

CALFED BAY-DELTA PROGRAM**Office Memorandum**

Date: February 27, 1996
To: Rick Soehren
From: Michael Norris
Subject: Summary Minutes from the Program Coordination Team (PCT) Extended Review Team Alternatives Discussion on 2-23-96

As per your instructions, I have summarized the PCT Extended Review Team (the "green group") discussion on the major features of the 20 draft alternatives for the CALFED Bay Delta process and Alternatives 6, 9, and 12 in particular. I used my notes, microcassettes recording, and large Post-It notes that were taken by Ron Ott. Major points are underlined. Some topics were discussed by the group but the group didn't necessarily say the idea was a good strategy or a bad one and thus the topic may not be underlined. Sometimes the group discussed a topic which was more appropriate under another discussion category such as talking about good strategies under the heading of bad ones and so on. As you know, time elapsed before detailed discussion of the green group's three alternatives could occur although some features of those alternatives were discussed as part of the general discussion anyway. You may wish to compare these notes against your own. Please contact me if you want the word processing file. The group consisted of the following individuals:

Green Group:

Stein Buer, DWR Planning
Rick Woodard, DWR Div Local Assistance
Pete Chadwick, Fish and Game
Pat Brantley, Fish and Game
John Renning, USBR
Al Candlish, USBR
Jean Elder, USFWS
Dave Fullerton, consultant team CALFED
Ron Ott, consultant team CALFED/transcriber
Rick Soehren, CALFED Green Group leader
Michael Norris, minutes recorder

Is this a reasonable range of alternatives?

Bay Barrier Alternative not included according to Chadwick although Chadwick acknowledges it's a lousy alternative. Fish and Game has looked at various versions of it and it is brought up so commonly by others that Chadwick feels that as long as we can document why it was not included, there shouldn't be a problem. The alternative is also known as the "Carquinez

Flapper". Candlish says the issue of it's not being included will be brought up.

Brantley asks if this is a "screening criteria report"? Soehren said he is aware of performance measures but this is not a screening criteria report.

Buer says his concern about the alternatives should follow the principals of "affordability" and "implementability". Because of these principals, he feels the alternatives are too expensive (multibillion) and thus violates the "affordability" principal. He feels the alternatives should start at \$300 million and go up from there. He also questions "implementability" of the alternatives when they are comprised of dozens of programs that are imbedded into them. Buer feels we need balanced low cost alternatives for the next round. Regarding excessive costs, Soehren replied that the costs are just starting to be developed and we will try and pare down costs or the option of phasing in the alternatives over time is possible.

Candlish says, regarding Buer's second concern, that the way in which the alternatives were developed results in the alternatives having all the bells and whistles and it's hard to concentrate on how the differences occur between them and this jacks up the costs. He doesn't like the way the procedure has gone. He said he would have been more general in terms of different types of categories. Also the alternatives are too similar and he would generate a theme in terms of how you go about fixing the Delta. Soehren acknowledged the similarities but says the differences will out as we whittle down the alternatives to 8-10.

Woodard asks about the selection process of the alternatives and points out the several alternatives that have flooding of Delta islands and it appears to have an emphasis. He notes the vast number of alternatives that have been studied in the past. Woodard noted the possible "Dukes Ditch Alternative". He feels we should go back and take another look to see if we have included all possible alternatives.

Buer notes possibilities of new alternatives include "New Hope Cross Channel", "South Stub Canal" (the south half of the PC), and the "Polder Concept" in which we can get substantial bang for the buck by focusing on certain levees. Buer found intriguing that the concept of flooding of Delta islands (such as the chain-of-lakes) has suddenly caught fire and it appears to violate the Polder Concept and the direction of the Delta Planning Commission.

Soehren noted that the flooding of Delta islands was partly due to agency comments on the initial set of 20 alternatives. The comment was the alternatives had to reduce "entrainment" and that's how the concept of using Delta storage to reduce entrainment got in there.

Chadwick noted we need a special discussion of the concept of flooding of Delta islands and Renning felt the same way.

Fullerton noted that stakeholders have noted why should we pump all kinds of money into saving levees when they're going to fail anyway and why don't we look at options where we look at levees failing and then use them for habitat. All of our alternatives look at saving levees. Fullerton asked if that was a reasonable perspective.

Woodard noted that as long as subsidence continues to occur, the Delta will not be "maintainable". He questions the habitat benefits of a flooded Delta island that will be operated as a reservoir.

Chadwick says the Delta is not viable in its present state on a long term basis (at least the Central Delta) and measures to reduce subsidence just has to happen or island will eventually fail.

Fullerton asked again if a strategy that does not pump a lot of money into levee enhancement a warranted one? He used an example where we might build an isolated system and then be faced with justifying levee enhancement even on a short term basis (10-20 years).

Chadwick says some islands are more important than others such as in the western Delta but otherwise Fish and Game is not equipped to answer that.

Buer says we can never build good Delta levees because the foundations won't permit it because an earthquake can cause levees to liquefy. Buer says the strategy has been putting money in key locations and weaknesses and not putting in massive amounts of money and trying to maintain the system for the interim while we work on a long term strategy. He says he was surprised about the alternatives in that he couldn't find the concept of restoring Delta island to sea level.

Ott said the concept is in there under "long term subsidence program" such as purchase and lease back and orchestrating farming practices but one has to look for it in the alternatives.

Buer only found the landside buffer zone and that won't do it by and in itself.

Soehren discussed Alternative 6 and its action of "implement subsidence management program".

Woodard talked about the bibliography in the Water Quality TAC report and felt it deserves a look to see if any possible alternatives have been left out.

Ott asked if there are any new alternatives we have not considered.

Renning says there is the "South Delta Recirculation" proposal where releases could be made from the Calif Aqueduct into the San Joaquin River for recirculation purposes and water quality.

Chadwick says the alternatives package does nothing for the San Joaquin system above the Delta but he felt that was reasonable given the CALFED mission of "fixing the Delta". He did however feel it was worth noting.

Renning asked about the "master drain for the San Joaquin Valley". Fullerton and Ott said no although there are alternatives that would indirectly inject water into tributaries on the east side and actions to store and collect tile drainage for later release. Renning noted the USBR has been directed by SWRCB to pursue a permit for that action. Ott also noted a Central Calif Reuse Study where Bay Area water is exchanged and treated and reused and/or discharged to Carquinez in an attempt to look for "exchange" potentials that may make "new water" for the Delta.

Chadwick noted this program does little for San Joaquin River above the Delta but again noted that was not unreasonable. This program will not rehabilitate salmon runs for the San Joaquin River.

Soehren noted we have done actions above the Delta but that was related to a problem in the Delta such as getting more fish down to the Delta.

Elder said ok but the same is true for the San Joaquin system.

Chadwick says it will always be easier to do work on the upper Sac River than the San Joaquin because of having to deal with all the local districts on the San Joaquin system. Ott says there are a few action for the San Joaquin system.

Chadwick says that one thing that stands out is the proposed reoperation of reservoirs to improve fisheries on the Sacramento River system but nothing is said about the reservoirs on the San Joaquin system.

Elder says we shouldn't toss out things at this point because of "politics" if we're trying to do an objective evaluation. Fullerton noted there's less water to play with on the San Joaquin system and one has to provide substitute water before one has water to play with. Possibilities include isolated systems with feeder lines or conjunctive use to supply replacement water to ag interests so that one can get control of water.

Brantley thought that Woodard would have water quality concerns about San Joaquin system. Woodard said the drainage problem on the San Joaquin system is like a whole different project and he doesn't feel uncomfortable about not making it a minimum requirement for the CALFED program.

The group talked at length about the water quality issue on the San Joaquin River and Brantley noted for instance that if the San Joaquin water was cleaned up then one wouldn't have to put so much emphasis on the Sacramento system. The selenium issue on the San Joaquin was discussed and Renning said the selenium is an "issue" but salt on the San Joaquin is the problem. There was more discussion on water quality issues and Soehren wanted to move on to "concepts and strategies".

Are there concepts or strategies in the alternatives that seem to work well?

Chadwick says that, with respect to conflict between fisheries and water supply, is to move part of the diversion to a less threatening place such as Hood or higher.

Buer agreed and notes we should be looking at maximum flexibility of the system over time and this to him means several smaller diversion sites spaced over time and this would give us spatial operational flexibility also. Fullerton proposed a PC that would break off into individual fingers. Buer wants a lot of flexibility into the system because we cannot anticipate how the system will evolve over time. As an example, he noted an example where an intake at Hood was clogged but the intake at Freeport was available and this could be a lifesaver. He emphasized "multiple

smaller facilities" and facilities that supply a high quality water supply.

Chadwick asks if Buer's concept is achievable in a sense that how we isolate supplies going to South Bay and southern Calif from those going to agriculture.

Buer noted the concept of "timesharing" and feels it should be explored and not necessarily a separate system. Fullerton noted there is a way to differentially send high quality water to urban users by shipping it part way down the system and parking it and waiting until there is a window before sending it the rest of the way. Buer notes this is what is done in the petroleum industry where diesel, gasoline, and so on in the same pipes throughout the country. Buer says we need at least a modest isolated transfer facility or the State will be in big trouble.

Renning asks about proposals that will be implemented regardless of what CALFED does. Soehren noted Category 3 and Senate Bill 900 are some of those concepts that are popping it.

Chadwick says that measures to reduce subsidence (such as strategies considered for Sherman and Twitchell Islands) should be in more alternatives. Soehren notes that if we're really going to reduce subsidence, then we're talking about eliminating farming. Chadwick agreed and he felt that would provide more multiple benefits than flooding the islands. Woodard thought that some farming practices are still possible without subsidence occurring. Chadwick asked about subsidence on Jersey Island with the grasslands there and Buer noted it subsides rapidly too at a rate of 2 inches a year. Also, although tilling isn't occurring which blows soils away, you're still going through the wetting and drying cycle which results in a major loss of organics so converting to grasslands doesn't do it. One has to keep it wet all the time to avoid subsidence. Woodard agreed and noted there should be more studies and he felt that building and maintenance of levees will be less important in the long term as compared with reducing subsidence. Renning says we need to flood islands to stop subsidence and someone else noted stopping agriculture will do it to.

Buer discussed coupling dredging projects with levee rehab projects. All demonstration projects show we can keep costs down if we do this. Soehren noted that the concept of restoring habitat at the same time that levee work is being done is worth pursuing. Buer says the problem is "institutional" and not "mechanical".

Getting back to moving diversions, Chadwick felt that got you more bang for the buck than habitat restoration actions. Renning noted that moving diversions would improve habitat in the southern Delta because what's left won't get sucked into the pumps.

The group talked about channel island erosion and Buer noted that channel erosion due to flows is not a major factor but boat wave action is the primary cause of the destruction of riparian habitat on channel islands. Elder asked if consideration was made to constrain boating activity with respect to reducing channel erosion. Soehren and Ott noted there is some mention of it. Buer noted the concept of separating boating activities (big and fast boats not allowed in some areas) was received favorably with respect to the south barriers project. The group concluded that separating boating activities to reduce channel island erosion is affordable and should be

pursued.

Are there concepts or strategies in the alternatives that do not work well or are incomplete? In-Delta storage reservoirs were discussed at length here. Chadwick says if the reservoirs are operated in a way that do not reduce reservoir releases, then outflow is increased and there are environmental benefits. He questioned how they facilitate to curtail exports. Fullerton and Ott noted the reservoirs can be operated to benefit fish when pumping occurs. The group brought up "real-time monitoring" and Renning says his experience says the program is expensive and is not real successful. Chadwick also noted that operations like reoperation of Clifton Court Forebay won't necessarily benefit fish.

Buer also noted that terrestrial habitat valuable to shorebirds will be wiped out if Delta islands are converted to in-Delta reservoirs. He also noted concerns with seepage on islands adjacent to an in-Delta storage reservoir island and the water quality issue with in-Delta reservoirs.

Woodard asked why a reservoir wasn't built south of Clifton Court in the hills and pump up there to create a water supply. Woodard noted that peat on islands will pose a water quality problem and small reservoirs are not too good for water quality because they aren't biologically stable because they're too shallow and they don't stratify and you can't use multiple portals for the outlets. Buer noted weed problems with Clifton Court and the possibility of water hyacinths could pose problems for the proposed chain-of-lakes.

Fullerton asked in deeper islands would be better for in-Delta islands and he felt that some of the levee on those islands would probably go anyway over time.

Woodard was concerned about the impacts of siphoning under some Delta levees for the chain-of-lakes concept and the massive physical disturbances and engineering problems associated with that concept.

There was discussion about how we manage water quality in the Central Delta if we have a chain-of-lakes. Renning wondered why going through the Delta is more acceptable than a Peripheral Canal. He doesn't see the same benefits as creating a lake because the water that goes in there is going to move south eventually. Fullerton says the benefit is in the storage component which provides operational and environmental benefits. Delta islands, according to Fullerton, can draw a lot of water in a short period of time during low impact to fish periods which isn't the case with off-stream storage. Chadwick says ok but he says you'd probably have to forego fish screens.

Chadwick also has concerns about concepts that involve large diversions way up river because of concerns about flows below the reservoir that provide dual benefits for water supply, fisheries, and in-stream benefits. Chadwick questioned a possible diversion at Shasta and wondered whether it will still be possible to provide dilution for things such as mine drainage and necessary temperatures.

In light of Chadwick's concerns, Fullerton wondered whether an east side conveyance similar to

Folsom South Canal that went beyond San Joaquin County and went further south to the aqueduct would work. He drew a diagram on the large map. The proposed intake would be at Hood. He asked Chadwick if this was better than the Shasta diversion. Ott proposed tying into Folsom South Canal and taking it further south to the aqueduct and asked the group how they felt. This is similar to Alternative 13 with a different intake. The group liked the idea and felt that it was better than the proposal for the American River/Oroville connection. Buer also proposed taking the water at Freeport instead of Hood to avoid Sacramento Wastewater Treatment Plant outfall. The consensus was that the group's ideas were better than the east side conveyances in the alternatives report.

Chadwick asked about the screened intake at Italian Slough. Ott explained the concept and there was a discussion among the group about flows versus screens and how the two work together. Buer proposed an inflatable barrier at the forebay. Chadwick discussed the USBR intake and how it is susceptible to tide cycles which affects velocities. The group didn't say there was anything wrong with the idea about the screen intake at Italian Slough but questioned how the idea would work.

Woodard questioned contributions from wastewater reclamation and whether or not they would work as proposed in the alternatives as long as the waste stream is returning to the water body.

Chadwick asked about the concept of improved drainage in floodway corridors. Buer says this may cause fish to get stranded and gave the example of the large number of salmon getting stranded in the Yolo Bypass.

Fullerton asked about the 100,000 acre-foot (AF) purchase on the San Joaquin system and asked the group about it. Chadwick said it was small with respect to the need but acknowledged it would probably provide benefits.

Brantley discussed the idea of pulse flows and how they relate to the San Joaquin drainage problem. Some pulse flows were done in the 1960s according to Brantley and there was discussion about their true benefits. Brantley says there may be a little bit of an improvement and the spike is shifted.

Soehren told the group a BDAC member was critical of the 100,000 AF purchase on the San Joaquin because it will present problems for riparian users. If the water is purchased, it won't be available to farmers who would normally use the water and return the water to the river. The suggestion by the BDAC member was to raise Friant Dam if you want more water on the San Joaquin system.

Friant Dam was discussed and the group discussed whether or not it was possible to raise it. Renning says it would be necessary to build a lot of dikes if it was to be raised in addition to foundation problems. There is also a matter of converting between "Class 1" and "Class 2" water which is how water is classified at Friant.

Brantley discussed the "Cross Valley Channel" at Bakersfield. She noted there was a study done

that looked at storage down south and the study concluded that increasing the capacity of San Luis Reservoir was judged to be the best. She brought this up because of what she had read in Alternative 9.

Have we missed any good strategies or concepts?

Renning discussed water transfers and streamlining the process for it. Although the strategy can be a good one, he noted one had to be careful in looking at the benefits from them. He gave an example of certain transfers from north of the Delta to south of the Delta. If the transfers aren't truly making new water available, then the projects simply underwrite the transfer when it goes south and no water was really created except on paper.

The concept of consolidating diversions was discussed. Some minor consolidations may be ok but Buer says its better to have a lot of smaller diversions than only one.

Fullerton discussed ponds on islands that farmers can draw upon but the idea didn't catch on from the group.

Brantley discussed real-time monitoring. The group appeared to question its real benefits at this time. Soehren noted its good to do and maybe we can become better at it.

Lunch Break

How can we increase the linkages between the elements to provide higher conflict resolution?

Soehren reworded this to read "are there any other actions that we can add in that will have benefits and help us meet our objectives and maybe help us meet objectives in two or more areas or that go very well with actions that exist in our alternatives already." He used the example that Buer brought up about using dredge material on the levees for rehab projects.

Buer discussed the North Delta flooding problem and the concept of taking farmland out of intensive production to restore the natural flooding regime. The action takes the peak out of the downstream flooding problem. Buer drew on the map and it is on the Mokelumne and Cosumnes systems. Buer noted levees can be removed to allow flooding or lower levees can be constructed. There will be benefits to reduce groundwater overdraft and benefits for habitat restoration.

The idea of managing east Delta islands for shallow water habitat for Delta smelt or as wetlands was discussed in response to Dick Daniel's suggestion. Brantley noted benefits for waterfowl as well. Buer suggested Brack Tract, McCormack-Williamson, Canal Ranch as good candidates. Fullerton noted the islands could be localized as to year types and opened up for shallow water habitat when smelt are present in wet years and closing them up and using them as wetlands in dry years. Chadwick questioned whether this type of habitat would actually be better for splittail than for smelt.

Buer mentioned channel enlargements/improvements for flood control would also benefit water supply but Chadwick noted this action could be detrimental to fish.

Are there alternatives or elements of alternatives which can be combined in order to perform better or provide more balanced performance?

Buer said the dual transfer concept should have the subsidence reversal concept brought back in and the in-Delta concept should be removed.

Chadwick said the habitat improvements are very similar in all the alternatives and we should try and make them more diverse.

Soehren asked Buer if a dual transfer facility was more flexible than a larger sized isolated facility and he said yes. He thought it was highly viable.

Chadwick asked others about the differences between Alternatives 10 and 12 and the differences in terms of screens and storage was discussed.

Chadwick asked about the size of an isolated facility and it was decided by the group that 5,000 to 10,000 cfs would do it. Fullerton asked if 15,000 would be ok and Chadwick said probably no. Buer thought that it was possible to work out a deal with Delta interests if the size was limited to 5,000 cfs but not much more than that. Buer noted that a 5,000 cfs facility gives you about 3.6 MAF/yr and Fullerton thought you could limp by with that amount for a year or two in the event of an earthquake. Renning said carriage water becomes necessary in general at exports over 4,000 cfs.

Chadwick discussed relationships between habitat and production of fish such as salmon and splittail. Chadwick says the least understood relationship is for smelt and he feels largemouth bass will benefit more than Delta smelt.

Fullerton asked 1 billion of very specific restoration projects or 900 million cash that could be spent over time and not committed up front. Is there an advantage to holding back our decisions? Brantley says habitat restoration has always been a piecemeal approach and you can get more bang for the buck with habitat restoration by buying larger pieces like up in spawning areas.

Buer discussed about how we need to get more aggressive about tying up land for future generations. It's too tempting to go ahead and build in floodplains when you only have to elevate a few feet. Brantley says she see two separate things for habitat restoration. One is for restoration to fix habitat that is broken and the other is to set aside. We need more edgewater habitat which is not in abundance.

Renning discussed there still isn't a generally accepted method for evaluating impacts/benefits of various proposals. The Fish and Game striped bass model is one that is used to evaluate impacts/benefits but the model doesn't work with a PC.

Fullerton proposed buying up land and setting it aside because you get the land and the diversions. The idea of buying up the whole Delta and managing it the way we want was discussed. Buer said the whole Delta could be bought for \$500 million and Fullerton said the land could then be leased back to get some of the money back. One wouldn't let the land sit vacant but instead plan for its use and manage it correctly.

Woodard says he doesn't agree with the theme of Alternative 6 where it is proposed that water can more reliably be exported from the Delta if we fix more habitat. Some actions would appear to have to be added here. Brantley questioned how much time would elapse before fish populations would be improved in Alternative 6 and Chadwick noted some fish populations have turned around dramatically in short periods of time such as the turnaround of San Joaquin salmon in good years. He still wondered though how Alternative 6 would perform.

Which alternatives do you perceive to be the highest three performers?

Major themes to be carried forward include:

Renning says isolated transfer facility (IF) and storage south of the Delta are important and Chadwick feels that this should be in one of the alternatives that goes forward. He feels the size should be in the 5,000 to 10,000 cfs range.

Chadwick also feels that system reoperation will have to be in one of the alternatives.

Chadwick feels a full sized isolation facility would have to be one of the 8 to 10 alternatives as well as a partial but Woodard liked the partial.

Buer again emphasized subsidence reversal should be carried forward if it works.

There was discussion about Delta water quality. Woodard says treatment processes are complex and not everything is known or can be predicted for the future. In terms of probability though, the better the water is to start with, the better quality of water we have to start with, the less chance of a new byproduct being produced in the treatment process in ten or so years. Woodard also discussed pathogens such as cryptosporidium which are bad news. Measures to protect the watershed are normally done to prevent pathogens like that from occurring but this isn't possible for a watershed as big as the Delta. Rather, it's best to emphasize source control according to Woodard.

Chadwick asked if the ship channel conveyance and the small isolated facility different enough to both be carried forward to the next round of 8 to 10 alternatives and Buer thought they were different enough. Buer did note though that the ship channel conveyance would be very expensive with respect to siphoning under the channel and tunneling through the urban areas on the south side. He thought it would be an engineers nightmare with 30-foot diameter pipes probably being installed. Buer says going from open channel to pipe will double costs.

Ott asked if it makes sense to spending extra money to move diversions to above I Street Bridge which is defined as critical Delta smelt habitat starting point. Moving there also puts one above the treatment plant and stormwater runoff too. Chadwick noted moving the diversion has big

benefits for Delta smelt although the big issue is salmon and not smelt in his opinion.

Woodard finished the discussion by noting the ship channel conveyance should be kept in for right now despite any high costs.

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