

Delta Smelt Working Group Meeting Minutes

October 10, 2006

Participating: Gonzalo Castillo (USFWS), Mike Chotkowski (USBR), Kevin Fleming (CDFG), Lenny Grimaldo (CDWR), Bruce Herbold (USEPA), Tracy Hinojosa (CDWR), Peter Johnsen (USFWS), Ann Lubas-Williams (USBR), Matt Nobriga (CDWR), Ted Sommer (CDWR), Jim White (CDFG) and Victoria Poage (USFWS, convener and scribe)

For Discussion:

1. CDFG's action plan matrix
2. Refined analyses of data pertinent to winter salvage events (triggering variables)
3. Parameters for PTM modeling of CCF gate ops

Recommendation for WOMT:

The Working Group made a preliminary recommendation to implement a proactive winter action to address concerns about wintertime entrainment of adults during "first flush" conditions. No action will likely be needed until after December 25th and after Delta water temperatures drop below 13⁰ C (compiled from data from Mossdale, Antioch and Rio Vista). Once time and temperatures are appropriate for smelt spawning movements, Sacramento River flow at Freeport increases above 25,000 cfs should trigger operational changes to achieve flows in lower Old and Middle Rivers no more negative than -3500 cfs. If no Sacramento River pulse above 25,000 cfs occurs by January 15th then Old and Middle River flows should be moderated as much as possible until February 15th. This recommendation reflects conditions which the Working Group believes are likely to minimize salvage of pre-spawning adult delta smelt, but if high salvage occurs other actions may be warranted.

If flows on the Sacramento River are above 25,000 cfs prior to Dec 25th, and remain above 25,000 cfs through Feb 15th, no action should be necessary.

Salvage of adults or other conditions suggesting that adults are spawning in the South Delta are an indicator that springtime actions may also be beneficial. If salvage is low and flows in Old and Middle Rivers are not strongly negative in January and February, then springtime actions might not be warranted.

Minutes:

The second sampling period of the Fall Mid-Water Trawl survey is underway this week. No information was available.

CDFG has been asked to compile a supplement to the POD Action Plan that outlines any new actions that could potentially be taken to protect delta smelt. Kevin Fleming presented a draft document with separate potential actions for winter and spring (see attachment 1). The emphasis was on actions that could be implemented at the SWP. The first trigger would come with the Recovery Index, as before, but DFG proposed that if the

index is less than 74 and the net flow at Old and Middle Rivers is more negative than -5000 cfs, flows be increased so that net Old and Middle river flows are no more negative than -5000 cfs, either by reducing exports or increasing San Joaquin River flow. DFG proposed changing the level of salvage concern from reaching the 50th percentile of the ratio of salvage to the recovery index to reaching the 25th percentile of the ratio, and making both percentiles triggers for export reductions or increases in SJR flow. After reviewing the graphic of Old and Middle River flow plotted against salvage (attachment 2), the Working Group recommended that OR/MR flows be increased further, to no more negative than -3500 cfs. Although the graphic depicts a linear relationship, the Working Group discussed the possibility that it is likely more sigmoidal, with a threshold level of effect followed by a steep upward curve. The Working Group noted that some of the weaknesses of the DFG plan included the potential to exhaust all EWA and B2 assets in winter, leaving nothing in reserve for spring actions, and that the document specifies no magnitude or duration for the proposed export cuts/flow increases. The Working Group noted that if a winter action is triggered by a salvage event, indicating adult delta smelt are (or at least were) present in the southern Delta and will be spawning there, then the likelihood that a spring action would be needed is greater than if an action is triggered only by environmental factors. However, if the adult salvage concern level is not reached, a spring action may not be needed. These recommendations notwithstanding, decisions to implement the action would best be made in real-time, as circumstances dictate. Spring actions do not yet include a flow trigger; this needs further discussion, and may depend upon real-time conditions and the results of PTM modeling. Spring actions also include modifications to Clifton Court Forebay intake gate operations. Following the discussion, changes will be made to the document which will be circulated for further review and comment by the Working Group and then forwarded to DFG management for final review.

The Working Group continued its August 30 and September 26 discussions of the environmental factors that correspond to the onset or sudden increases in salvage of pre-spawning adult delta smelt. Preliminary analyses indicate that a drop in water temperature to about 13^o C followed by an increase in Delta inflow may be a good predictor of adult salvage. More work is needed to refine these potential environmental triggers; however, the Working Group made the following preliminary recommendation:

1. action triggered by environmental factors (proactive mode)
 - o when Delta water temperatures reach 13^o C and Delta inflow increases to 25,000 cfs or greater, increase the net OR/MR flow to no more negative than -3500 cfs
 - o if no Sacramento River pulse above 25,000 cfs occurs by January 15th then Old and Middle River flows should be moderated as much as possible until February 15th.
2. action triggered by salvage (reactive mode)
 - o when the adult concern level is reached, be it the 25th or the 50th percentile of the ratio, respond as per the DSRAM

As always, the Working Group believes that reacting to a salvage event as it occurred would be far less effective than anticipating a salvage event; the former likely defers or extends salvage in time, whereas the latter is intended to avoid and/or minimize salvage.

A spring action could include reoperation of the CCF intake gates and modification of the schedule by which South Delta barriers (not just the HORB) are installed. Analysis of CCF gate operations and screening efficiency indicate that there may be a diel effect of pumping, and that decreases in approach velocities lead to increases in salvage, likely because of increased efficiency of the screens. Analysis of barrier operations indicates that all barriers, not just the HORB, affect South Delta circulation and particle fate. How this information may be used to reduce impacts to delta smelt warrants further discussion.

The Working Group has for some time been interested in Particle Tracking Modeling of the effects of CCF intake gate operations. Reoperation of the CCF intake gates could even out channel velocities, export pumping and approach velocities and therefore affect salvage. The Working Group proposed that the following PTM runs be performed:

	Barriers in:		Barriers out:	
SJR	4500	7000	4500	7000
Exports	1500 comb.	3000 comb.	1500 comb.	3000 comb.
Gates	Fully Open	Fully Open	Std. Ops	Std. Ops

The PTM would be run for VAMP-like conditions from April 15 – May 15. Particles would be released at 20-mm stations 815, 902 and 910, as in the runs performed last year. Rather than the traditional bar chart output, the Working Group requested a cumulative output of particle fates. Holding Sacramento River flows constant, potentially in the range of 20-30,000 cfs, for both San Joaquin flow values would avoid introducing a confounding factor. However, it may be more realistic to match historic SR flows to historic SJR flows.

Action Items:

1. Mike Chotkowski will work on refining the winter salvage trigger analyses.
2. DWR modeling staff will perform the requested PTM runs.

Next Scheduled Meeting: Not yet scheduled.

Attachments: 2

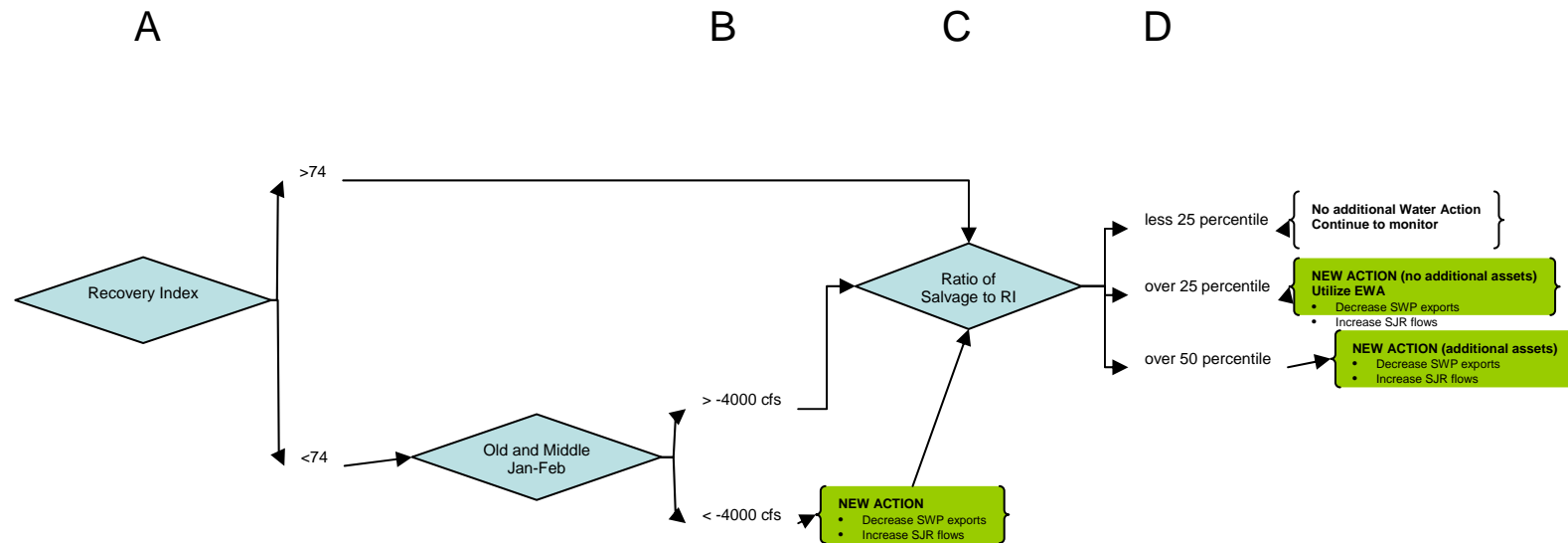
Submitted,

VLP

Winter Action – DRAFT for discussion only

Reduce entrainment of POD fish (delta smelt, longfin smelt and striped bass)

- *Modify Old and Middle River flows (pre-emptive)*
- *Reduce salvage (reactionary)*



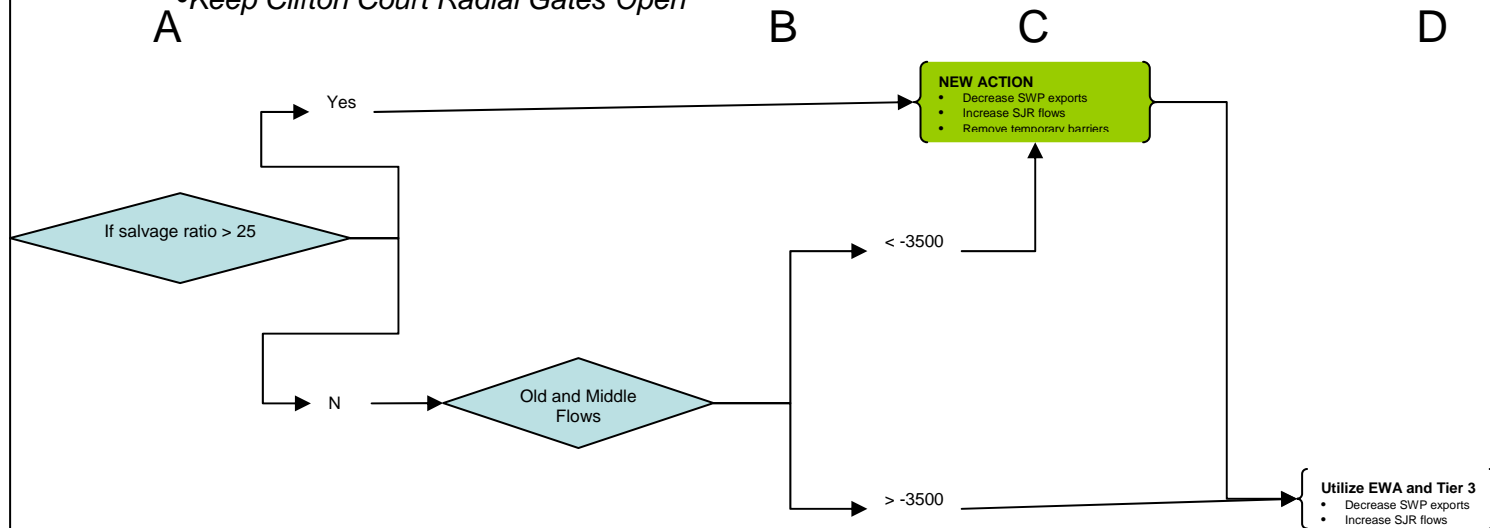
- *Recovery Index is based upon FMWT and will be available by mid October. The RI of 74 represents the median for all years. From the RI the salvage concern levels is calculated. This algorithm for the concern level is found in the 2005 USFWS OCAP BO.*
- *January and February combined Old and Middle River flows should be projected based upon model runs with both current and projected operations. The -4000 cfs criterion is only a first approximation based upon a visual inspection of the graphs prepared by Pete Smith, USGS. The actual target criterion will require further input from DSWG an other Agency staff.*
- *The amount and timing of the new action to reduce negative flows will require further input from DSWG an other Agency staff. It will likely determined by a combination of spawning migration cues (outflow and temperature) as well as historic patterns of salvage events.*
- *This is a modification of the current DSRAM with the inclusion of a more protective criterion for concern. Given a low RI the differences in salvage numbers between 25 and 50 percentile is not anticipated to be great and the length of time between hitting the 25 and 50 percentile will be short. Therefore, additional water assets need to be identified prior to the need and readied for implementation.*

Early Spring Action – DRAFT for discussion only

Reduce entrainment of POD fish (delta smelt, longfin smelt and striped bass)

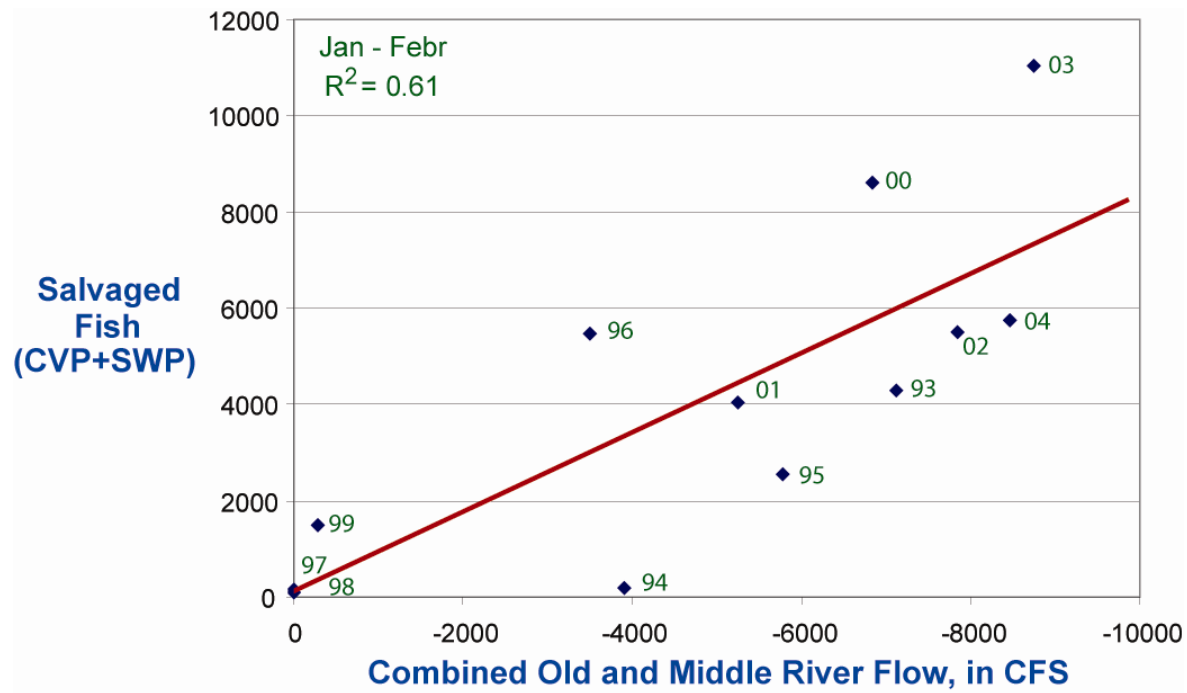
• *Modify delta hydrology during early delta smelt early larval stage*

- *Additional assets (SJR)*
- *Reduced SWP exports*
- *Remove Temporary Barriers*
- *Keep Clifton Court Radial Gates Open*



- *If there was a need for winter protection of the adults pre-spawn, there will be a need to protect the larvae.*
- *Relationship between early flows and subsequent delta smelt distribution. Based upon 20MM Survey "centroid" distribution, the higher the early flows the further downstream the resulting smelt distribution.*
- *The amount and timing of the new action to reduce entrainment will require further input from DSWG and Agency staff. It will likely be determined by a spawning cues (temperature) as well as historic patterns of salvage events.*
- *This would include a pre-VAMP use of EWA assets. It may turn out that the only time that the radial gates can be left open is during this pre-VAMP/VAMP period, in which case this is where that particular new action will be used.*

Attachment 2.



Source: Pete Smith, USGS