

# MEMORANDUM



MONTGOMERY WATSON

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**To:** Loren Bottorff  
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**From:** Jeff Kishel  
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**Subject:** CALFED Workshop No. 3  
Notes from Habitat Restoration  
& Water Quality Management

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## Action Categories for Habitat Restoration "In Delta"

Fixer too narrow, consider Suisun Bay also (D.S. habitat added)

### Restoration of Delta Habitat

#### Ecosystem Quality

- A: Setback levees will kill some pear trees adversely impact sturgeon habitat
- + Flooded areas provide small fish with places to hide, increased spawning opportunities.
- Too detailed, look at things at face value.
- What's the objective? To capture your thinking.
- +/- With comments, dissenting opinions all ecosystem quality categories +, look for +'s in other objective a,b,c + by definition.
- Under Water Supply Objectives - Enhancement of water supply not clear, not apparent that water supply A adequately covers increased supply objectives.

#### Water Supply

- More fish equals reduced conflict, therefore +, disagreement/ how much water is required to maintain habitat?
- A: No the potential to eliminate conflict need a "P"
- +, provided no additional water is required.
- Could reduce agricultural uses and recreational uses, should be +/-, could be positive to some recreation uses
- B: Uncertainty - hard to see how this could increase uncertainty

- Might result in new species, new conflicts, additional water regiments

### Water Quality

- A: Would increase organic loads, chance of algae blooms
- + Might improve conditions by stabilizing oxidation; reduces agricultural land use, agricultural drainage, wetlands would improve quality (other than TOC)
- Might increase TOC's
- B, C, D: nothing, 0
- E: + if system is carbon limited, would put more organics in water

### Vulnerability

- A: Habitat increases chance of failure, by limited ability to maintain setback levees could permit greater ease of maintenance (levee itself can be free of habitat)

Farmland could be impacted, can these impacts be afforded, economics can be affected negative because it changes existing land uses.

- + Changes in land use is a plus because levees are secure, protecting agricultural land.

B: 0

- C: + Because more secure levees reduce risk of saline intrusion.

- If restoration weakens levees, potential short-term impact

- D: + Increased quality of habitat reduces proportional risk.

Use of inappropriate dredge spoils could change plus to minuses.

### Restoration of Upstream Habitat

- A: 0 No Impact in Delta

- B: 0 No impact in Delta

- C: + More fish upstream = more fish in delta

### Water Supply

- B:A:+ Because of increased storage capacity in enlarged flood plains

- Decreased flood capacity reduces carry over storage

- Increased upstream flows

Reduces available supplies, because more water is required to maintain habitat.

## Water Quality

A: - Pathogens, Organics increase, no positives as in Delta because U.S. soils are not organic., consumptive use increases, increasing salt loading

- Reduces ag drainage

P - on balance

B: P - Might increase salt loading

C:, D: 0

E: + Same as WQE above.

## Vulnerability

A: + If actions create flood control opportunities, small effect

P

B: 0

C: 0

D: P, may improve flood control

## Threatened and Endangered Species Recovery

Not a logical category, subsumed in other categories, restoration of habitat, etc. Same concern for next category: "establishment of integrated habitat management program", no effect by themselves.

Delete these things as categories, include actions in other categories, at least implicitly.

## Acquisition of Long-Term Water Supply for Fish and Wildlife

Should be broader - acquisition is only one way of achieving flow needs - too narrow as listed - Broaden to reflect all

## Ecosystem Quality

A: + More water = better aquatic habitat

B: + More water = better wetlands habitat

C: + More water = more fish

## Water Supply

A: + If increases availability to all users  
- If decreases availability to other users  
P +-  
P +-

B: Same as A

Water Quality

A: 0

B: 0

C: 0

D: 0

E: +, more water dilutes dry year flows resulting in better water quality

Vulnerability

A: 0

B: 0

C: 0

D: 0

Should be broader - Acquisition is only one way of achieving flow needs - too narrow as listed -  
BROADEN to reflect all

Ecosystem Quality

A: + More water = better aquatic habitat

B: + More water = better wetlands habitat

C: + More water = more fish

Water Supply

A: + If increases availability to all users  
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P+-

B: Same as A

Water Quality

A: 0

B: 0

C: 0

D: 0

E: +, more water dilutes dry year flows resulting in better water quality

Vulnerability

A: 0

B: 0

C: 0

D: 0

# Water Quality Management

## Installation and Operation of Flow Barriers

Barriers would reduce DO near Stockton and salinity at Suisun

### Ecosystem Quality

- A: + Suisun barrier would lower salinity  
+ Improve mitigation - SJR
- B: + Better quality of water in Suisun Marsh (reduced salinity)
- C: + By increasing survival of out migrating SJ Salmon by directing them properly.  
+ Support food chain development in Suisun Marsh  
- May increase entertainment and/or block upstream migration

### Water Supply

- A: + Reduces entrainment of endangered species, allowing more water to be pumped  
- May impact recreational uses
- B: + Reduces entrainment of endangered species, allowing more water to be pumped

### Water Quality

- A: - Barrier in Old River aims ag drainage at Rock Slough  
+ Routes ag drainage away from Tracy, less Salt to Tracy  
0 - No change at banks
- B: + Less salt to Tracy  
+ Less salt to some south delta  
- More salt to other sough delta diverts
- C: - More salt to River Slough  
+ Less salt to Tracy and points D.S.

D: 0

E: 0

### Vulnerability

A: 0

B: 0

C: 0

D: 0

Management of Agricultural Drainage

There could be detrimental effects outside the delta.

Ecosystem Quality

A: + reduces salt constituents, improves habitat

B: + reduces salt constituents, improves habitat

C: + reduces salt constituents, improves habitat

Water Supply

A: +

B: +

Water Quality

A:

B: +

C: +

D: +

E: +

Vulnerability

A: 0

B: 0

C: 0

D: 0

Management of Urban/Industrial Drainage and Wastewater Discharge

Ecosystem Quality

A: + Less harmful constituent/salinity

B: + Less harmful constituent/salinity

C: + Less harmful constituent/salinity

Water Supply

A: +

B: +

Water Quality

A: +

B: +

C: +

D: +

E: +

Vulnerability

A: 0

B: 0

C: 0

D: 0

Dredged Material Management

Possible depending on disposal location.

Ecosystem Quality

A: + Reduces suspended material, improves habitat

B: + Reduces suspended material, improves habitat

C: + Reduces suspended material, improves habitat

Water Supply

A: 0

B: 0

Water Quality

A: + Reduces suspended material, improves quality

B: + Reduces suspended material, improves quality

C: + Reduces suspended material, improves quality

D: + Reduces suspended material, improves quality

E: + Reduces suspended material, improves quality

Vulnerability

- A: + Dredged materials can be used for levee maintenance, improving levees
- B: + Dredged materials can be used for levee maintenance, improving levees
- C: + Dredged materials can be used for levee maintenance, improving levees
- D: + Dredged materials can be used for levee maintenance, improving levees

Management of Mine Drainage

Ecosystem

- A: + Reduces constituent of concern
- B: 0
- C: + Improves U.S. habitat resulting in more fish

Water Supply

- A: + Reduces volume of water required for dilution
- B: + Reduces volume of water required for dilution

Water Quality

- A: + Reduces constituents of concern
- B: + Reduces constituents of concern
- C: + Reduces constituents of concern
- D: + Reduces constituents of concern
- E: + Reduces constituents of concern

Vulnerability

- A: 0
- B: 0

C: 0

D: 0

Category Definition:

Reduction of source material treatment of drainage.

Management of Diversions For Drinking Water

Definition: Adjust timing of export diversions for drinking water.

If drinking water exports of higher quality are available, exporters could place greater reliance on poorer quality reclaimed wastewater. Higher quality provides a greater ability to manage (i.e. draw down) groundwater basins.

Percent needed to increase availability of export at certain times, say following dry periods to refill groundwater basins.

Establishment of Floodways and Meander Belts

Definition:

Control of Introduced Species

Definition: Prevent further introduction of any new, undesirable species, and control current undesirable species (terrestrial and aquatic).

Ecosystem Quality

A: + Reduce undesirable consumptional food

B: + Reduce predation of desirable consumptional food

C: + Reduce predation of desirable species

Above have Synergy with restoration of habitat.

Water Supply

A:P + If control benefits T & E species, reduces water supply constraints

B:P + If control benefits T & E species, reduces water supply constraints

Water Quality

A: 0

C: 0

D: 0

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B:P + If control benefits T & E species, reduces water supply constraints

Water Quality

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#### Vulnerability

A: 0

B: 0

C: 0

D: 0

#### Summary

##### General Observation:

Habitat Restoration actions exhibit positive linkages between ecosystem quality and water supply, with some potential for achieving vulnerability objectives.

Water Quality Management actions show promise for achieving ecosystem quality and water supply objectives, with little connection to vulnerability, other than some dredge material issues.

##### Habitat Restoration

- Achieves Ecosystem Quality Objectives
- Can achieve Water Supply objectives by producing more fish, protecting fish
- Can achieve vulnerability objectives if setback levees are used

##### Water Quality Management

- Achieves Water Quality objectives
- Achieves Ecosystem Quality objectives by improving habitat, increasing numbers of fish
- Achieves Water Supply objectives by increasing numbers of fish