Phase 4 of Bay-Delta Effort: Overview & Background

Dan Schultz
Nicole De La Mora
Division of Water Rights
Public Trust Unit
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Presentation Outline

- Definitions
- Phase 4 Overview – Flow Objectives for Priority Tributaries (Sacramento River focus)
- Next Steps

DEFINITIONS

Flow Criteria

Flow Objective

Public Trust

Beneficial Uses

Flow Criteria

- The range of instream flow needed to ensure the viability of aquatic dependent species, and to support geomorphic processes that create and maintain habitat
- Provide the technical basis for the development of flow objectives
- Do not consider competing uses of water
- Do not have regulatory effect

Flow Objectives

- The quantity of instream flow required to maintain ecologically sustainable watersheds, while concurrently balancing all beneficial uses of water
- State Water Board determination that has regulatory effect
- Tributary-specific flow objectives will be developed as a component of tributary-specific policies

Public Trust

- The State Water Board is responsible for the protection of public trust uses, including commerce, navigation, recreation, and habitat for fish and wildlife, which are held in trust for the public.

- The State Water Board must consider these responsibilities when planning and allocating water resources, and protect public trust uses whenever feasible.

Beneficial Uses of Water

- Beneficial uses of water, pertaining to water rights include: domestic; irrigation; power; municipal; mining; industrial; fish and wildlife preservation and enhancement; aquaculture; recreational; stock watering; water quality; frost protection; and heat control.
  - California Code of Regulations (CCR) §659-672

Beneficial Uses of Water (con't)

- Water quality control plans (basin plans) also designate beneficial uses
- Beneficial uses of waters of the state that "may be protected against quality degradation include, but are not limited to: domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" - Water Code §13050
- Examples: water contact recreation, cold and warm freshwater habitat, cold and warm water spawning habitat, agricultural supply, commercial and sport fishing, etc.

Phase 4 of Bay-Delta Effort

State Water Board Bay-Delta Activities

- Phase 1: Bay-Delta Plan review and update of the San Joaquin River flow and southern Delta salinity objectives and program of implementation
- Phase 2: Comprehensive review and update of other components of the Bay-Delta Plan and program of implementation
- Phase 3: Amendment of water rights and other measures to implement changes to the Bay-Delta Plan resulting from Phases 1 and 2
- **Phase 4: Development and implementation of flow criteria and flow objectives for priority tributaries to the Sacramento-San Joaquin Delta watershed, with a focus on the Sacramento River watershed**

Phase 4 Process

1. Development of non-binding flow criteria
2. Development of flow objectives and implementation plans
3. Development of policies for water quality control
4. Implementation of policies through conditioning of water rights and other measures as appropriate

Policies for Water Quality Control (Water Code §§13140-13147)

- Tributary-specific
- Include flow objective(s), implementation plan, and adaptive management
- Principles, guidelines, and requirements for maintaining instream flows and habitat connectivity to protect public trust resources, while minimizing impacts on other beneficial uses of water
- Complement or enhance existing efforts to make significant positive progress towards protection of public trust resources and other beneficial uses of water

Phase 4 Goal

- Focus on Sacramento River watershed
- Establish and implement flow objectives for a minimum of five priority tributaries in the Bay-Delta watershed by 2018 – as policies for water quality control
- Work to continue on remaining priority tributaries thereafter
- Consistent with Delta Stewardship Council's *Final Delta Plan*

Phase 4 Objectives

- Achieve characteristics of a natural hydrograph
  - Maintain inter-annual variability
    - Variability in water year types
    - Variability in magnitude of peak flow events
  - Maintain intra-annual events
    - Fall peak flows
    - Winter peak flows
    - Spring snowmelt
    - Summer baseflows

Phase 4 Objectives

- Restore natural geomorphic processes, to maintain channel habitat
  - Floodplain and side channel inundation
    - Annual spring event
  - Channel flushing flows
    - Annual fall or early winter event
  - Channel maintenance flows
    - 1.5-3 year return interval
  - Channel forming flows
    - 5, 10, and 15 year return interval

Phase 4 Objectives

- Restore natural high flow recession rates
  - Prevent juvenile salmonid stranding
  - Promote riparian seed dispersal
  - Trigger natural species reproduction patterns

Phase 4 Objectives

- Restore self-sustaining resilient populations of anadromous salmonids and other native species by:
  - Addressing flow-related salmonid passage impediments
  - Increasing the quantity and quality of salmonid spawning and rearing habitat
  - Reducing water temperature
  - Restoring natural aquatic habitat connectivity

Phase 4 Objectives

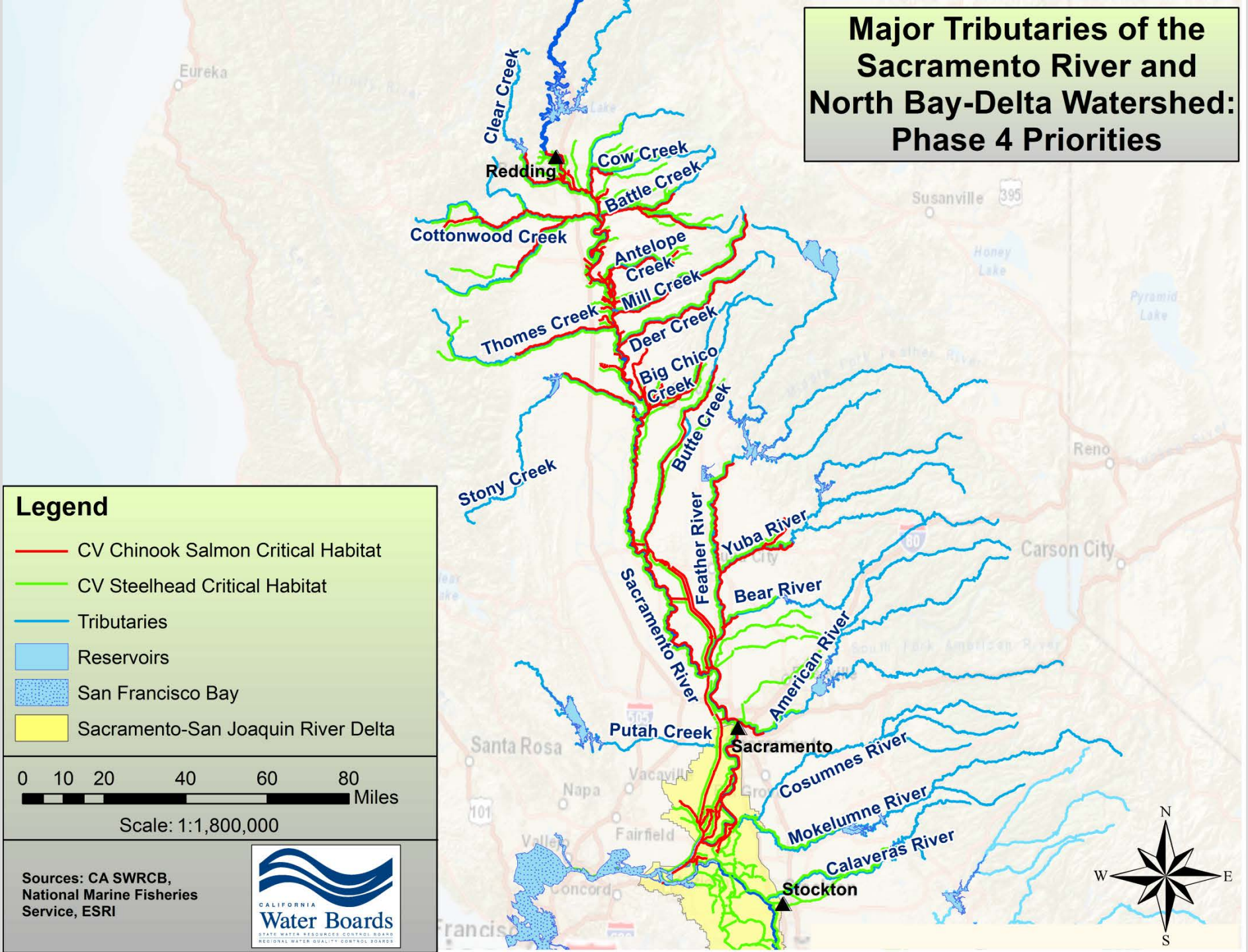
- Preserve existing beneficial uses of water to the maximum extent possible
- Minimize impacts to water right holders
  - Provide a reliable water supply
  - Promote off-season deliveries and storage
  - Promote water conservation

Flow Criteria Methodology

Flow Criteria Method Objectives

- Leverage limited resources available to conduct needed studies over large geographic area
- Applicable to bulk of each tributary's watershed
- Address multiple species or life stages and fluvial processes
- Responsive to critical and time-sensitive need to address flow-related impacts contributing to the decline of threatened and endangered species

Major Tributaries of the Sacramento River and North Bay-Delta Watershed: Phase 4 Priorities



Legend

- CV Chinook Salmon Critical Habitat
- CV Steelhead Critical Habitat
- Tributaries
- Reservoirs
- San Francisco Bay
- Sacramento-San Joaquin River Delta

0 10 20 40 60 80 Miles

Scale: 1:1,800,000

Sources: CA SWRCB, National Marine Fisheries Service, ESRI

California Water Boards
State Water Resources Control Board
Regional Water Quality Control Boards

Major Tributaries in the Phase 4 Planning Area (in alphabetical order)

American River	Clear Creak	Mill Creek
Antelope Creek	Cosumnes River	Mokelumne River
Auburn Ravine	Cottonwood Creek	Paynes Creek
Battle Creek	Cow Creek	Sacramento River (below Keswick)
Bear River	Deer Creek	Stony Creek
Big Chico Creek	Dry Creek	Thomes Creek
Butte Creek	Feather River	Yuba River
Calaveras River	McClure Creek	

Flow Objectives to be developed as part of Phase 1 Bay-Delta Plan Update

Merced River
San Joaquin River
Stanislaus River
Tuolumne River

Flow Criteria Development (to date)

- July 2013: State Water Board submitted *Request for Recommendation of Method to Develop Flow Criteria for Priority Tributaries to the Sacramento-San Joaquin Delta* to the Delta Science Program
  - Scientifically Defensible
  - Cost-effective
  - Applicable to the bulk of each tributary's watershed
  - Can be implemented in a timely fashion

Flow Criteria Development (to date)

- February 2014: Delta Science Program transmitted the report developed by an independent review committee - *Recommendations for Determining Regional Instream Flow Criteria for Priority Tributaries to the Sacramento-San Joaquin Delta*
- March 2014: State Water Board workshop on the Delta Science Program's recommendation.

DSP Panel Recommendation: Use of a Hybrid Approach

1. Stream and river classification based on geomorphic, hydrologic, geographic, and/or faunal characteristics
2. Hydrologic analyses that separate the hydrograph into flow regimes (blocks) and examine historical changes
3. Assessment of whether any site-specific field work is required in the catchment or river reach to address specific information gaps
4. Extrapolation of understanding of flow-ecology relationships from other sites to the study catchment or segment
5. Production of an environmental flow regime that meets the needs of species and ecosystem processes in the system
6. Assuring clear and transparent dialogue and interaction between scientists and stakeholders
7. Designing an effective adaptive management protocol with robust implementation measurements to support the decision-making process

1. Stream Segment Classification

- Classify streams and group similar stream segments using a process-based classification scheme
  - Should consider: watershed size, hydrologic regime, dominant geomorphic features, faunal assemblages

2. Hydrologic Analysis

- Conduct a hydrologic analysis that includes the separation of the hydrology into key flow regime components
  - Spring snowmelt, summer baseflows, etc.
- Flow criteria development should be based on the full range of flows, and on multiple species

3. Assessment of Site-Specific Field Work Requirements

- Determine what data exists, and identify information gaps
- Conduct site-specific field work to address information gaps
- Field efforts should target representative species assemblages and processes

4. Extrapolation of understanding of flow-ecology relationships

- Regionalize data by extrapolating the findings of processes and relationships from one site to other sites within each group of stream segments.
- Should focus on key hydrologic components that drive geomorphic and ecological processes
  - Peak and overbank flood flows, spring snowmelt recession flows, summer baseflows, first flush events, etc.

Phase 4 Next Steps

- Develop *Strategy for Establishing Flows for Tributaries to the Bay-Delta* (Phase 4 Strategy); Anticipate Strategy will contain:
  - Goals and objectives of Phase 4 effort
  - Overview of process
  - Flow criteria methodology
  - Priority Tributaries

  - Timeframe: Draft Strategy anticipated for release for public comment in Fall 2014

Phase 4 Resources

- Phase 4 Webpage:

  http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/flow_objectives/index.shtml

- To receive email subscriptions:

  http://www.waterboards.ca.gov/resources/email_subscriptions/

  - Select “State Water Resources Control Board”
  - Enter email address and full name
  - Under Categories, select “Water Rights Topics”
  - Select “Delta Watershed Flow Objectives (Phase 4 of Bay-Delta effort)”
  - Click “Subscribe” button at top


Phase 4 of Bay-Delta Effort

State Water Board's Mission

To preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations

Authorities

- Dual authorities (water allocation and water quality protection) to provide comprehensive protection of California's waters
- Protect and enforce water quality standards (beneficial uses + water quality objectives + antidegradation)
- Protect public trust resources
- Balancing role

Recent History

- 2009 Delta Reform Act (Senate Bill X7-1)
  - Water Code §§ 85086 & 85087

Water Code (Delta Reform Act)

§85086

"For the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan, the board shall, ***pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources****"*

§85087

"The board […] shall submit to the Legislature a prioritized schedule and estimate of costs to complete instream flow studies for the Delta and for high priority rivers and streams in the Delta watershed […] and for all major rivers and streams outside the Sacramento River watershed […]"

History Continued

- 2010: State Water Board submittal to Legislature – *Instream Flow Studies for the Protection of Public Trust Resources: A Prioritized Schedule and Estimate of Costs*
  - Included 138 rivers and streams (28 Delta tributaries)
  - Determined which rivers and streams should be prioritized for instream flow studies

http://www.waterboards.ca.gov/publications_forms/publications/legislative/docs/2011/instream_flow2010.pdf

- 2010: State Water Board completed report: *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*

History Continued

- 2013: Delta Stewardship Council's Final Delta Plan
  - Co-equal goals:
    - Provide a more reliable water supply for California
    - Protect, restore, and enhance the Delta ecosystem
  - Directs State Water Board "By June 2, 2018, adopt, and as soon as reasonably possible, implement flow objectives for high-priority tributaries in the Delta watershed that are necessary to achieve the coequal goals"