

The Importance of CALFED Decisions

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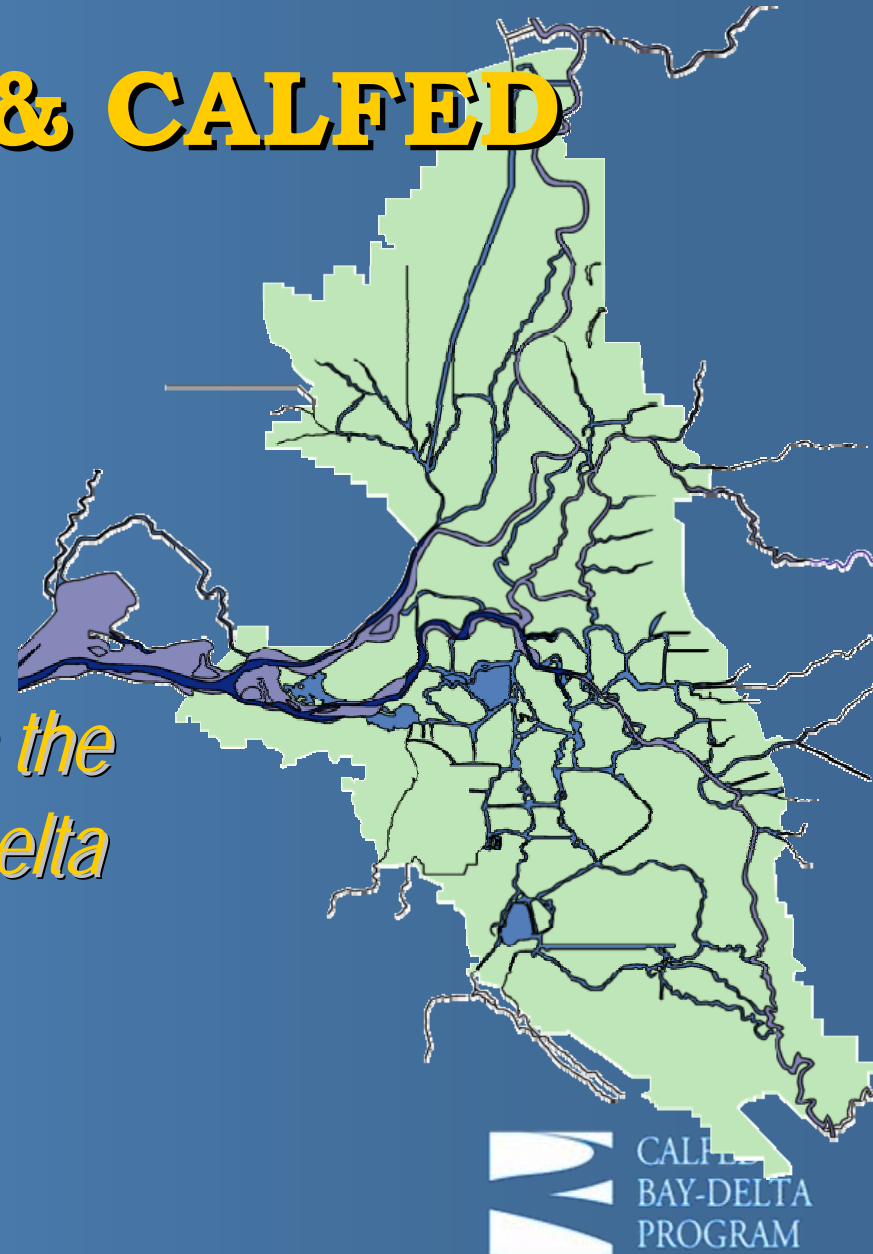
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Delta Vision & CALFED

Delta Vision

- Land Use
- Transportation
- Flood Control
- Utilities
- Shipping
- Water Use
- Etc....

*In the
Delta*



Delta Vision & CALFED

CALFED

- Levees
- Ecosystem Restoration
- Water Supply Reliability
- Water Quality

In the Delta

*In the Delta
&
Upstream Watershed
&
Service Area*



Importance of the Delta



- The Delta represents unique ecological resources
- The quality of life of all Californians is linked to the Delta
- We have an opportunity to make the Delta an even MORE special place

CALFED Approach

- CALFED: State / Federal Partnership



Tackling Big Challenges

- Mission: ...Restore ecological health and improve water management for beneficial uses of the Bay-Delta System

Big Challenges Require Tough Decisions

Challenges

- Pelagic Organism Decline
- Uncertain Water Supply & Quality
- Fragile Levees
- Sea Level Rise
- Climate Change



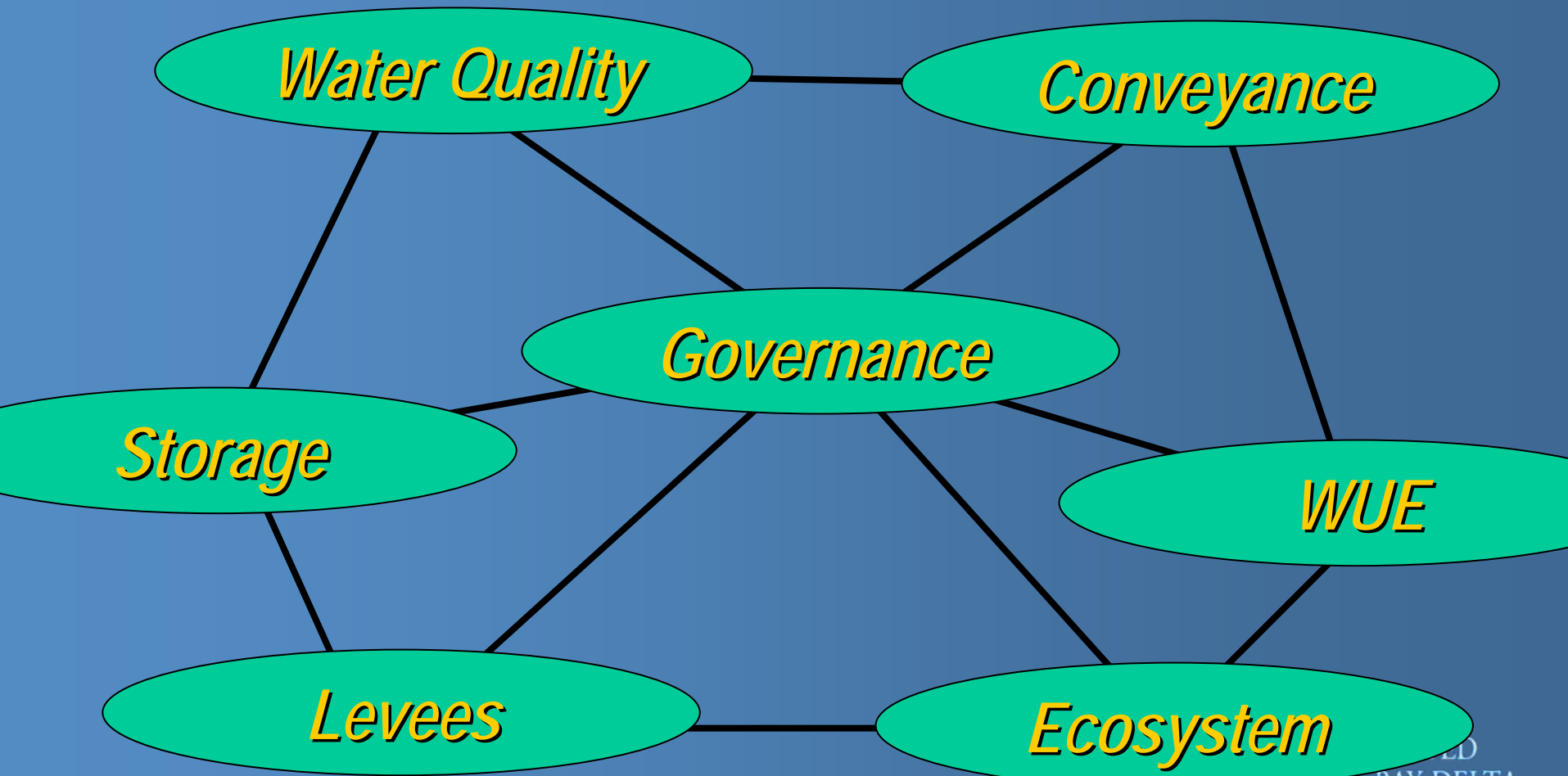
Big Challenges Require Tough Decisions

Decisions

- Ecosystem
- Water Conveyance
- Drinking water quality
- Levees
- WUE
- Storage
- Governance



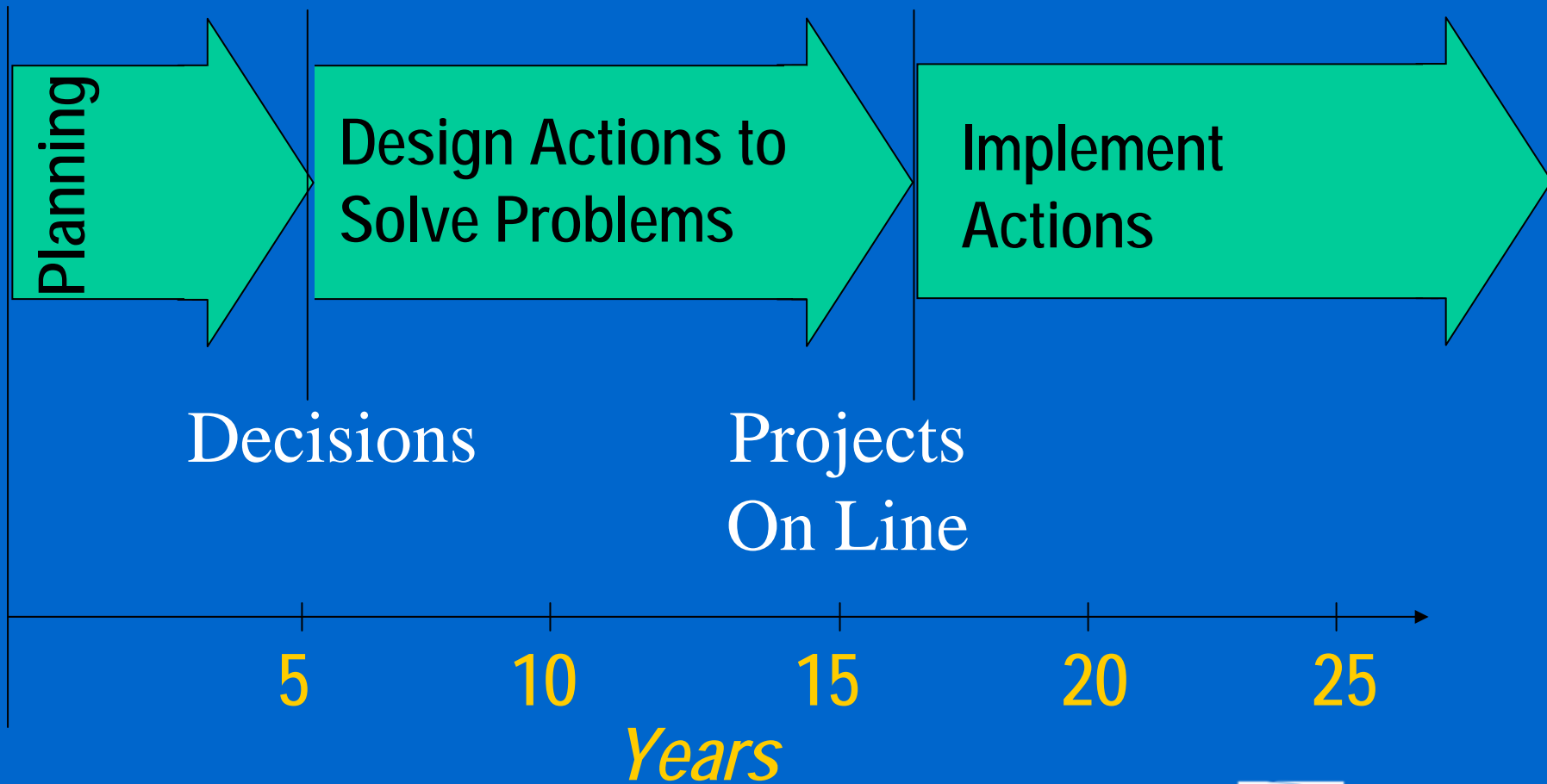
Decisions are Interrelated



Decisions are Interrelated

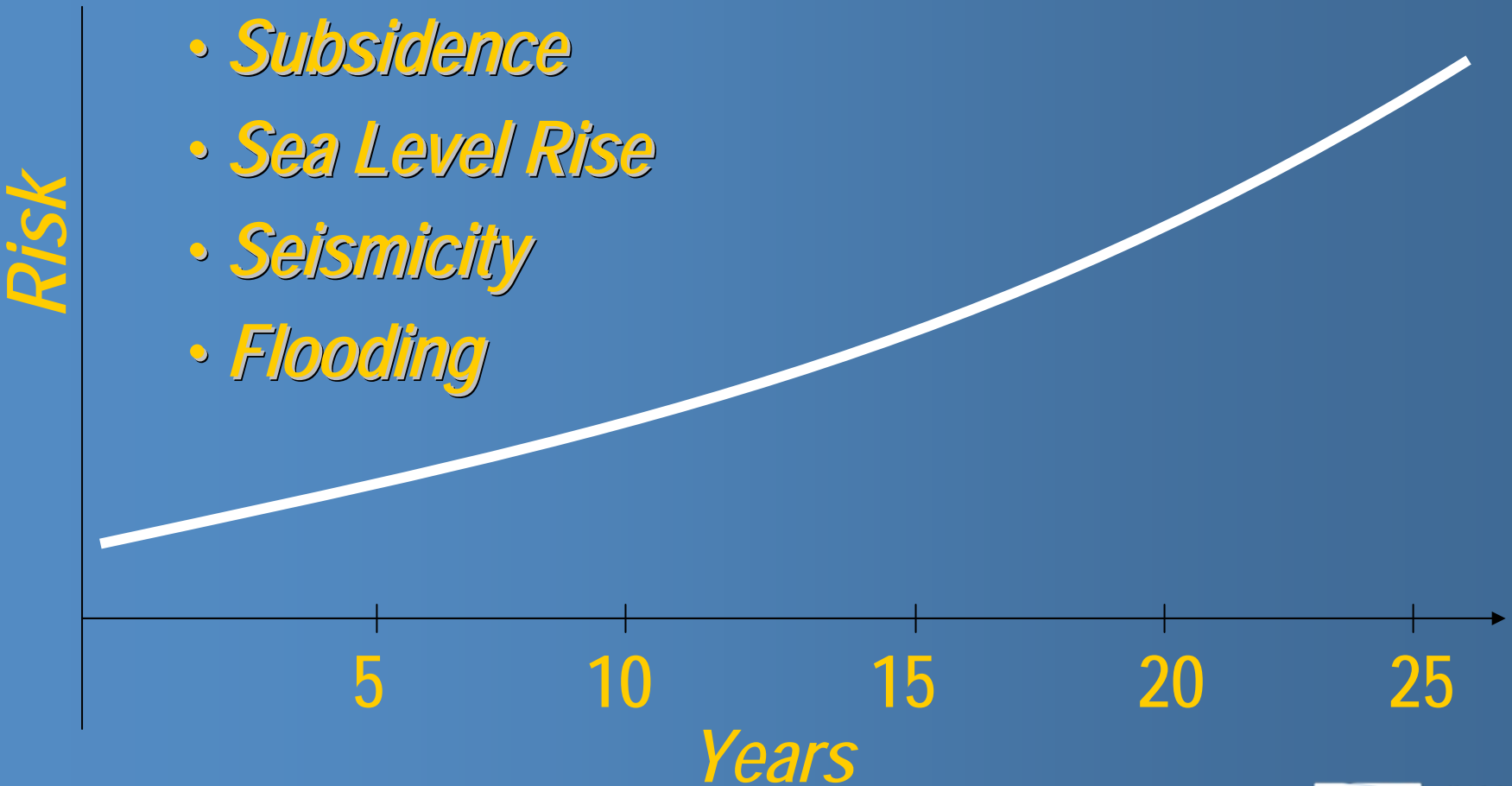


Delayed Decisions Lead to Delayed Solutions



And...Delayed Solutions Can Lead to Catastrophic Failure

- *Subsidence*
- *Sea Level Rise*
- *Seismicity*
- *Flooding*



Approach to Decision-Making



- Decisions will be made using the best information available at the time
- We can't delay decisions while waiting for "perfect" data

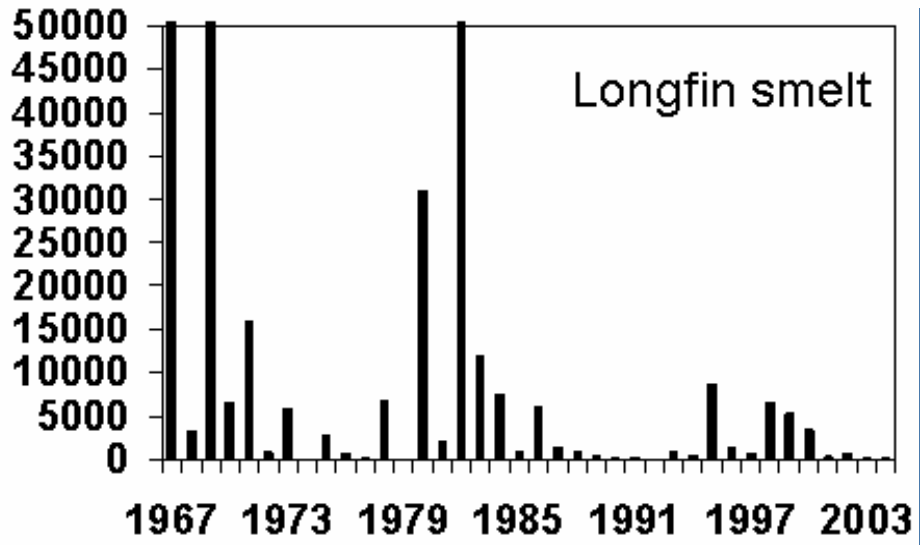
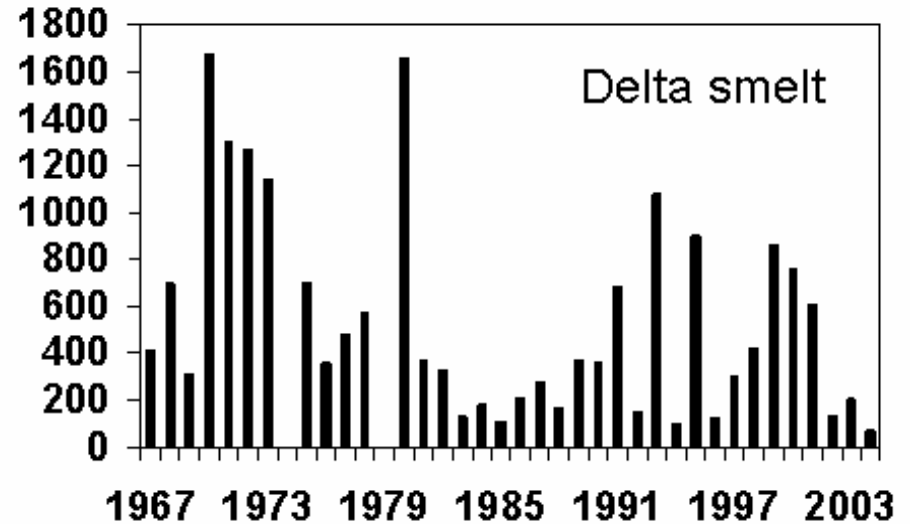
CALFED Decisions

- Examples of Issues -

- Ecosystem →
 - Water Conveyance
 - Drinking water quality
 - Levees
 - WUE
 - Storage
 - Governance
- *Declining species*
 - *Insufficient progress*
 - *Conflicting demands for flows*
 - *Export pumping entrainment*
 - *Effects of climate change*

Ecosystem Issues

Pelagic fish have declined to record low levels



Ecosystem Issues

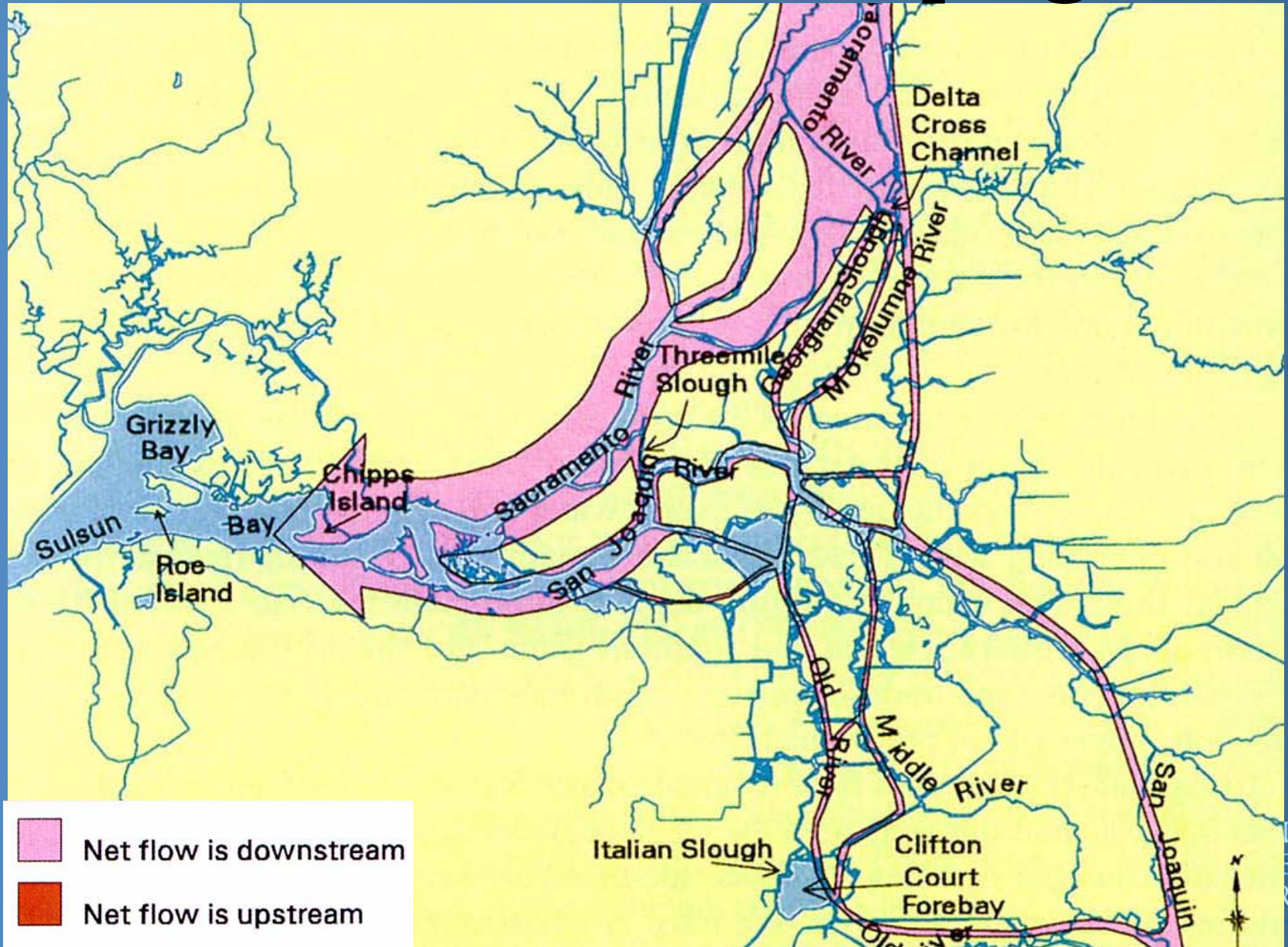
Months when vulnerable lifestages of species of concern may be present in the Delta

Common name	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook salmon												
Winter run	S	S	S									
Spring run	S, F	S, F	S, F									
Fall & late fall run	F	F	F	S	S	S						
Late fall run												
Steelhead	S	S	S	S	S							S
Delta smelt	A	A	A, J	A, J	A, J	J	J					A
Sacramento splittail				J	J	J	J	J				
Legend:	F - fry			S - smolt			J - juvenile			A - adult		

From Brown and Kimmerer 2001a, Moyle 2002

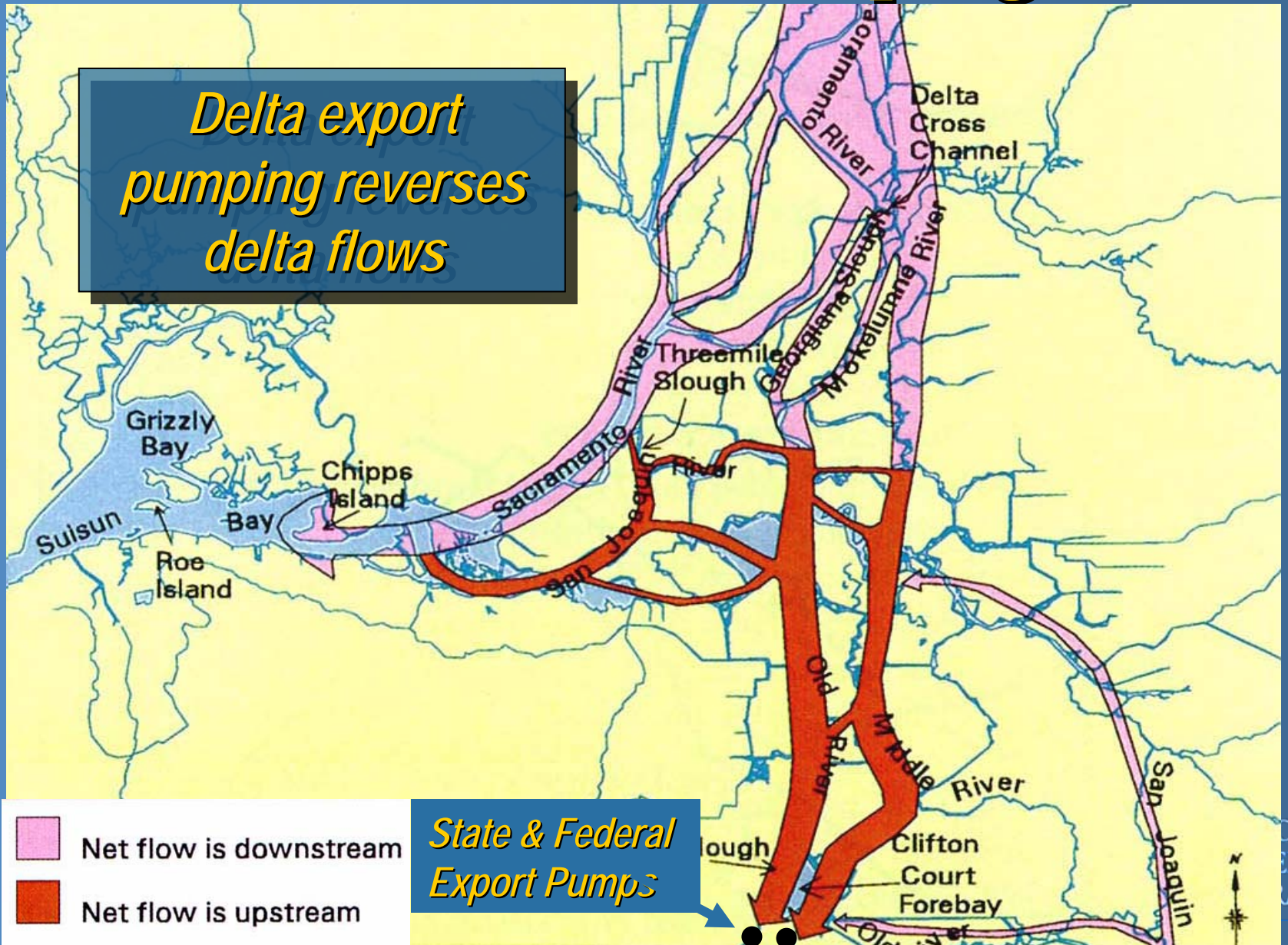
Sensitive species are often present in Delta



Ecosystem Issues – Typical Flow without Pumping



Ecosystem Issues – Typical Flow WITH Pumping

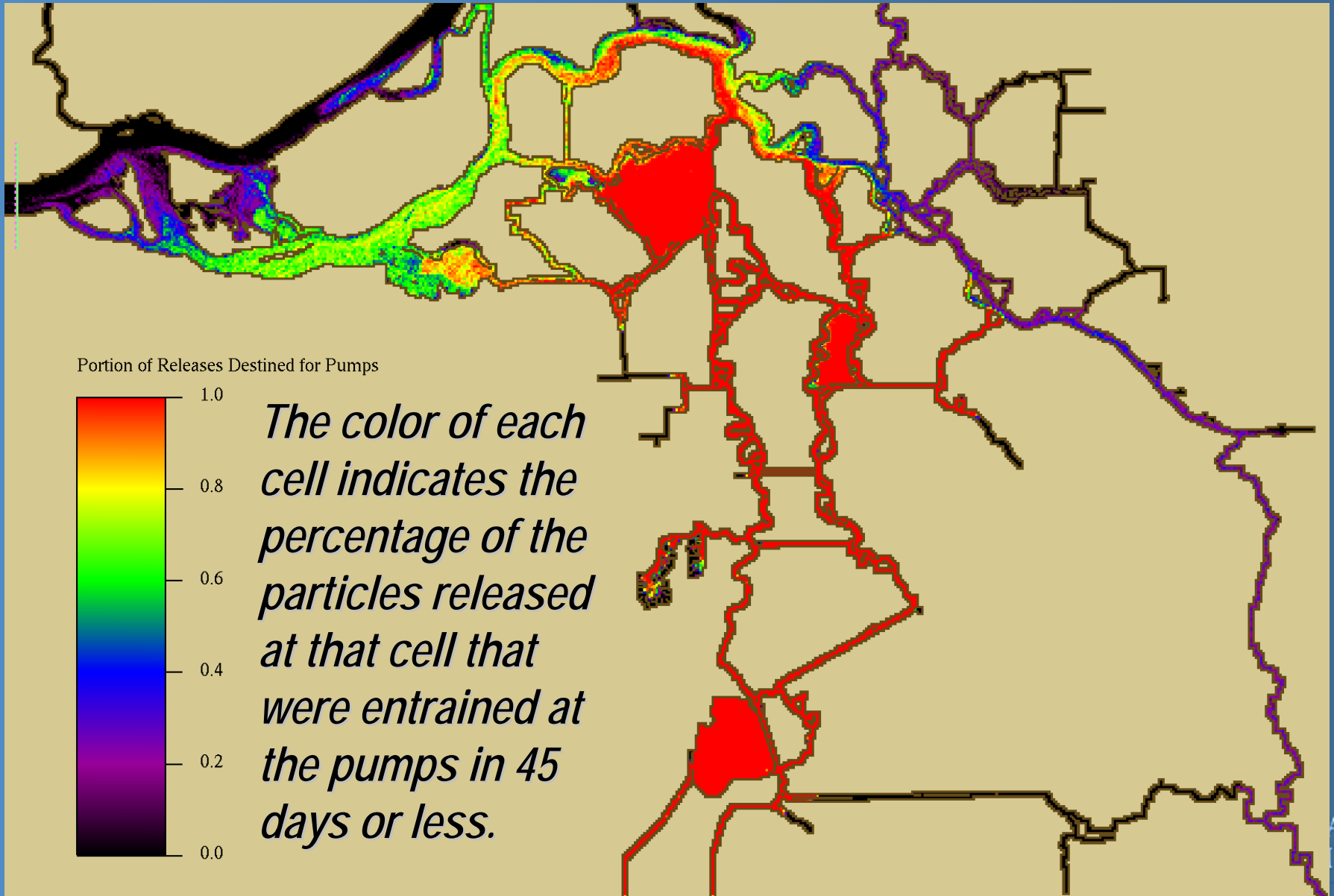
Delta export pumping reverses delta flows



-  Net flow is downstream
-  Net flow is upstream

State & Federal Export Pumps

Floating Particles are Entrained at Pumps



CALFED Decisions

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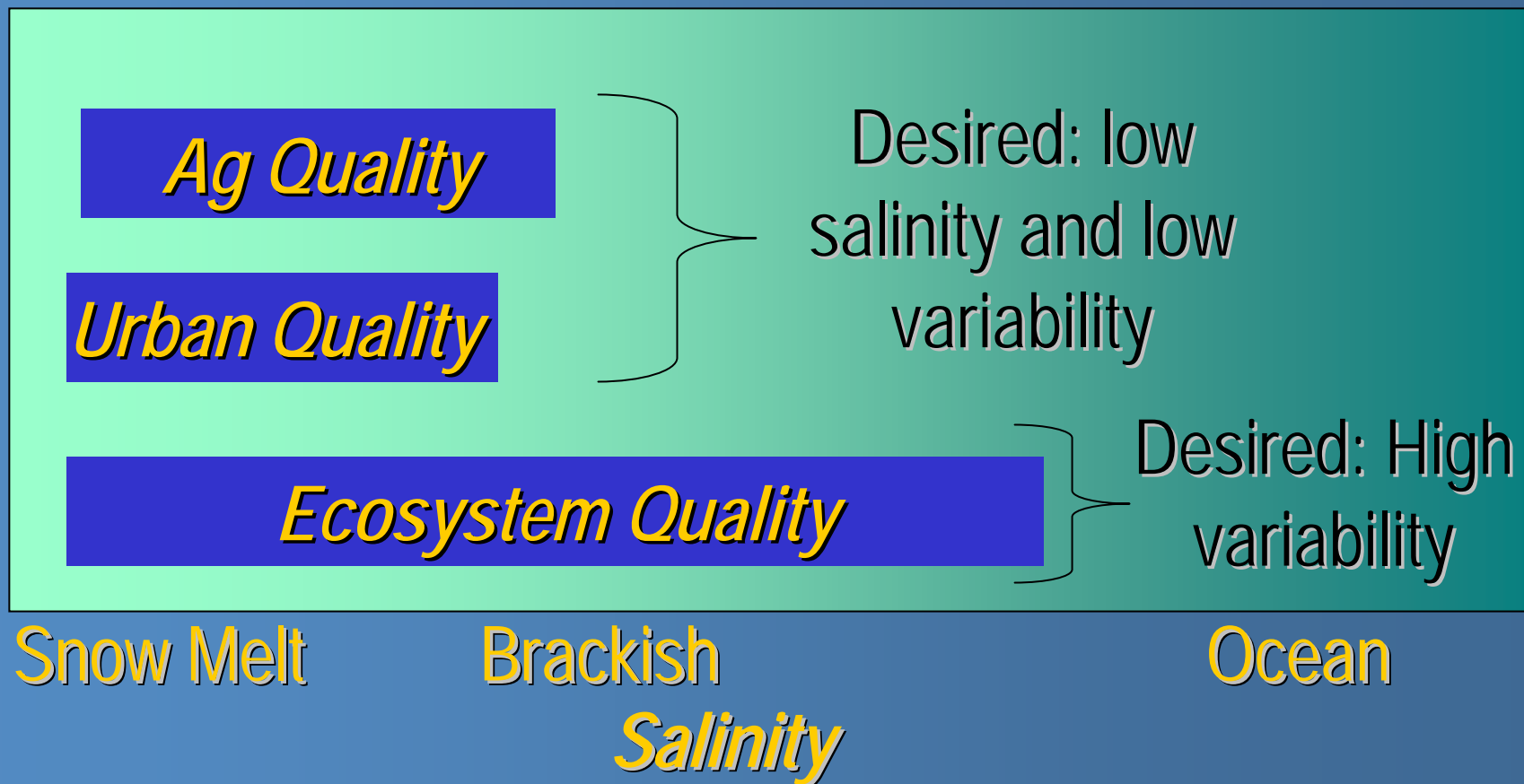
- *Thru-Delta Conveyance can't meet all needs simultaneously*
 - *Ecosystem*
 - *Water Quality*
 - *Water Exports*
- *Changes (i.e. climate) will magnify challenges*

Water Conveyance - Issues -



*Thru-Delta Conveyance-
Existing Delta channels
are used to convey
inflow to export pumps*

Example of Conflicting Delta Needs – Water Salinity*



*Note – Salinity is one of many important water quality factors

Water Conveyance - Issues -

Changes will magnify challenges:

- **Sea level rise:** more salinity & higher risk of failure
- **Climate change:** more droughts & floods
- **Seismicity & Subsidence:** higher risk of failure
- **Urbanization:** precludes conveyance options & increases flood risk

CALFED Decisions

- Examples of Issues -

- Ecosystem
- Water Conveyance
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- Levees
- WUE
- Storage →
- Governance

- *Important tool for:*
 - *Water supply & quality*
 - *Ecosystem restoration*
 - *Drought insurance*
 - *Flood Control*
- *Reservoir re-operation & groundwater management may help*
- *Surface storage is a controversial issue*

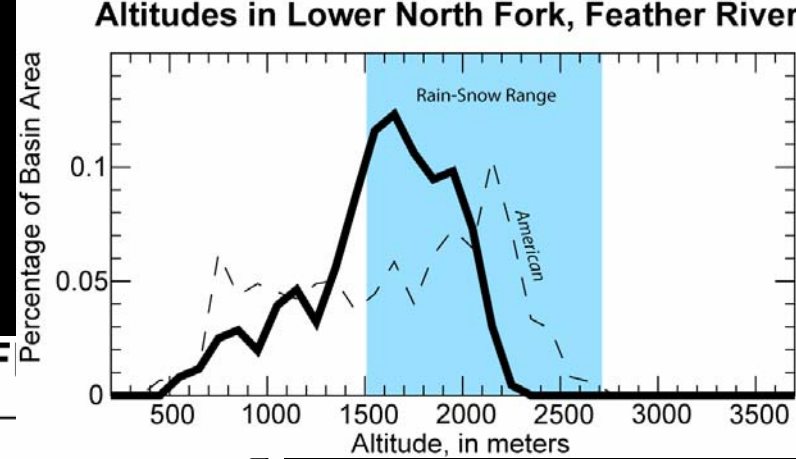
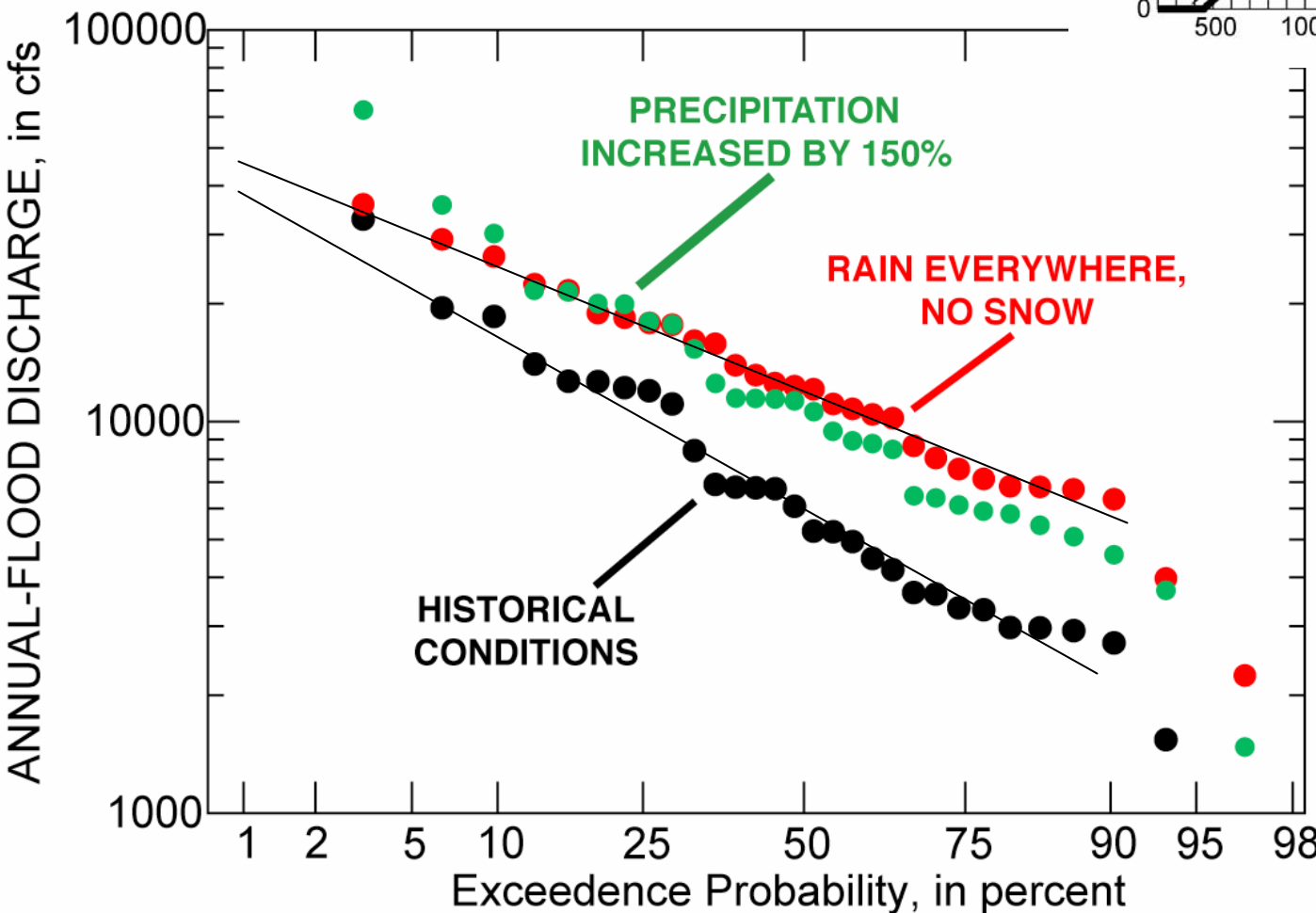
Storage - Climate Change will Reduce California's Snow Pack

- 14 MAF ~ Average annual Central Valley snow pack
- DWR projects that a temperature rise of 3 degree Celsius rise in temperatures will reduce this storage by 4 to 5 MAF



Making ALL precipitation = rain in PRMS simulation model of **Lower North Fk Feather River** (abv Oroville)

SIMULATED FEATHER RIVER (Lower North Fork) F



Concentration of altitudes in historical snow-rain transition range yields notable max-flood changes with snow-rain change:

8-yr flood --> 2-yr

(Model described by Koczot et al, 2005, USGS SRIR 2004-5202)

Conclusions

- System is broken - difficult **decisions** required
- Stakes are high - **irreplaceable** ecosystem, water supply, public health
- **Changes** will magnify challenges (climate change, sea level rise, etc.)
- **Coordination** is imperative (Delta Vision)
- **Challenges are opportunities**