Basin Plan Amendments for a Mercury Control Program for the Sacramento-San Joaquin River Delta Estuary

Patrick Morris, Janis Cooke, Michelle Wood & Jerry Bruns

Outline

- **Regulatory Background**
- The Delta Mercury Problem
- Proposed Mercury Control Program
- Outstanding Policy Questions
- Additional Amendment Options

Protect the Delta

December 2007
State & Regional Water Board Resolutions:

Resolve to adopt and implement a mercury TMDL for the Delta

Clean Water Act Requirements

- States develop 303d list of impaired water bodies
- Central Valley has 49 water bodies listed for mercury
  - Includes Delta, Sacramento, San Joaquin, and many reservoirs

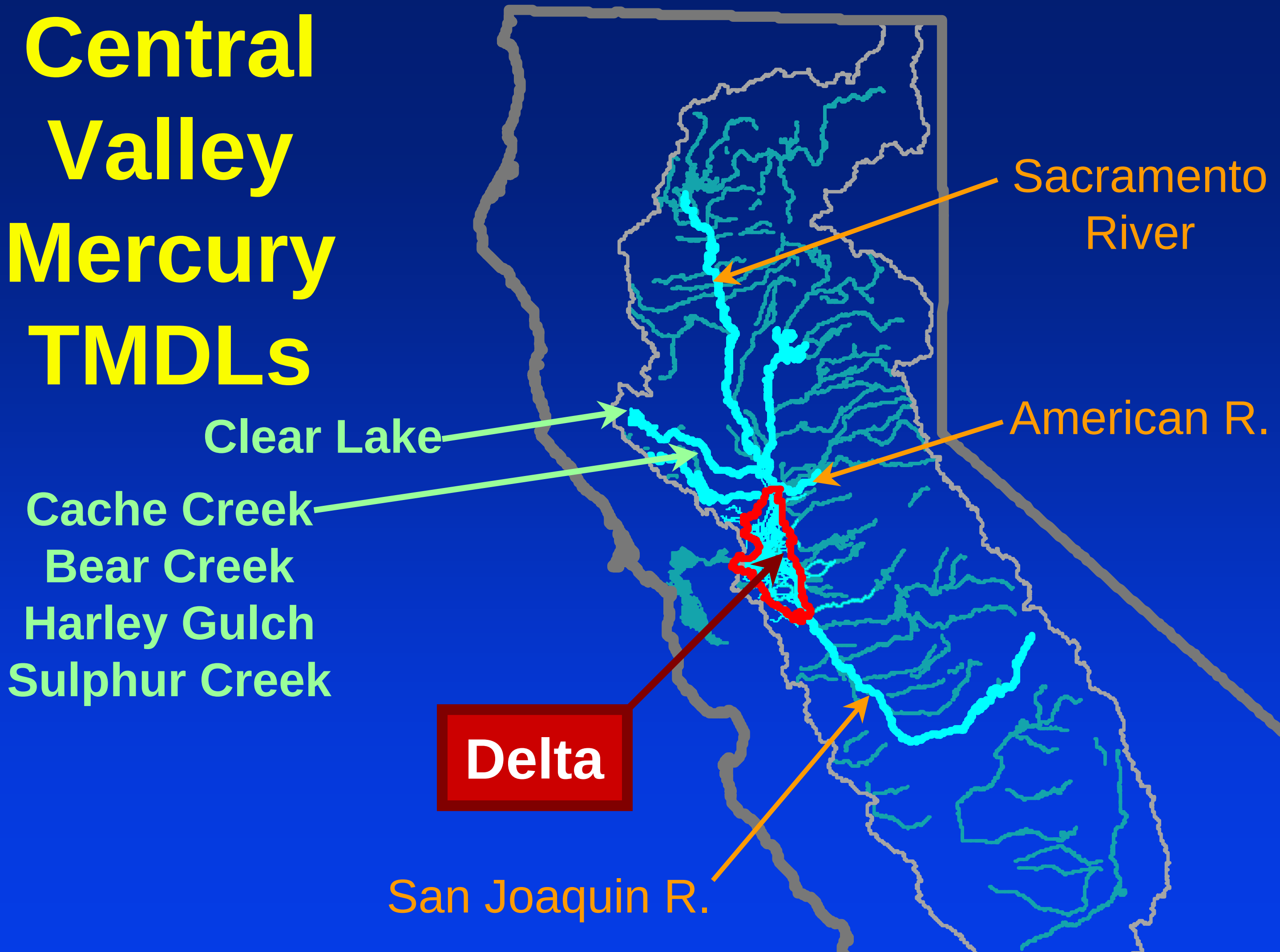
Total Maximum Daily Load (TMDL)

- Assimilative Capacity:
  maximum pollutant load for water body
- Allocations:
  maximum load for point & nonpoint sources
- Margin of safety:
  addresses uncertainty

Basin Plan Amendment

- Contains TMDL elements and implementation plan
- Approved by:
  - State Water Board
  - Office of Administrative Law
  - USEPA
- Adapt as necessary

Central Valley Mercury TMDLs



Delta TMDL Adaptive Approach

~2009

Phase 1

TMDL
Review
~2017

Phase 2

2030

- Studies
- Implement mercury prevention measures
- Improve Settling Basin
- Develop upstream TMDLs
- Phase 1 offset projects

Re-asses MeHg allocations & schedules.

- Implement methylmercury controls in the Delta
- Implement upstream controls
- Phase 2 offset projects

Outline

- Regulatory Background
- **The Delta Mercury Problem**
  - **Delta fish mercury impairment**
  - **Methylmercury bioaccumulation**
- Proposed Mercury Control Program
- Outstanding Policy Questions
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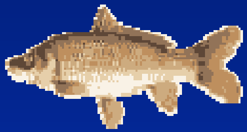
Why is Hg a Problem?

↑ High mercury levels



Neurotoxicant:

Impairs nervous systems in humans & wildlife

Also affects reproductive & immune systems

Who eats Delta fish?

Wildlife:

Least tern, kingfisher, western grebes,

bald eagle, osprey,

& river otter

Fish Hg levels in some Delta areas are equal to harmful concentrations found elsewhere in the United States.

Who eats Delta fish?

~300,000 licensed sport & subsistence anglers per year

Unknown # of unlicensed anglers

Multiple ethnicities, communities, & income levels

5% of fish consumers in northern Delta: mercury intake rate 10x the safe dose

Advisories & Safe Eating Guidelines

1971: Delta

2007 & 2008:

- North and South Delta
- lower Sacramento River
- San Joaquin River
- lower Cosumnes & Mokelumne Rivers

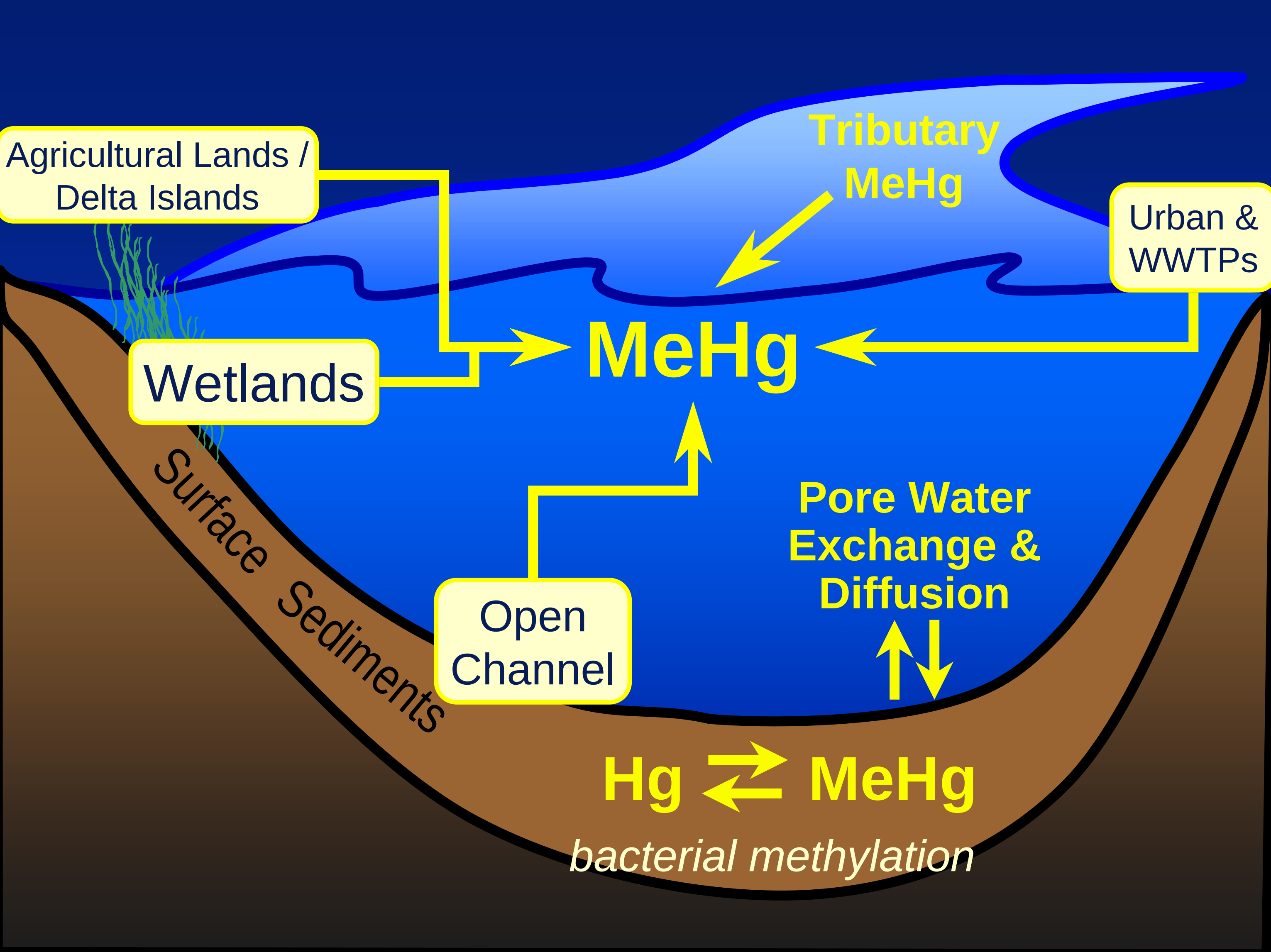
***larger sizes of certain species are more contaminated**

Mercury Strategy for the Bay-Delta Ecosystem (CalFed, 2003):

"The problem with mercury in the Delta's aquatic ecosystems can be defined as biotic exposure to methylmercury."

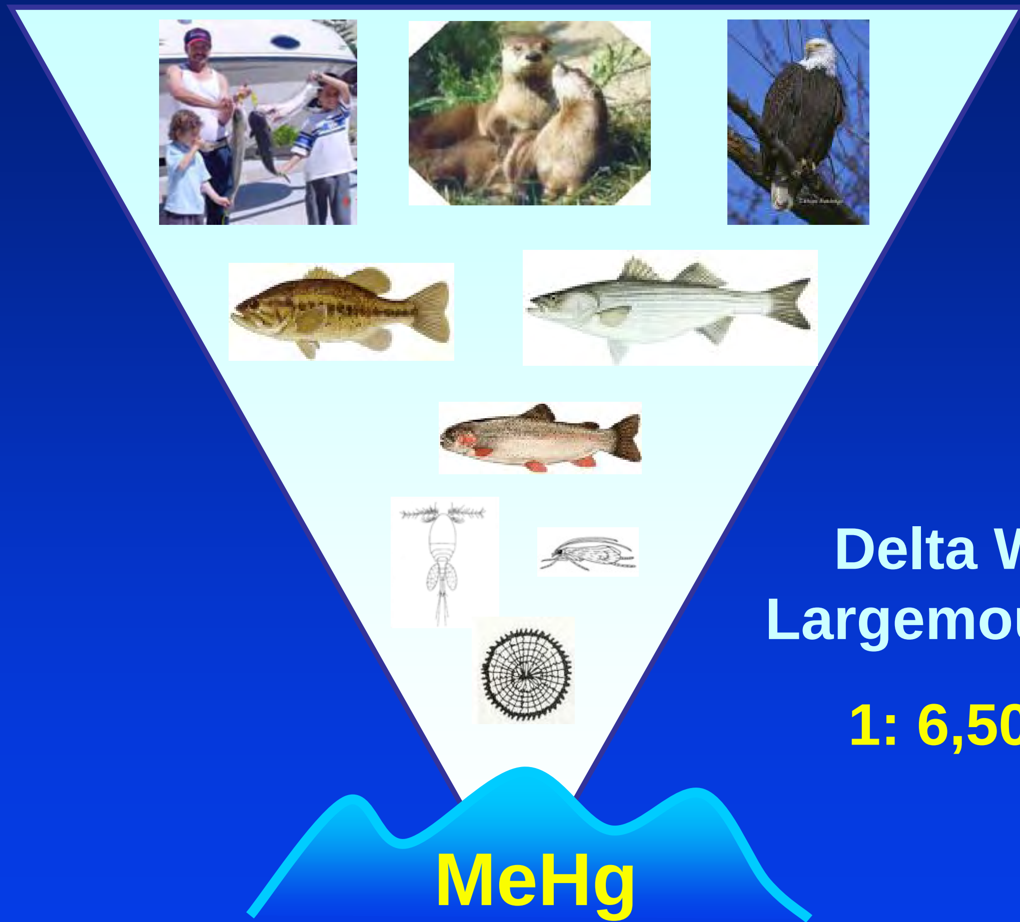
Methylmercury

- Most toxic form of Hg
- Most bioavailable form of Hg
- MeHg bioaccumulates



Tributary
MeHg
Agricultural Lands /
Delta Islands
Urban &
WWTPs
MeHg
Wetlands
Surface Sediments
Open
Channel
Pore Water
Exchange &
Diffusion
Hg
MeHg
bacterial methylation

MeHg Bioaccumulates…

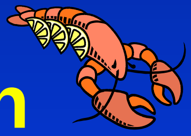


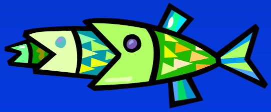
Delta Water : Largemouth Bass

1: 6,500,000

Methylmercury

- Most toxic form of Hg
- Most bioavailable form of Hg
- MeHg bioaccumulates
- **Exposure to MeHg is through consumption of fish & shellfish**





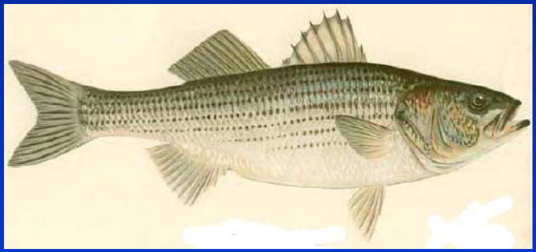
Fish Tissue Objectives

(rather than water-based objectives)

Outline

- Regulatory Background
- The Delta Mercury Problem
- **Proposed Mercury Control Program**
    - **Fish Tissue Objective**
    - Assimilative Capacity
    - Allocations
    - Phased Implementation Strategy
- Outstanding Policy Questions
- Additional Amendment Options

Proposed Fish Tissue MeHg Objective for Delta Fish

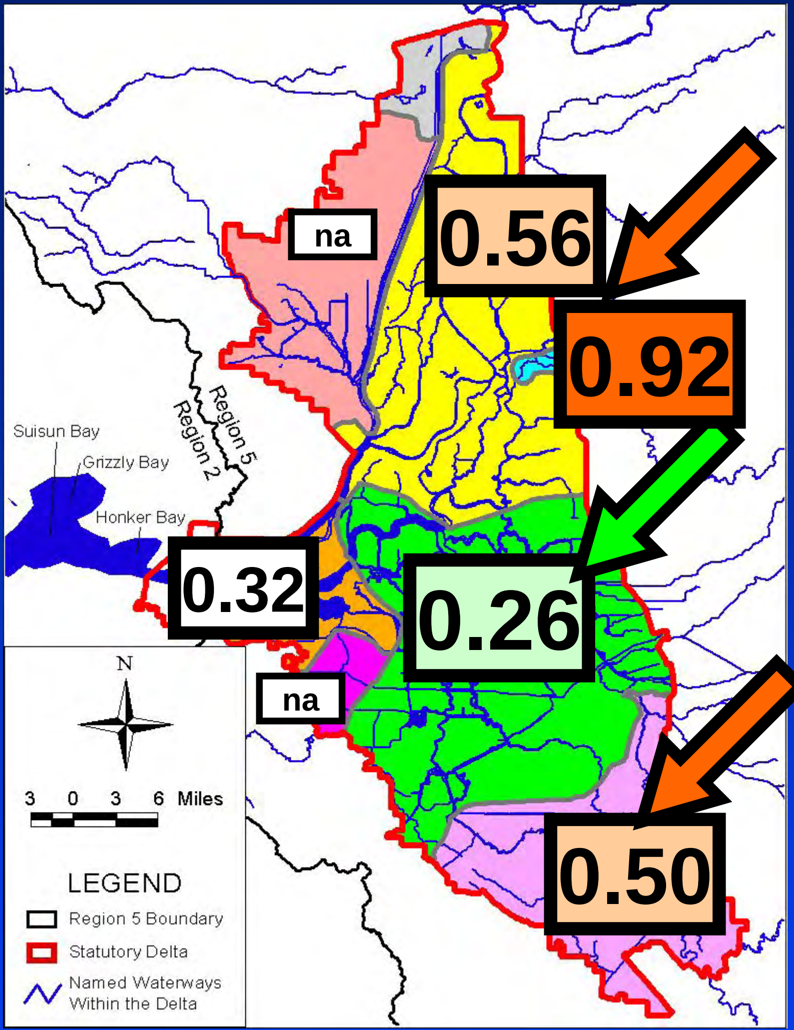


0.24 mg/kg mercury

in large bass & catfish

1 meal/wk

Average MeHg Levels in Large Bass & Catfish (mg/kg)



Proposed Fish Tissue MeHg Objective for Delta Fish

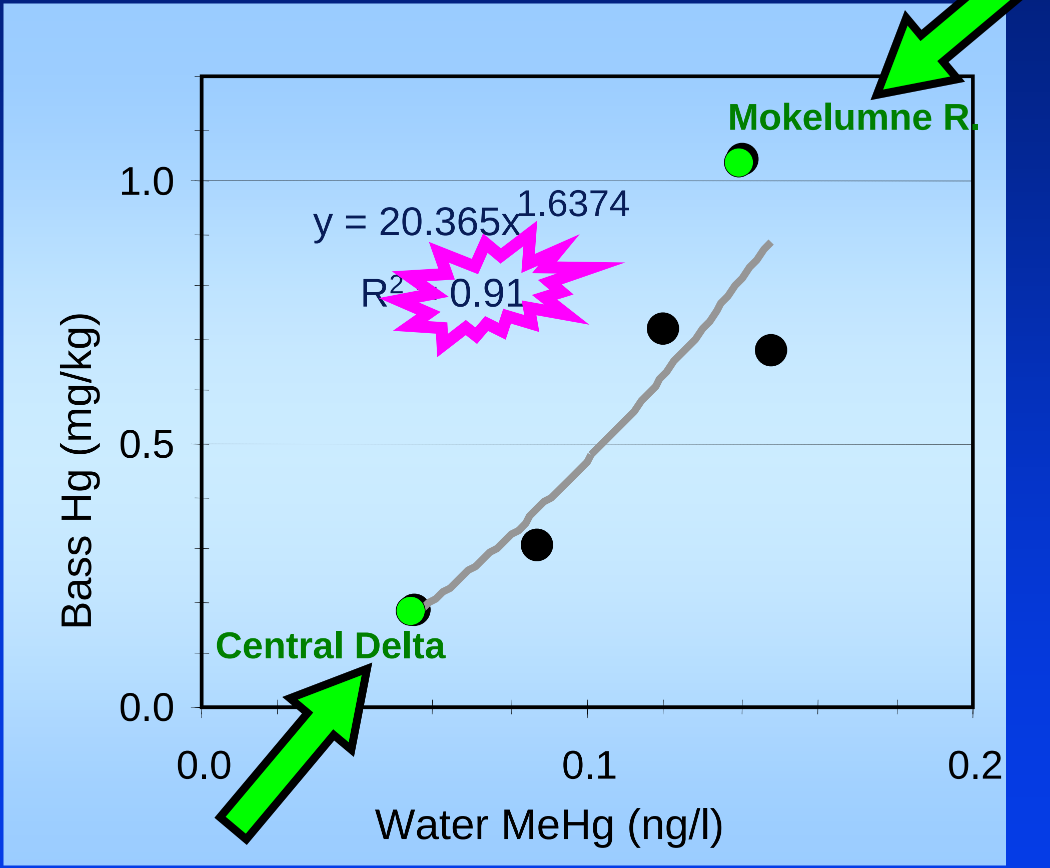
Stakeholder Comments:

- ☝ Too high: Not stringent enough
- ☟ Too low: Overly protective
  Possibly unachievable

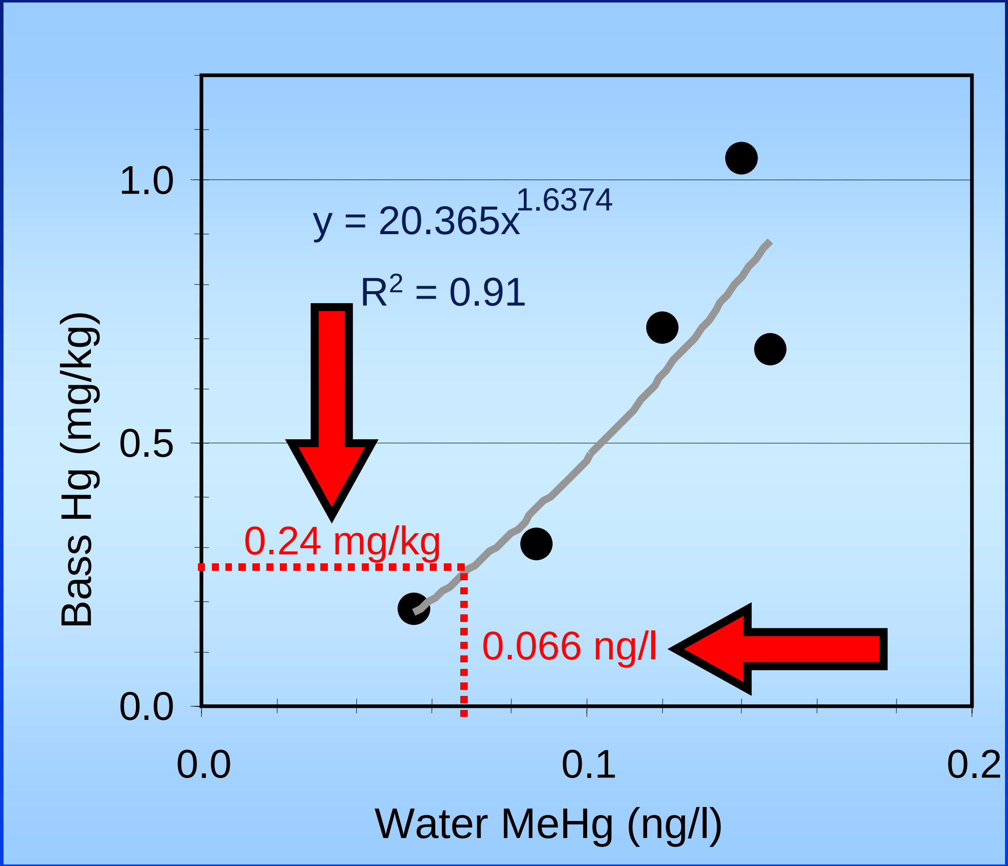
Proposed Fish Tissue MeHg Objective for Delta Fish

- Lower objective likely not achievable in western States
- Need to protect human health and wildlife; be consistent with Clear Lake, Cache Creek, & San Francisco Bay objectives

MeHg Linkage: Largemouth Bass & Average Water MeHg



MeHg Linkage: Largemouth Bass & Average Water MeHg



Proposed MeHg Goal

- **0.06 ng/l** in unfiltered ambient water, annual average
- Establishes the assimilative capacity
- Use goal to determine how much reduction from each MeHg source is needed to achieve fish tissue objective

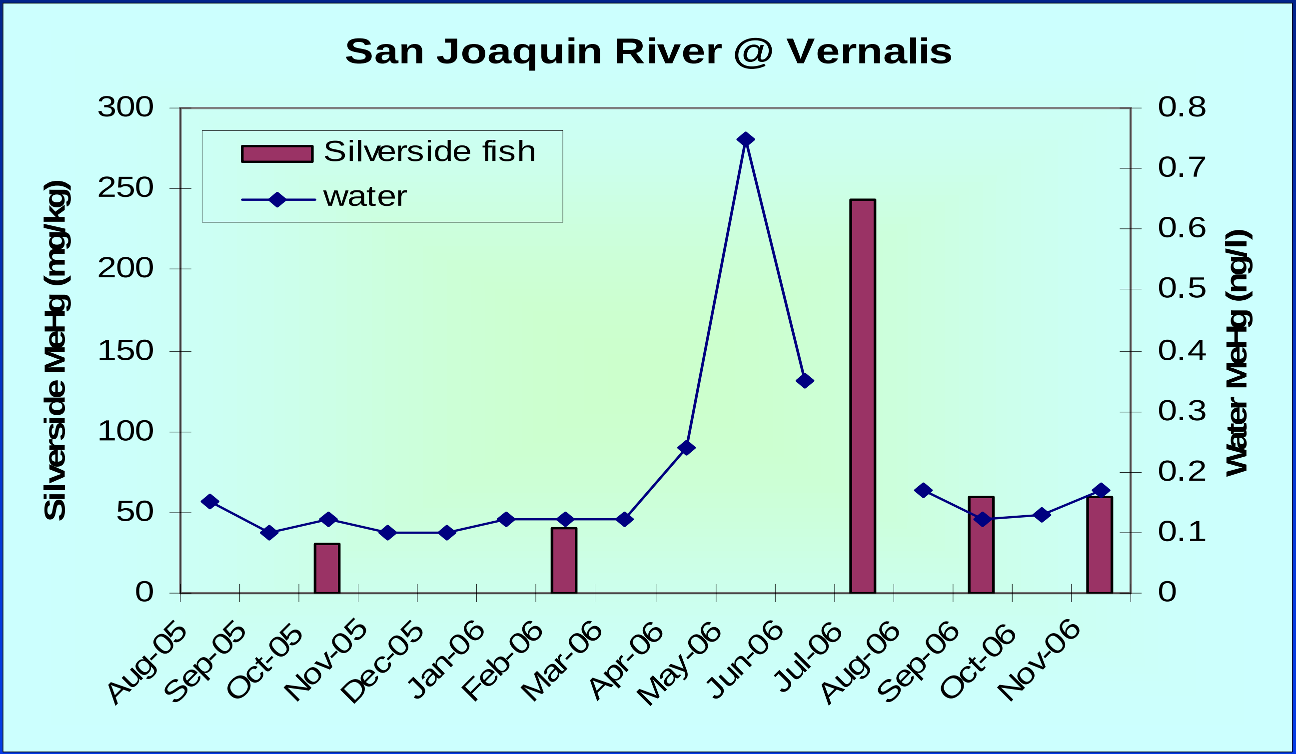
Water MeHg & Fish MeHg Linkages

Cache Creek linkage:

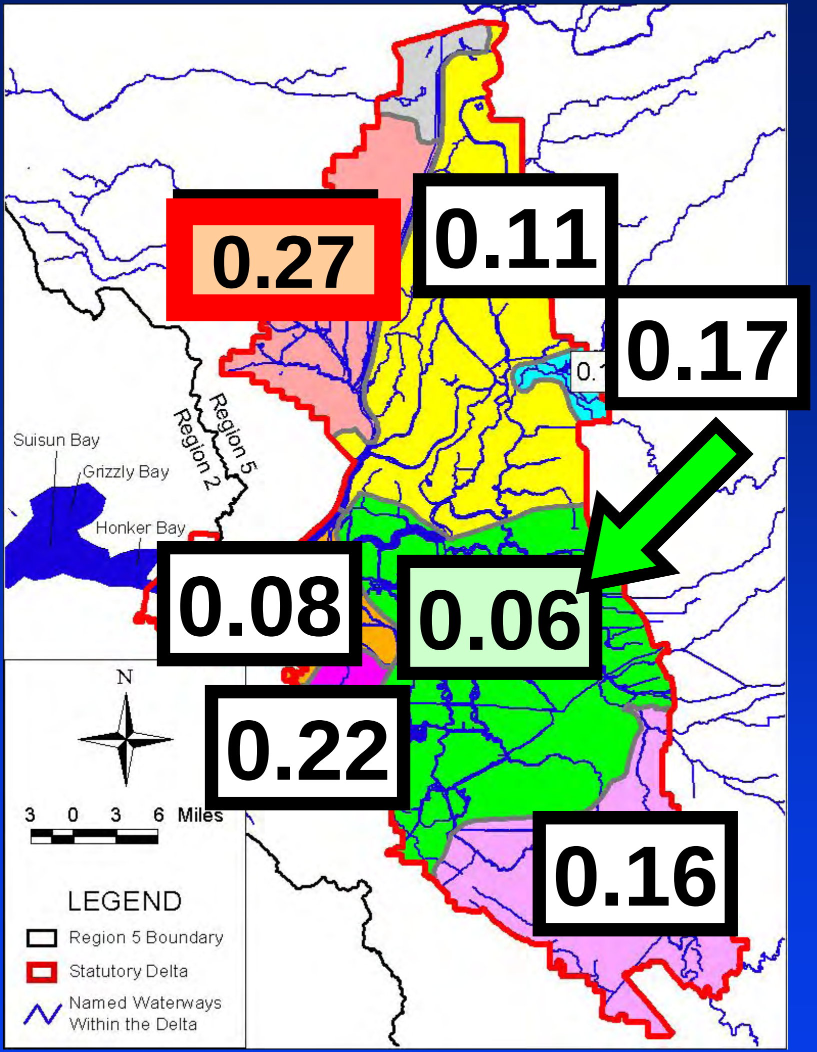
Extensive scientific peer review by:

- CALFED Mercury Program
- Cache Creek mercury control program scientific peer review

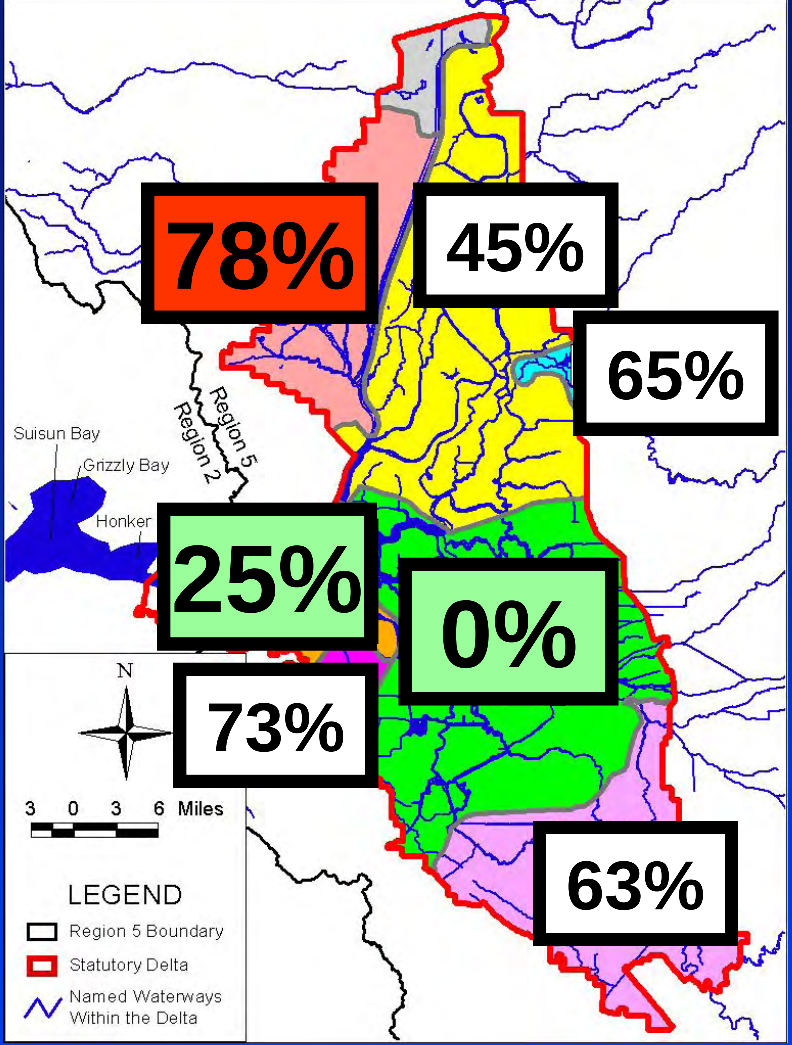
Recent data underscores the water MeHg & fish MeHg linkage:



Average Annual Ambient MeHg Levels in Water (ng/l)



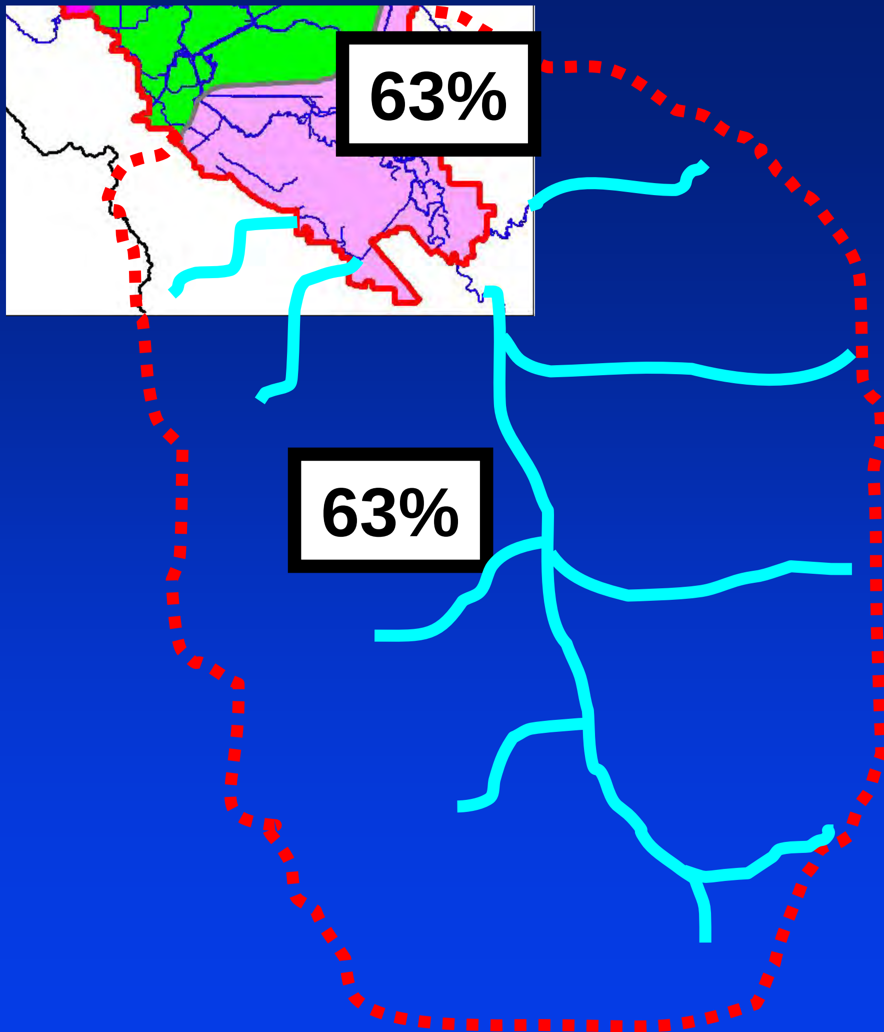
MeHg Source Reductions Needed to Achieve Proposed 0.06 ng/l goal



Key Points

- Level of impairment varies by area
- Different sources for each area
- Need to reduce specific sources to each area to fix impairment in each area

For example, need to reduce the sum of all sources in the south Delta & San Joaquin watershed by 63%



Ways to Reduce MeHg in Delta Waters

- Reduce Hg in sediment
  (reduces MeHg produced by Delta wetlands & open-water areas)
- Control activities that enhance MeHg production in wetlands & open-water areas
- Reduce MeHg discharges from external sources
  (e.g., WWTPs, urban runoff & irrigated agriculture)

Proposed Control Strategy

- Reduce Hg in sediment
  - Control upstream sources of Hg-enriched sediment
- Reduce MeHg discharges
  - Wetlands & open water
  - WWTPs, urban runoff & irrigated agriculture

Proposed Control Strategy

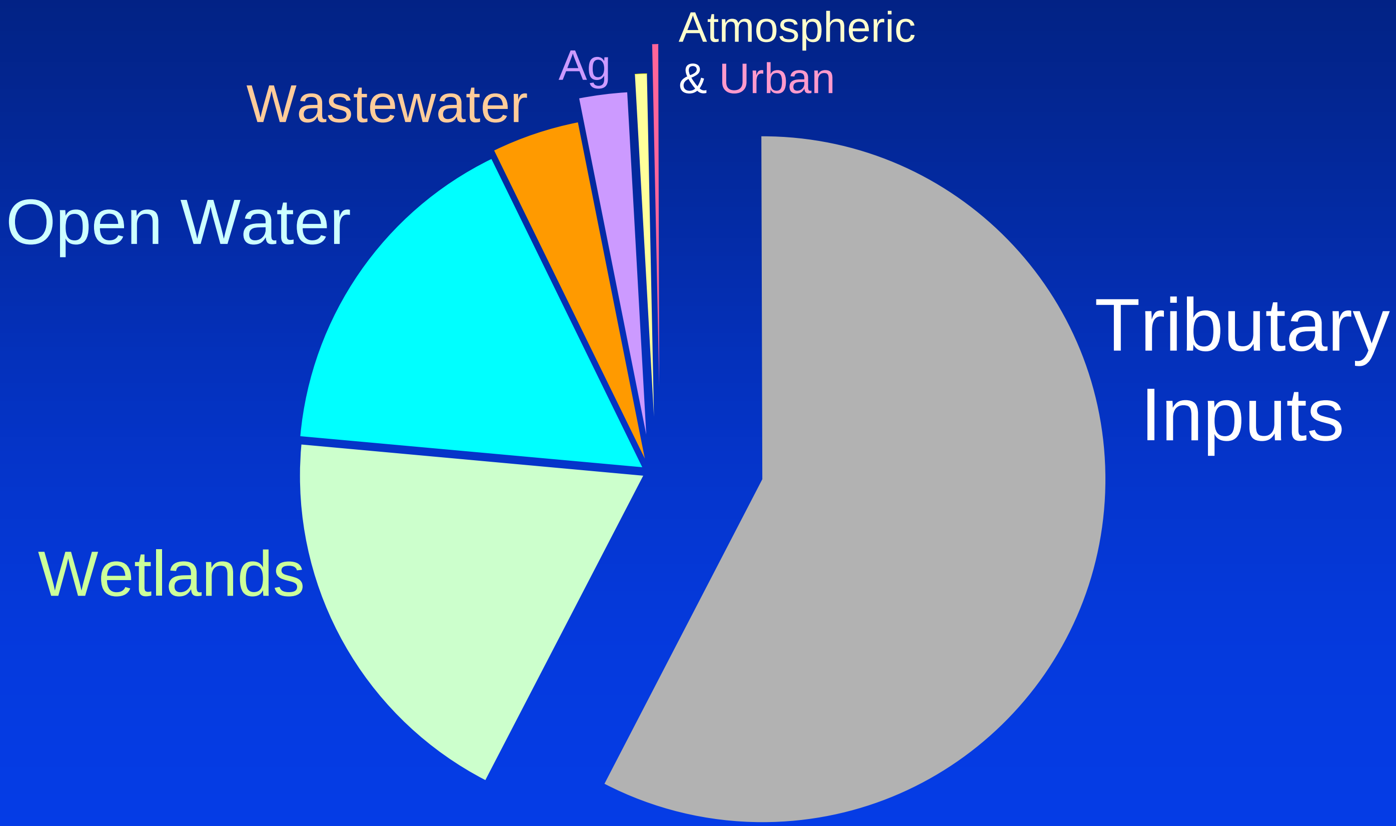
- ✓ Focus on both MeHg and Hg reduction for more rapid improvements

- ✓ Decades versus centuries to make measurable improvements

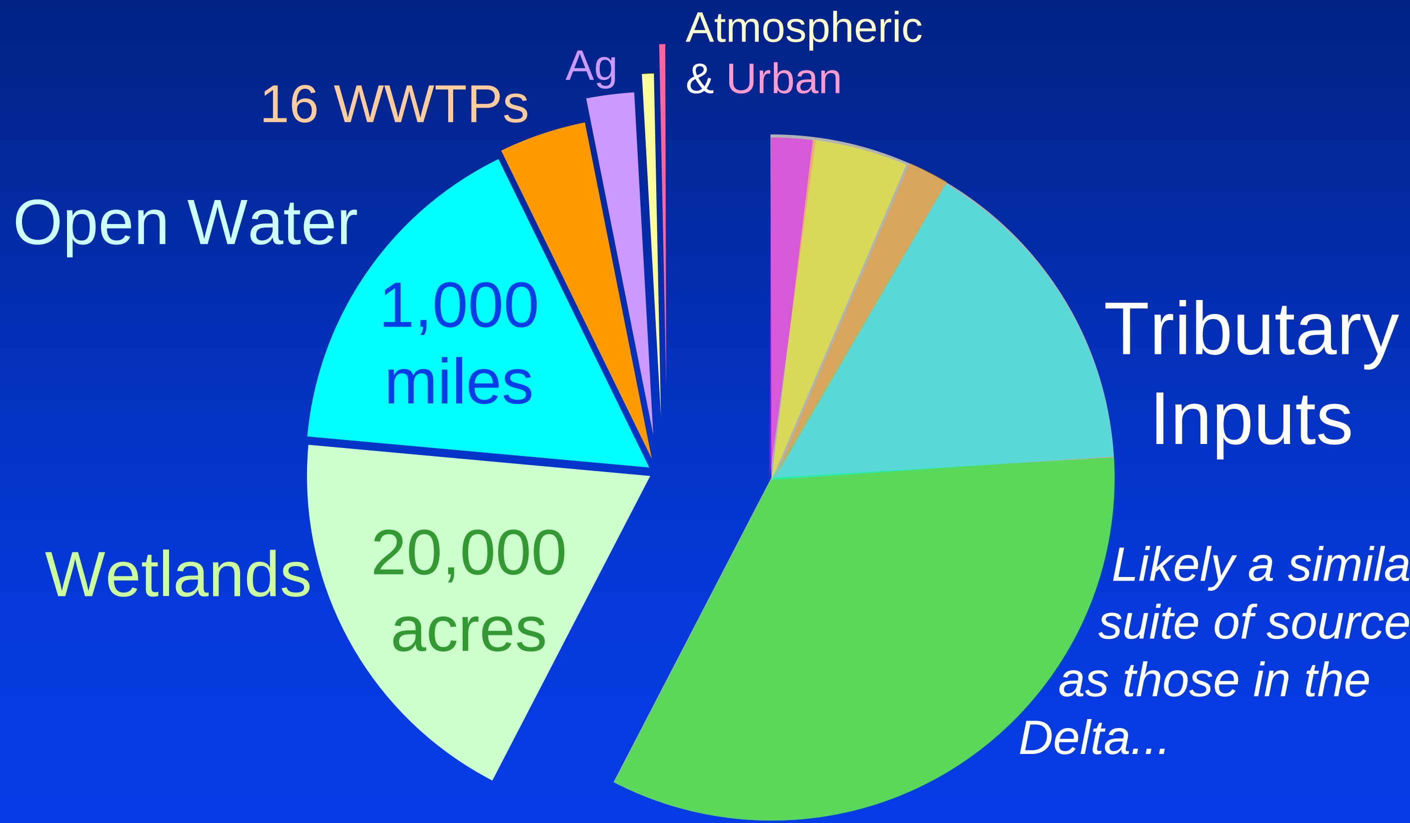
Proposed Control Strategy

- ☑ Allocations for MeHg sources
- ☑ Studies to verify that allocations are reasonable and achievable
- ☑ Board needs to re-evaluate the allocations after studies are completed

MeHg Sources



MeHg source categories are comprised of may individual discharges...



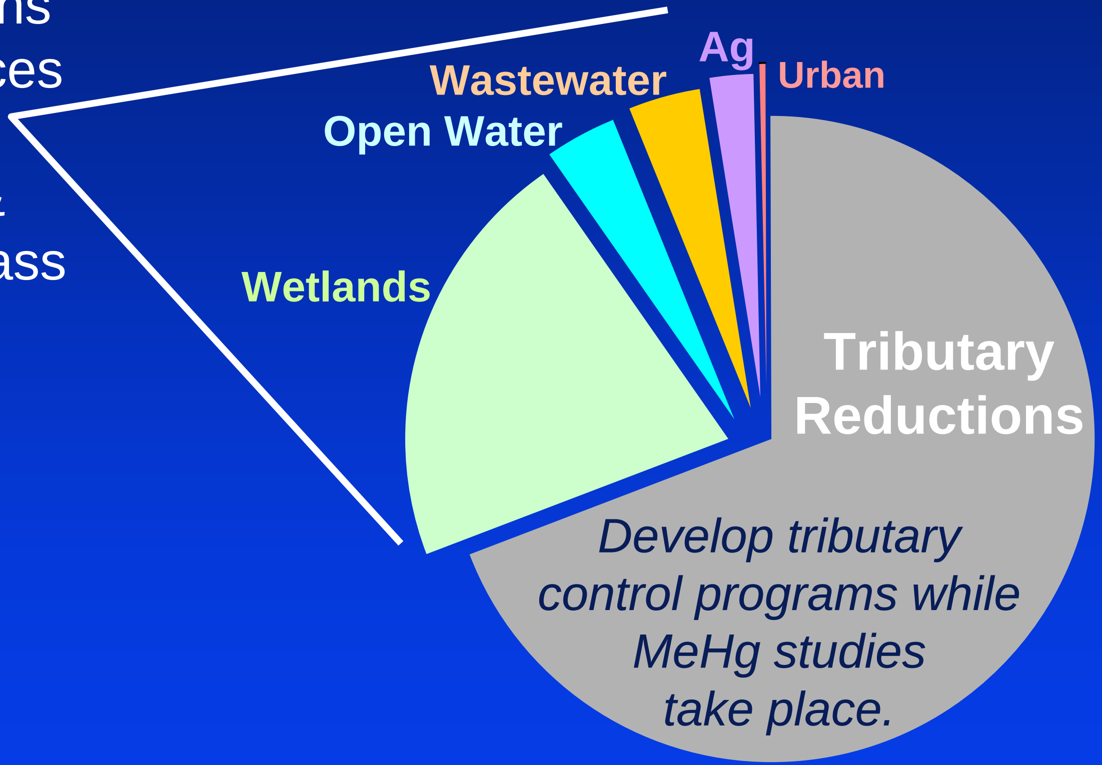
Likely a similar suite of sources as those in the Delta...

MeHg Allocations

- Sources in the Delta/Yolo Bypass: WWTPs; urban, wetlands, agriculture & open-water areas
- Tributary inputs
- Compliance by 2030 for most

Allocations Require MeHg Load Reductions

Reductions For Sources in the Delta & Yolo Bypass



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  - Fish Tissue Objective
  - Assimilative Capacity
  - Allocations
  - **Phased Implementation Strategy**
- Outstanding Policy Questions
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Phased Approach

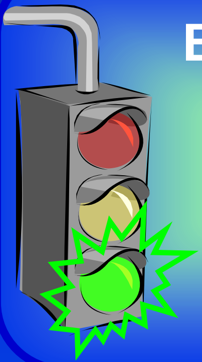
<u>Phase 1</u> (~2008-2016):

- ✓ MeHg studies
- ✓ Keep impairment from getting worse
- ✓ Implement high-priority Hg reduction projects
- ✓ Develop upstream control programs
- ✓ Review study results & revise program

Phased Approach

Phase 2 (~2016-2030):

- ✓ Implement MeHg controls



But it's okay to begin MeHg management during Phase 1!

Phase 1 MeHg Studies

- Determine how best to reduce MeHg sources
- Studies required for:
  - Irrigated agriculture & wetlands in the Delta & YB
  - 3 MS4s (out of 67)
  - 20 WWTPs (out of 60)
- Coordinate studies to reduce costs
- Technical Advisory Committee

Other Phase 1 Requirements to Minimize Potential Increases

- NPDES WWTPs & MS4s:
  - Interim, performance-based MeHg & Hg concentration limits
  - Implement pollution minimization measures for Hg
- New sources conduct studies & implement MeHg management practices as they are developed

Other Phase 1 Requirements

Inorganic Mercury Reductions

- Assigns ~30% Hg reduction to tributaries
- Cache Creek Settling Basin improvements
- Goal: reduce Hg concentrations in Delta sediment

Where does inorganic Hg come from?

Delta Sources:

- Wastewater treatment plants
  (dental, medical, household)
- Atmospheric deposition
  (local & global emissions)
- Urban runoff

Where does inorganic Hg come from?

<u>Watershed Sources [~97%]</u>:

- WWTP, atmospheric deposition & urban runoff
- Historic mining activities in tributary watersheds
- Geothermal springs
- Naturally mercury-enriched soils

Legacy Mercury

Millions of kilograms were released to waterways by historic mining operations.

Historic Mine Sites

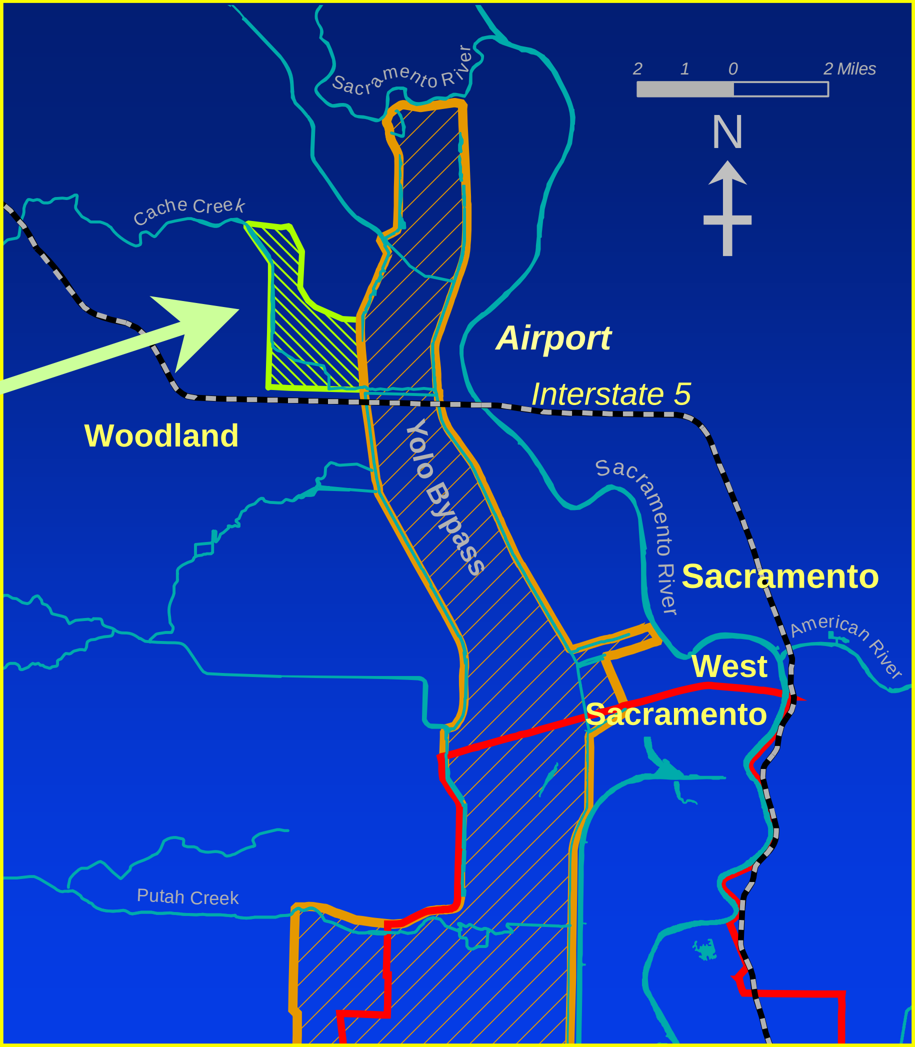
- >8,000 mines, ~80% of mine sites are upstream of dams
- Recent cleanup projects: Sulphur Bank, Abbott-Turkey, Polar Star and Sailor Flat

Historic Mine Sites

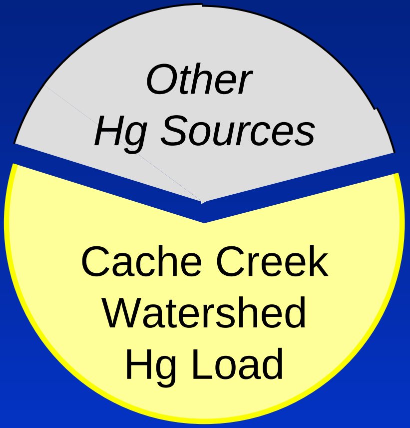
- Hg released before dams were built
- Dams trap mercury from upstream mines
- Upstream mine cleanups will benefit reservoirs and upstream creeks but not have much impact on the Delta
- Need to focus on legacy Hg downstream of dams

High Priority Legacy Hg Project:

Cache Creek Settling Basin



Cache Creek Settling Basin



- Cache Creek watershed exports ~60% of Central Valley Hg
- Settling Basin traps ~½ of the Hg & discharges ~½ to Yolo Bypass
- There is no maintenance program for the Settling Basin

Settling Basin is a High Priority

- As the Basin fills, Hg discharge to the Yolo Bypass will double

- The downstream Yolo Bypass has widespread wetlands & high MeHg in water & fish
  - If reduce Hg leaving the Basin,
    will reduce MeHg production in Bypass

Improving an existing basin is more cost-effective than building a new basin…

- ✓ Proposed amendment contains schedule for plan development & implementation
- ✓ Trying to set aside $5.5 M in proposed FY08/09 budget

Other Legacy Mercury Reduction Efforts

- ☑ Contractor to identify legacy Hg projects downstream of reservoirs
- ☑ High-priority Hg mine cleanups list sent to Senator Feinstein, identifies:
  - 31 high priority Hg sites in the Central Valley
  - Estimates of funding needed to remediate sites

What if at the end of Phase 1 on-site control methods for some MeHg sources are not economically or technically feasible?

Offset Projects:

Allow dischargers to comply with their MeHg allocations by conducting Hg or MeHg reduction project(s) elsewhere.

Two-part Approach:

TMDL
Review

~2009 Phase 1 ~2017 Phase 2 2030

Phase 1 "pilot" offset projects

Re-assess MeHg allocations & schedules.

Phase 2 long-term offset projects

Phase 1 Activities:
Phase 1 "Pilot" Offset Projects

Proposed amendment provides guidance:

- Can conduct both Hg & MeHg pilot offset projects
- Can conduct pilot projects in same watershed as discharge or in a different watershed

Phase 1 Activities:
Phase 1 "Pilot" Offset Projects

- Projects will provide useful information for Phase 2 offset projects
- May help make quicker improvements in the Delta

Phase 1 Activities:
Phase 1 “Pilot” Offset Projects

Proposed amendment provides guidance:

- Phase 1 pilot offset projects in conjunction with evaluating MeHg at the facility
- Scientific & public review

Phase 1 Activities:
Phase 1 "Pilot" Offset Projects

Proposed amendment provides guidance:

- Staff recommends credits be used to extend allocation compliance schedule by 5 years

How credit gets used is a policy decision.

Phase 1 Activities:

Develop Guidance for Phase 2 Offsets

- Staff, stakeholders, State Water Board & USEPA craft draft guidance for Phase 2 long-term offset projects
- Board addresses critical policy decisions

Credit for Early Pollution Prevention

- ☑ SRCSD 2000 NPDES permit allowed mercury credits for discharge below mass cap
- ☑ SRCSD reduced its Hg loads & has a Hg credit

Credit for Early Pollution Prevention

- ☑ Proposed amendment establishes criteria for approving credit if dischargers demonstrate reductions in Hg or MeHg discharges
- ☑ Credit used to extend allocation compliance schedule by up to 5 years

Activities Since March 2007

Made changes to proposed program based on comments from:

- March 2007 Board Workshop
- Prior 2 staff public workshops & >25 stakeholder meetings
- Scientific peer review & other stakeholder input
- More recent meetings regarding Cache Creek Settling Basin, wetland management & offset program

Activities Since March 2007

Based on the revised program, completed:

- CEQA environmental analysis
- Cost estimates for every program element

Changes to the Draft Amendment Since June 2006

- Clarified requirements for NPDES, irrigated agriculture & wetlands
- Offset guidance & credit methods for early pollution prevention efforts
- Reduced # of entities responsible for studies

Changes to the Draft Amendment Since June 2006

- Simplified requirements for dredging and dredge disposal
- Added requirements for activities to reduce human exposure to fish Hg
- Added technical advisory committee

Response to Comments

- Staff made many changes in response to stakeholder comments
- Did not make suggested changes if staff thought the changes would result in a program that would be:
  - Ineffective, or
  - Unacceptable to State Water Board & USEPA

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- Regulatory Background
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- **Outstanding Policy Questions**
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Stakeholder Suggestions

- Delta control program should not focus any control efforts on MeHg sources
- Focus only on upstream sources of legacy mercury
- Do not include anything in the amendment that can be interpreted as effluent or receiving water limits for MeHg

1. Should the Delta control program focus only on making legacy mercury reductions and not require control actions for methylmercury sources?

Ways to Reduce MeHg in Delta Waters if Focus Only on Legacy Hg

- Reduce Hg in sediment
  (reduces MeHg produced by Delta wetlands & open-water areas)
- Control activities that enhance MeHg production in wetlands & open-water areas
- Reduce MeHg discharges from external sources
  (e.g., WWTPs, urban runoff & irrigated Ag)

1. Should the Delta control program focus only on making legacy Hg reductions and not require control actions for MeHg sources?

Staff Recommendation

Focus on both:

- Legacy Hg reductions in the tributary watersheds
and
- MeHg source controls in the Delta and watersheds

1. Should the Delta control program focus only on making legacy Hg reductions and not require control actions for MeHg sources?

Focusing only on legacy Hg reduction:

- Would take much longer to make measurable improvements
- Likely would not achieve fish tissue objectives in every Delta area
- Does not incorporate best available science

1. Should the Delta control program focus only on making legacy Hg reductions and not require control actions for MeHg sources?

- If program address both Hg & MeHg:
  - Shorten time to observe improvements
- If program does not address both Hg & MeHg:
  - MeHg could increase due to wetland expansion, population growth & water management changes

Total Mercury TMDL Scenario

- Would assign Hg allocations for NPDES, atmospheric deposition, & tributaries
- There would be no controls required for wetlands, agriculture or open water
- Reduction efforts would focus on tributary legacy mercury

Total Mercury TMDL Scenario

Staff does not recommend this approach because:

- It would likely not achieve the proposed fish tissue objective in all areas of the Delta
- It would take centuries for all legacy mercury to be removed

Total Mercury TMDL Scenario

Fish tissue objective likely not achievable in San Joaquin, Yolo Bypass & Marsh Creek areas of the Delta:

- No more than 2 meals per month for people
- Not protective of wildlife (e.g., mink and kingfisher)

Total Mercury TMDL Scenario

Fish tissue objective may be achievable in Sacramento & other Delta areas:

- Protective of wildlife
- 1 meal/week for people
- *However, likely would take centuries to achieve observable improvements*

1. Should the Delta control program focus only on making legacy Hg reductions and not require control actions for MeHg sources?

Best available science supports concept that controlling MeHg in water will fix fish MeHg impairment.

1. Should the Delta control program focus only on making legacy Hg reductions and not require control actions for MeHg sources?

Even if the Delta control program were to focus only on legacy Hg,
it would most likely be required to have
MeHg components similar to the
San Francisco Bay control program.

San Francisco Bay Mercury Control Program
Background

- Fish tissue objectives to protect wildlife and enable people to consume 1 meal/week
- Total mercury allocations based reducing sediment Hg levels

San Francisco Bay Mercury Control Program

Background

- Wastewater treatment plants:
  - 19 plants with highest Hg loads required to reduce Hg loads by 20-40%
- Urban stormwater: 50% Hg load reduction
- Allocation to Central Valley: 330 kg/yr
  - Ongoing studies suggest the Central Valley is meeting this allocation

San Francisco Bay Mercury Control Program

Methylmercury Requirements

- MeHg studies & monitoring:
  - NPDES facilities & stormwater, dredging, wetland projects
- Dredging and disposal operations:
  - No increase in Hg bioavailability
- Wetland restoration projects:
  - No net increase in Hg or MeHg loads to Bay

Questions 2 - 4:

Which MeHg source categories should be required to conduct studies & make reductions?

2. Should small sources be required to reduce their methylmercury loads?

2. Should small sources be required to reduce their methylmercury loads?

- With a few exceptions, all individual MeHg discharges are small
- Tributaries also have small individual discharges
- The sum of individual discharges in the Delta and its tributary watersheds cause the Delta impairment

3. Should future water management, flood control, dredging & salinity-related projects be required to evaluate their potential impacts on MeHg levels in the Delta and mitigate MeHg increases?

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These activities may affect MeHg levels in the Delta.

3. Should future water management, flood control, dredging & salinity-related projects be required to evaluate their potential impacts on MeHg levels in the Delta & mitigate MeHg increases?

Staff recommendations:

- New projects consider MeHg along with other water flow and quality mandates
- If new projects are predicted to increase MeHg, then evaluate potential MeHg controls and mitigate to the extent feasible
  - e.g., controls that do not conflict with other water quality or flow mandates

3. Should future water management, flood control, dredging & salinity-related projects be required to evaluate their potential impacts on MeHg levels in the Delta & mitigate MeHg increases?

Cache Creek Settling Basin Improvements

- Staff considers this a high priority because improving the Basin would benefit:
  - Flood & sediment control activities in the Yolo Bypass by reducing sediment buildup in the Bypass
  - Downstream wetland restoration projects by reducing sediment Hg concentrations

3. Should future water management, flood control, dredging & salinity-related projects be required to evaluate their potential impacts on MeHg levels in the Delta & mitigate MeHg increases?

Cache Creek Settling Basin Improvements

- DWR was named in draft amendment as responsible for improving the Settling Basin, but there is disagreement about this.
  - DWR maintains Basin levees and manages the high and low flow weirs.

3. Should future water management, flood control, dredging & salinity-related projects be required to evaluate their potential impacts on MeHg levels in the Delta & mitigate MeHg increases?

<u>Policy Questions</u>:

- Does the Board agree with the proposed approach for water management activities?
- Does the Board agree with the proposed approach for improving the Settling Basin?

4. Should wetland managers be required to conduct Phase 1 MeHg studies & develop MeHg management practices?

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Staff recommendations:

Require wetland managers to:

- Conduct Phase 1 MeHg studies
- Evaluate MeHg management practices & effects on habitat function
- Implement feasible MeHg management practices during Phase 2

4. Should wetland managers be required to conduct Phase 1 MeHg studies & develop MeHg management practices?

- Existing wetlands account for substantial MeHg loading
- Substantial wetland expansion planned

4. Should wetland managers be required to conduct Phase 1 MeHg studies & develop MeHg management practices?

- CalFed commitment:
  - Up to 90,000 acres increase, much in the Yolo Bypass
- Yolo Bypass:
  - Some of the highest fish MeHg in the Central Valley
- CalFed Record of Decision:
  - Found that MeHg mitigation should be developed for wetlands

4. Should wetland managers be required to conduct Phase 1 MeHg studies & develop MeHg management practices?

DFG Yolo Bypass wetlands MeHg management study:

- Preliminary results: permanently flooded wetlands produce less MeHg than seasonally-flooded wetlands
- DFG is evaluating possibility of draining seasonal wetlands through permanent ones to reduce MeHg levels

4. Should wetland managers be required to conduct Phase 1 MeHg studies & develop MeHg management practices?

At the end of Phase 1:

- Consider wetland benefits and potential detrimental effects of MeHg management
  - Board may find wetland benefits outweigh MeHg management concerns & determine wetlands are exempt from implementation of MeHg control projects, or
  - Board may find that MeHg reductions are feasible and require MeHg management
- Difficult decision without study results

Two-part Approach for Offsets:

TMDL Review

~2009 Phase 1 ~2017 Phase 2 2030

Phase 1 "pilot" offset projects

Re-assess MeHg allocations & schedules.

Phase 2 long-term offset projects

5. How should the Board address Mercury Offset Projects?

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Sacramento Regional County Sanitation District (District) submitted a proposal for an offset project for the Cache Creek Settling Basin:

- Credits to be used in lieu of reducing Hg & MeHg discharges from District's plant
- District wants specific language in Basin Plan for long-term offset project in a watershed different from its discharge

5. How should the Board address Mercury Offset Projects?

Policy Question (1):

- What should be the approval process for an offset project?

District would like its offset project adopted into the Basin Plan as part of the Delta TMDL control program

5. How should the Board address Mercury Offset Projects?

Policy Question (1):

- What should be the approval process for an offset project?

Pro's & Con's of Offsets in Basin Plan:

+ Basin Planning process provides thorough public & scientific review
+ Provides surety for the discharger
- More difficult to make changes

5. How should the Board address Mercury Offset Projects?

Policy Question (1):

- What should be the approval process for an offset project?

Staff recommendations:

Include guidance for Phase 1 offsets in amendment:

- Scientific and public review
- Board Resolution or waste discharge requirements to approve projects

5. How should the Board address Mercury Offset Projects?

Policy Question (1):

- What should be the approval process for an offset project?

Proposed amendment does not include:

- Phase 2 guidance for long-term projects
- SRCSD's specific project proposal

5. How should the Board address Mercury Offset Projects?

Policy Question (1):

- What should be the approval process for an offset project?

SRCSD project needs scientific and public review:

- Additional peer review: Could delay TMDL adoption by 12-18 months
- Long-term offset projects need to ensure objectives are met in all Delta areas, as required by Clean Water Act

5. How should the Board address Mercury Offset Projects?

Policy Question (2):

- How should credit from the offset program be applied?

5. How should the Board address Mercury Offset Projects?

Policy Question (2):

- How should credit from the offset program be applied?

- Credits not necessarily accumulated at the same time and rate as the Hg discharge
- Credits earned now would be “banked” and used over several years or decades

5. How should the Board address Mercury Offset Projects?

Policy Question (2):

- How should credit from the offset program be applied?

Pro’s & More Questions:

\+ Potentially more rapid improvements, but

- How much credit can be accumulated?
- Can enough offset credit be accumulated so that the discharger never takes actions to reduce effluent mercury?
- Should the credits last forever, or should unused credits “expire” at a set time?

5. How should the Board address Mercury Offset Projects?

Policy Question (2):

- How should credit from the offset program be applied?

Staff recommendation:

Allows Phase 1 offset project credits to offset discharges up to 2035, ~25 years from now

5. How should the Board address Mercury Offset Projects?

Policy Question (2):

- How should credit from the offset program be applied?

Dischargers' Concern:

5 year extension for
compliance timeline &
potential for future on-site controls
are a disincentive
for Phase 1 pilot projects

5. How should the Board address Mercury Offset Projects?

Policy Question (3):

- Is SRCSD's project appropriate for a long-term project?

Proposed Project: Sediment removal from Cache Creek Settling Basin to reduce Hg discharged to Yolo Bypass

5. How should the Board address Mercury Offset Projects?

Policy Question (3):
Is SRCSD's project appropriate for a long-term offset project?

- No agreement on credit amounts
- Scientifically difficult to equate Hg and MeHg discharges in different watersheds
- Benefit to Yolo Bypass, no benefit to Sacramento River where District discharges

5. How should the Board address Mercury Offset Projects?

Policy Question (3):
Is SRCSD's project appropriate for a long-term offset project?

Re-phrasing the Question:

Is it a problem that the proposed offset project is not in the same watershed as the District's discharge?

5. How should the Board address Mercury Offset Projects?

<u>Policy Question (3)</u>:
Is SRCSD's project appropriate for a long-term offset project?

Settling Basin improvements will not improve Sacramento River for 30 miles downstream from plant, a popular fishing location, so

- Fish will continue to be influenced by District's current discharge & future increases,

  or

- Other upstream MeHg sources will need more reductions

5. How should the Board address Mercury Offset Projects?

Policy Question (3):
Is SRCSD's project appropriate for a long-term offset project?

- Staff recommendation:
  Allow Phase 1 offset projects in different watersheds because of the benefits of early Hg removal
- No staff recommendations at this time for Phase 2 long-term offsets
  - Board policy decision when considering Phase 2 offset program

Study Costs

Dischargers and State agencies have voiced concerns about the potential cost of the Phase 1 studies.

Study Costs

<u>Staff Estimates</u>:

- Wetlands: $400k to $3M
- WWTPs: $500k to $1M
- Total cost for all studies: $2M to $6M
  (wetlands, WWTPs, MS4, irrigated agriculture)
- Technical advisory committee:
  $300k to $500k

Potential Funding

- $5.5M for Cache Creek Settling Basin
- $500k for wetland management practices

Outline

- Regulatory Background
- The Delta Mercury Problem
- Proposed Mercury Control Program
- Outstanding Policy Questions
- **Additional Amendment Options**

Options

<u>Stakeholder Concern</u>:

Delta control program addresses only the 30% of the MeHg impairment from Delta sources & 70% (tributary sources) is not addressed.

Options:
A. Upstream Control Programs

- Could modify amendment to delay start of Phase 2 Delta MeHg implementation actions until the upstream control programs have been adopted
- Staff would develop upstream control programs during Phase 1

Options

Stakeholder Concern:

State should be responsible for some portion of Phase 1 studies & Phase 2 implementation because tributaries are “waters of the State”.

Options:
B. Allocations to the State

- Staff could research the possibility of assigning a MeHg allocation to the State
- State government would be responsible for a portion of the mercury studies & implementation of MeHg & legacy Hg controls

Options

Uses of MeHg goal for ambient <u>Delta water (0.06 ng/l)</u>

- Link between water & fish
- Determine how much sources need to be reduced to achieve proposed fish tissue objective
- Determine which sources conduct MeHg studies

Options

Stakeholder Concern:

Goal could appear in permits as an effluent or receiving water limit.

Options:
C. Concerns about MeHg goal for ambient Delta water

- Staff added language to amendment to clarify goal’s use
- Concerns remain

Options:
C. Concerns about MeHg goal for ambient Delta water

- Could consider not mentioning goal in amendment
- Could consider modifying Phase 1 performance-based concentration limits for use as interim limits in NPDES permits

Options

Stakeholder Concern:

Developing a regional monitoring program would be more cost-effective than requiring every discharger to monitor receiving water.

Options:
D. Regional Monitoring Program

Could modify amendment to allow dischargers to establish a regional monitoring program.

Options:
E. Frequency of Staff Updates to the Board

- Proposed amendment includes schedule for updates every 2 to 3 years
- Staff could provide annual updates addressing TAC and study progress

Options:

F. Exemptions for Time-Critical & "de minimis" Projects

Recent DWR Comments:

Certain flood control projects are either time critical or are so small that Hg impacts are not expected.

Options:

F. Exemptions for Time-Critical & "de minimis" Projects

- Could modify the proposed amendment to allow exemptions for *de minimis* & emergency flood protection projects.
- DWR & Board permitting staff would need to determine how to define *de minimis* projects.

Summary

- Addressing mercury problems in the Delta is a high priority
- Proposed control program would:
  - Result in short-term improvements
  - Establish framework to protect wildlife and enable humans to eat 1 meal a week of Delta fish

Summary

- Phased approach for implementing the fish tissue objective & MeHg load allocations
- During next 8 years:
  - MeHg studies
  - Improvements to Cache Ck. Settling Basin
  - Minimize new inputs
  - Develop tributary control programs
  - Re-assess Delta allocations & schedule

Summary

Long-term Goal: Reduce Delta sediment Hg as much as possible

- Settling Basin improvements could reduce sediment Hg in Yolo Bypass relatively quickly
- Identifying other legacy projects is a high priority, but it is likely that many legacy sources will not be easy to control
- Natural processes could take 100’s of years to reduce sediment Hg

Summary

Need both Hg and MeHg control to ensure:

- ✓ Proposed fish tissue levels would be achieved in all areas of the Delta
- ✓ Delta impairment is addressed as quickly and efficiently as possible

Additional Comment Letters

- Southeast Asian Assistance Center
- People for Children's Health and Environmental Justice
- Clean Water Action, Environmental Justice Coalition for Water, Baykeeper
- Delta Mercury Collaborative
- Yolo County
- UC Davis Researcher
- USEPA

Summary

- Staff made numerous changes to the control program based on stakeholder input
- Need Board's direction on "Outstanding Policy Questions" & "Additional Amendment Options"

Questions to Consider

1. Should the Delta control program focus only on making legacy mercury reductions and not require controls for methylmercury sources?
2. Should small sources be required to reduce their methylmercury loads?
3. Should future water management, flood control, dredging, and salinity-related projects be required to evaluate their potential impacts on methylmercury levels in the Delta and mitigate for any methylmercury increases?
4. Should wetland managers be required to conduct Phase 1 studies and develop methylmercury management practices?
5. How should the Board address Mercury Offset Projects?

Additional Options to Consider

1. Develop upstream control programs before starting Delta Phase 2 MeHg implementation
2. Assign allocation and study requirements to the State
3. Do not mention 0.06 ng/l goal in amendment
4. Allow regional monitoring program
5. Schedule more frequent Board updates
6. Provide exemptions for “de minimis” and emergency flood control projects

Questions?