

# Primary Issues

- Which species populations, and life stages are most sensitive to diversion effects under each alternative?
- What degree of benefit and impact will the common programs provide?
- What is the risk and chances of success of species recovery for each alternative?



# Diversion Effects on Fish

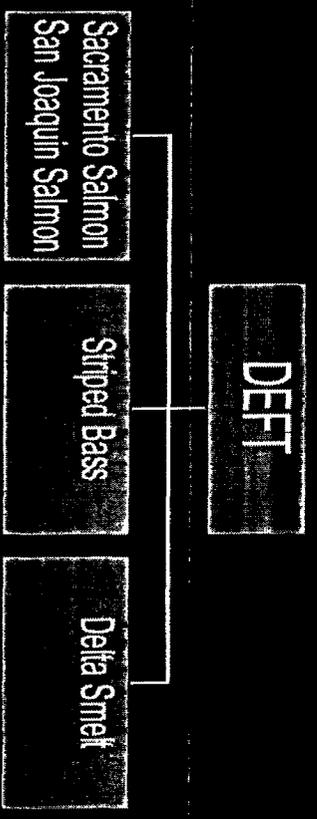


# Interagency/Stakeholder Team

- |                            |                                  |
|----------------------------|----------------------------------|
| • Pat Brandes (USFWS)      | • Larry Brown (USBR)             |
| • Sheila Greene (DWR)      | • Mike Thabault (USFWS)          |
| • Serge Birk (CVP/WA)      | • Bruce Herbold (USEPA)          |
| • Pete Chadwick (DFG)      | • Pete Rhoads (MWDSC)            |
| • Karl Halupka (NMFS)      | • Mike Fris (USFWS)              |
| • Jim White (DFG)          | • Jim Buell (MWDSC)              |
| • Lee Miller (DFG)         | • Ron Ott (CALFED)               |
| • Elise Holland (Bay Inst) | • Several others                 |
| • Kevan Urquhart (DFG)     | contributed that are not on DEFT |
| • Dale Sweetnam (DFG)      |                                  |



# Interagency/Stakeholder Team



## Peer Review

- American Fisheries Society
  - Anonymous five person panel, Report by executive director
  - Review completed in 4 Weeks
- General Questions
  - Does the process appear to be logical and make biological sense?
  - How does this process compare to others you have experienced?
  - How would you incorporate the evaluation of the ecological process into a decision?
  - How adequate are our analysis tools that we applied?
  - Do the species teams reports support the conclusions in the summary?



## Assumptions and Limitations

- Biological Scope
  - Representative three species (salmon, striped bass, delta smelt)
  - Green sturgeon, white sturgeon, Longfin smelt, Sacramento splittail, American shad
  - May need future analysis
- Geographical Scope
  - Limited to Delta, Suisun Bay and Suisun Marsh
  - Team and time precluded upstream, ocean
  - Unable to assess overall recovery



## Primary Issues for the next phase

- To what extent can diversion effects be offset by modifications to the alternatives or by operational changes?



## Assumptions and Limitations (con't)

- Process
  - Best professional judgement (using data, models, existing info)
  - Time constraints precluded more quantitative analysis
  - Multiple sources of uncertainty considered
- Procedures and Inputs
  - Single operations for each scenario (VAMP, WQCP, Biological Opinions for delta smelt and winter-run)
  - No new storage and maximum new storage
  - No attempt to minimize impacts or maximize benefits



# Assumptions and Limitations (con't)

- Common Programs
  - Benefits to species, but some impacts
  - Magnitude of benefits uncertain
- Water Quality
  - Effects unknown, but potentially significant
  - Address in the next phase
  - Need coordination with the water quality team
- Exotics
  - New species may alter estuary - almost certain
  - Unlikely that effects will change the performance of alternatives relative to each other



# Delta Smelt Alt 2 Wet Years

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
Entrainment	0	0	0	0	0	0	0	0	0	0	0	0	0
Entrainment (export)	0	0	-1	-1	-1	-1	-2	-2	-2	-2	-1	-1	0
OCF predation	0	0	-1	-1	-2	-2	-2	-2	-2	-2	-1	-1	0
Handling	0	0	0	0	-1	-1	-1	-2	-2	-2	-1	0	0
Hydrodynamics	0	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	0
Cross-Delta Flow	0	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	0
Quest	0	0	0	0	0	0	0	0	0	0	0	0	0
Oli River @Beacon Island	0	0	-1	-2	-2	-2	-2	-2	-1	-1	-1	0	0
Sec River @ Rio Vista	0	0	0	0	0	0	0	0	0	0	0	0	0
SI River @ Antioch	0	0	0	0	0	0	0	0	0	0	0	0	0
Predation	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0
Food supply	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0
Shallow nearshore habitat	0	0	0	0	0	0	0	0	0	0	0	0	0
Salinity/2	0	0	0	0	0	0	0	0	0	0	-1	-1	-1
Agricultural diversions	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0

# Impact Matrix Species Life stages for all Alternatives

- Direct and indirect effects
  - Entrainment
  - Hydrodynamics
  - Predation
  - Handling
  - Food Supply
  - Shallow/ Near shore habitat
  - Water Quality (contaminants, temperature, salinity)
  - Agriculture diversions
  - Straying



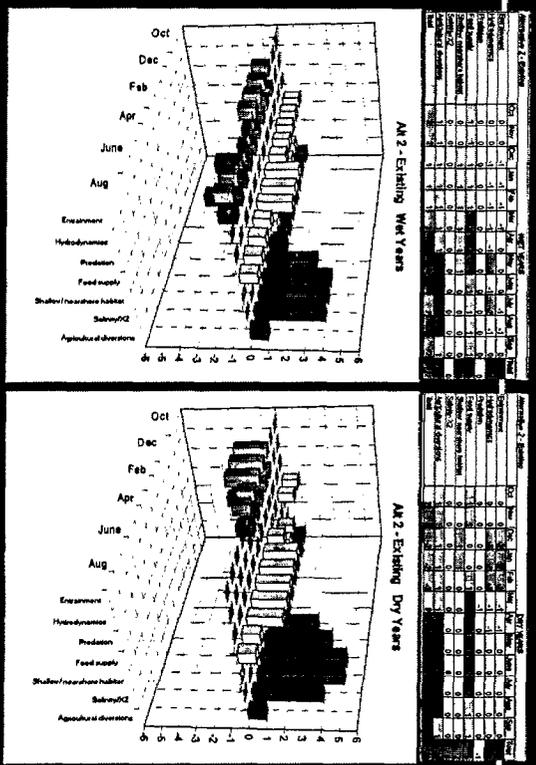
# Delta Smelt Alt 2 Dry Years

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
Entrainment	0	0	0	0	0	0	0	0	0	0	0	0	0
Entrainment (export)	0	0	-1	-1	-1	-1	-1	-2	-2	-2	-2	-2	0
OCF predation	0	0	-1	-1	-2	-2	-2	-2	-2	-2	-2	-2	0
Handling	0	0	-1	-1	-1	-1	-2	-2	-2	-2	-2	-2	0
Hydrodynamics	0	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	0
Cross-Delta Flow	0	0	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	0
Quest	0	0	0	0	0	0	0	0	-1	-1	-1	0	0
Oli River @Beacon Island	0	0	-1	-2	-2	-2	-2	-2	-1	-1	-1	0	0
Sec River @ Rio Vista	0	0	0	0	0	0	0	0	0	0	0	0	0
SI River @ Antioch	0	0	0	0	0	0	0	0	0	0	0	0	0
Predation	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0
Food supply	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0
Shallow nearshore habitat	0	0	0	0	0	0	0	0	0	0	0	0	0
Salinity/2	-1	-1	0	0	0	0	0	0	0	0	-1	-1	-1
Agricultural diversions	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0

**Net Effects Matrices with Common Programs  
Alternative 2 - Existing Conditions**

Wet Years

Dry Years



**What's Next Overview**

- Population Analysis Issue
  - Actions in the rivers upstream of the Delta
- Local Peer Review
- AFS Peer Review
- Optimize Alternatives



**What's next?**

- Develop a thru Delta Alternative that optimizes the benefits and minimizes impacts to fisheries, while considering water supply and water quality.
- Develop specific actions for implementation in Stage 1.
- Evaluate dual Delta implementation actions in case contingent strategy is needed.



**Expanded Diversion Effects on Fish Team**

- Technical team with representatives from:
  - DEFT
  - Fish facilities team
  - Water Quality Tech Team
  - No Name Group
  - USBR Operations
  - DWR operations
  - DWR Modeling
  - CALFED Staff



## Schedule

- Weekly meeting with more frequent task team meetings
- Progress report on improvement of the through Delta alternative to Management and Policy in August meetings
- Draft report on all alternatives in September meetings



## Policy Charge to DEFT Step 1 Con't

- Develop a list of in Delta actions for implementation in Stage 1 that will:
  - Include habitat, screening, operations and flow related actions
  - Enhance a through Delta alternative while preserving the viable contingent strategy



## Policy Charge to DEFT Step 1

- Develop one or more of the best through Delta options for fisheries while:
  - Considering water supply and water quality
  - Closely interacting with the Noname group, water quality technical team and ERP
  - Including operational and structural actions in the Delta that affect specific species in the Delta
  - Determining the ability of the options to recover species with in-Delta actions
  - Adding technical representatives from upstream tributaries



## Policy Charge to DEFT Step 2

- Develop one of more best options for a contingent dual Delta conveyance for fisheries while:
  - Considering water supply and water quality
  - Including operational and structural actions in the Delta that affect specific species in the Delta
  - Determining the ability of the options to recover species with in-Delta actions



# Policy Charge to DEFT

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## Step 3

- Determine the risk and potential success of species recovery for the through Delta and contingent dual conveyance options considering all actions of the CALFED program.

