From: Bherbold@aol.ccm
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To: fishteam@water.ca.gov, h2o4u@ix.netcom.com, Bjmill@aol.com
Subject: South Stub description and request for comments
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At meetings recently I have referred to a possible configuration to stage fish protection consistent with other CalFed needs. Here's a first effort to get more details written down. Please review and comment, if so moved.

I originally suggested a multiple intake configuration that had intakes at Franks Tract, at the site on the San Joaquin River where the PC would cross, and near Vernalis. That alternative was carried forward as an option within the 12 refined alternatives but disappeared during the reduction to three alternatives. I have since considered one branch, the one covering the south half of a PC, as a possible first stage implementation. This email describes how I imagine such a structure to operate, the fish protection issues surrounding it, and how it relates to other water uses in the delta. I have had a number of encouraging conversations in hallways and would like to open it up for everybody to attack before I invest more time in it.

SOUTH STUB

The structure – a new channel (and/or the use of some existing channel) that runs across Lower Roberts Tract to a siphon into Clifton Court Forebay. Some capacity and side channels might be used to supply screened water to much of south delta agriculture.

Screening – by preference a flat plate screen (or other type) similar to that in use at the new Los Vaqueros intake, so as to avoid the need for significant salvage operations. Ebb and flood tidal velocities in this area are substantial and it may be desirable to operate the structure on ebbs and floods and avoid slack water conditions. I have included at the end of this description the maximum daily flows under alternative 1A at two locations near the proposed diversion point and two flows at the present diversion point; it can be seen that the flows that would be sweeping across the screen and distributing floating life stages are often four times as much near Turner Cut as at the CCF intake.

Staging – Alternative 3, if eventually used, would still have a substantial diversion in the delta and this could become that diversion point. The capacity of the stub would be the first increment of south delta pumping. Higher pumping rates would need to go through the existing CCF intake and salvage operations. Thus, as big as possible is best. I have been imagining a 5000 cfs intake which would handle most allowable springtime diversions in drier years.

FISH ISSUES – BENEFITS

Allows use of all south delta channels as fish habitat. Present pumping causes demonstrable reductions in water levels and flow in south delta channels partly because of the limited capacities of the channels. Thus fish in the south delta are unlikely to get out as witnessed by the high salvage rates of young splittail in recent years and their failure to maintain populations there despite high juvenile abundance. For outmigrating San Joaquin salmon, the natural split at the head of Old River is 60/40, with 60 going down Old River. If fish follow the flow, then moving the diversion point to the large channel of the San Joaquin River will expose a smaller fraction of them to the facility as well as eliminating CCF predation and handling stress from those that do go by the facility. Much of the south delta is at a good elevation to permit construction of tidal wetlands but is not desirable now because it lies on the way to the pumps.

By placing intake on a larger, central channel the area of the zone of influence is reduced. High tidal excursions distribute eggs and larvae widely so individual eggs and larvae are much less likely to be exposed repeatedly to entrainment stress than in south delta. Reduction in size of zone of

influence may enhance passage of migratory species; i.e. once they pass intake they are out of range of impact instead of being exposed at each southern channel off San Joaquin River.

Does not rely on a salvage operation which probably cannot protect delta smelt and which adds mortality and stress to all species. Eliminates CCF predation, during times when only the new intake is used.

Enhances flexibility of operations by providing two intakes at a considerable distance from each other. Thus, if delta smelt, splittail, or striped bass spawn right in front of one intake, the other can be used to reduce export impacts. Canal could be sized to operate as an enlarged CCF so that exports could be curtailed for longer periods of time.

Reduces impacts of south delta agricultural operations without the use of artificial barriers and allows effective screening at one location to replace many small unscreened diversions.

FISH ISSUES – CONCERNS

Relocating intake to central delta causes zone of influence to overlap San Joaquin spawning area of striped bass and moves intake into area of some delta smelt spawning.

Although positive flows are restored to south delta channels, probably no net change to QWEST and possibility of higher mortality rates in north and central delta may offset reduced mortality in south delta.

No experience with screens of such size increases uncertainty of effectiveness.

Continued use of south delta pumps prevents year-round use of south delta channels by species of concern.

WATER SUPPLY AND WATER QUALITY ISSUES

Improves export water quality by eliminating contamination with south delta ag return flows.

Reduces impacts of export operations on south delta agriculture. Use of new diversion point to supply south delta ag would improve their water quality and supply, which in turn would add flexibility to New Melones operations.

Eliminates bottleneck for export supplies of south delta channel size without large-scale dredging operations.

Continues to return much of San Joaquin River outflow to San Joaquin Valley so that selenium is not passed into delta and bay.

ASSURANCES AND PLANNING ISSUES

Need enforceable operational criteria to protect biological resources.

Meets desire for a common delta pool for all delta water users.

No stranded assets if Alternative 3 is later determined to be necessary.

Eliminates concern that substantial portion of Sacramento River flows could be diverted.

APPENDIX A (Thanks to Bob Suits for providing the info)

Average Maximum Flow Upstream (u.s.) and Downstream (d.s.)
over 16-year period of 1976 - 1991
Alternative 1A - Calfed Study 516

12/1/97

	SJR at Wright-Elwood Tract		SJR at Rindge Tract		Old R near DMC Intake		Old River @ Highway 4		West End of Grant Line Canal	
	u.s.	d.s.	u.s.	d.s.	u.s.	d.s.	u.s.	d.s.	u.s.	d.s.
Oct	8376.	9144.	17581.	16102.	2447.	2918.	15281.	6540.	6549.	8282.
Nov	8378.	8801.	17222.	16039.	1756.	2792.	16606.	7520.	4490.	7770.
Dec	7835.	9132.	16988.	16162.	1583.	2869.	17108.	6872.	3725.	8169.
Jan	7396.	9739.	16538.	16608.	1584.	3009.	16908.	6839.	3266.	8656.
Feb	5701.	11311.	14737.	17988.	1618.	3283.	14811.	8888.	2296.	9593.
Mar	5650.	11314.	14756.	17921.	1538.	3262.	15121.	8615.	2023.	9658.
Apr	6533.	10774.	15157.	17694.	2388.	3206.	12271.	9447.	4535.	9086.
May	7039.	10324.	15580.	17402.	2341.	3047.	12422.	9416.	4957.	8615.
Jun	7316.	9999.	16227.	16977.	2226.	2835.	13879.	7589.	5563.	8407.
Jul	8811.	8594.	18427.	15629.	2643.	2604.	15993.	5832.	7510.	7679.
Aug	9134.	8232.	18609.	15379.	2562.	2601.	16146.	5765.	7726.	7530.
Sep	8812.	8709.	17962.	15686.	2413.	2774.	15494.	6380.	6984.	7900.