisk
Novato	San Pablo (Estuarine)	Inland Silverside (Tier II, Marine) – Received approval	Red Abalone (Tier I, Marine)	Giant Kelp (Tier I, Marine)	0, 7.5, 15, 30.8(IWC), 65, 100%	Aqua Science
SMCSD	Central SF Bay (Estuarine)	Topsmelt (Tier I, Marine)	Mussel (Tier I, Marine)	Green Algae (Tier I, Fresh) – salinity study performed	1.2(IWC), 10, 50%	McC Campbell
Vallejo	Carquinez and Mare Island Straights (Estuarine)	Inland Silverside (Tier II, Marine) – Received approval	Red Abalone (Tier I, Marine)	Green Algae (Tier I, Fresh)	0, 3.8(IWC), 5, 10 (surveillance), 25, 50%	Aqua Science
City of South San Francisco	Lower San Francisco Bay (Estuarine)	Topsmelt (Tier I, Marine)	Mussel (Tier I, Marine)	Giant Kelp (Tier I, Marine)	1.3(IWC), 10, 25, 50, 75%	Pacific EcoRisk

# Tips for reviewing the proposal?

- Review Proposed Dilution Series
  - Must include: IWC and Monitoring concentrations in series
- An evaluation of the receiving water salinity/classification
- Species selection
  - Reasoning for use of Tier 2 species
  - Explicitly define what the back up species will be if availability is an issue.
  - Flexibility to use Tier 2 species

# Cost

- Concurrent LC-50's will add cost
- More dilution series will add cost
- Certain species are more expensive than others

# Did the Regional Board accept the proposal?

- How long did it take for the regional board to approve?
  - 3 days to 3 weeks
- Did your proposal include Tier 2 species and was it approved?
  - Yes, there were two dischargers that had Tier 2 fish (due to availability of topsmelt)
- Were there any comments/modifications to your proposal?

# Contract Laboratory

- What contract laboratory are you using?
- Have you experienced any issues?
  - Giant Kelp had delays for one discharger – that discharger ended up switching to Green Algae
- Has the contract lab needed to substitute any species due to availability?
  - Giant kelp issue above
- Has the contract lab needed to substitute a Tier 1 species with a Tier 2 species?
- If you have had substitutions, did the regional board have any issues?

# Results Review Tips

- Have you had any odd results and how were they addressed with the laboratory?
- Did anything stand out to you when reviewing the results?
- If you had a substitution during your screening, how is this handled in the evaluation and final tabulation of results to determine the most sensitive species?



# Thank you!

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