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Central Delta Intakes
Operation/ Gaming Issues

March 3, 2000
"Strawdog"

Assumptions

- For purposes of analysis, we are assuming
  - a constant 4 kcfs diversion at McDonald Island (no storage)
  - a 4 kfs diversion at Bacon Island (either into storage or into a conveyance system to CCF)
- *Up to 1.5 kcfs of McDonald Island or Bacon or CCF diversions would be* delivered to south Delta agriculture
  - Alternatively, if water stages are improved by changing the point of diversions for the SWP and/or CVP (at full build out of facilities), we should consider leaving south Delta point of diversions alone (or possibly screening them).
- Clifton Court would be sized to 15 kcfs to maximize diversion flexibility (need confirmation on this).
- CCF and Tracy Intertie constructed.

Issues

1) Possible Operational Priorities, in no particular order:
   a) Protect South Delta water quality, reliability, and water levels (note: water levels may not be an issue if SDWA are irrigators are supplied via an isolated canal (from McDonald, Bacon, or CCF), or if they are supplied through new lowered consolidated diversion combined with a dredging program)
   b) Reduce salinity and TOC in urban supplies
   c) Reduce fishery entrainment
   d) Improve export water supplies

2) Operational/ infrastructure shifts depend upon which priority is to be emphasized. Possible operations to meet these various priorities is given below:
   a) **South Delta Priority.**
      i) Deliver enough water to meet South Delta agricultural needs at all times, for ag areas tied to the Central Delta Diversion System (CDDS).
         (1) If fish entrainment at the McDonald Island screened diversions are *problematic (if screened they should be minimal) at certain times of* the year, build an intertie to Bacon Island with enough capacity to serve agriculture for a period of weeks without pumping. Operate Bacon to keep enough storage to meet south Delta agricultural needs during periods of high biological sensitivity.
         (2) The diversion to meet South Delta ag needs should not count against Project water rights.
      ii) If south Delta ag areas remain which depend upon south Delta channels, then
         (1) Pump at least enough water through CCFS and Tracy to retain south Delta water quality
         (2) Consider other south delta improvements, such as dredging, extending diversions, consolidation, and/or some combination of barriers to reduce or eliminate south Delta stage problems.
   b) **Urban Water Quality Priority.**
      i) Plumb the CDDS to allow McDonald/ Bacon supplies to be injected *either at CCFB or at Tracy.*
      ii) Shift federal urban supplies from the DMC to the CA Aqueduct.
      iii) Keep DMC water segregated from CA Aqueduct water during high TOC transport periods (i.e. don't pump into O'Neal Forebay).
      iv) When the Delta is in balance during the TOC peak in February and March, shift pumping out of Banks and into Bacon for storage. This *would require reversing flows out of CCF and into the Bacon Intertie for* storage. During VAMP and after, deliver that water from Bacon to agriculture via the DMC. Trade for Tracy water during a period of higher water quality.
      v) Use Bacon as a pass through facility when salinities are low. With a 4 kcfs intake, the residence time of stored water would be approximately 12 days. *This would reduce TOC production.* Alternatively, provide direct conveyance from the Bacon intakes to the Bacon intertie, leaving storage on the island.
      vi) Use the water on Bacon Island to enhance Delta outflow to hold down Delta salinity at CCFB.
         (1)
   c) **Fishery Priority**
      i) Operate all three intake points on an opportunistic/ real-time basis. Each day, pumping regime would be based upon:
         (1) Species/ life stages in vicinity of each intake point.
         (2) Screening characteristics.
         (3) Priority given to individual species.
         (4) Flexibility of the system to accommodate shifting in total pumping.
      ii) Shifting would take place in time (with reduced overall pumping during some periods compensated by increased pumping during other periods) and space (pumping would take place at the intakes with the most favorable characteristics.
      iii) Typically, this priority would reduce pumping during the spring, and maximize during the summer and fall.
   d) **Export water supply.**
      i) Use Delta storage as a new yield enhancing facility.

ii) Use spatial shifting between intake points to reduce frequency of ESA "red light" occurrences.
iii) Use expanded overall pumping capacity to increase deliveries.

3) Possible operational scenario
   a) The program should be designed to help solve the south Delta water quality and stage problems. This could be accomplished by improving stage levels in the Delta by merely relocating SWP and CVP intake into the Central Delta.. Therefore, the south Delta should probably get top operational priority. This means that enough water to meet south Delta needs and avoid staging problems must be delivered at all times. Restrictions in deliveries due to fish take cannot be allowed for diversions who have riparian rights. If necessary, Bacon Island should be used to allow such deliveries to be made during outage periods (if connection is provided).
   b) Urban exporters need a reliable supply of water of a good water quality. Improving yield would be a secondary priority.
   c) The main remaining questions have to do with fishery protection vs. export water quality (and particularly urban water quality). The easiest way to explore this operation would be to run a game. For example:
      i) The Projects control the McDonald Island intakes.
         (1) McDonald is allowed to operate year round at 4 kcfs at the discretion of the Projects. Out of this 4 kcfs of flow, the Projects must subtract off enough to meet local needs.
         (2) CCFB will continue to operate under existing COE criteria. This means that total export capacity will rise by (4 kcfs - deliveries to the South Delta).
         (3) Presumably, the Projects will shift between McDonald and CCFB, depending on source quality. Also, high TOC and high salinity water would be preferentially shifted to the DMC.
      ii) The EWA controls the Bacon Island intake.
         (1) EWA may require the Projects to take Bacon water in preference to water from the McDonald intakes or CCFB, provided that any water quality degradation is below certain criteria.
         (2) EWA may use Project conveyance when surplus capacity is available. However, the Projects may elect to move the EWA water as they see fit, provided that EWA receives proper credit in SLR. Thus, if the EWA wishes to move Bacon water during VAMP, the Projects may
            (a) Move the water to SLR through the CCFB.
            (b) Send the water through Tracy to agriculture (to avoid high TOC).
            (c) Hold the water in Bacon for later delivery through Tracy or for Delta outflow. However, the Projects would need to credit the water toward the EWA in SLR and the Project water in Bacon would become low priority water, subject to spilling.
      iii) That is, instead of attempting to develop an integrated optimum operations plan, we could divide up operations rights and then allow the two interests to interact.

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