

Preliminary Responses to the Rejection of the Western Delta Intakes Concept as a Comparable Project to the Bay Delta Conservation Plan in the BDCP Public Draft EIR/EIS

Pyke comments are in red. Line and section numbers in black are from Draft EIR/EIS.

35 **3A.11.4 Pyke Proposal**

The Western Delta Intakes Concept (WDIC) had its origin in a white paper prepared by Tom Zuckerman and others for Delta Vision and the key feature that it is self-regulating was the product of a conversation with Jonas Minton. The concept has been developed by a multi-disciplinary technical team and has benefited from discussions with staff of the Metropolitan Water District of SoCal.

36 The Western Delta Intake Concept proposed by Robert Pyke (the Pyke Proposal) includes the
37 following actions (Pyke 2012, Pyke 2013):

- 38 ● Restoration of floodplains along the Sacramento and San Joaquin Rivers and their tributaries,
39 including the Lower San Joaquin Bypass.

This bullet is taken from a white paper that outlines the WDIC but is not essential to that subset of the WDIC that is directly comparable to the project defined by the sponsors of the BDCP as being “in the Delta”. The preparers of this public draft EIR/EIS have not talked to the team that has developed the WDIC and do not appear to have made any effort to use the WDIC as the basis for evaluating an alternative that is directly comparable to the BDCP.

- 40 ● Dual conveyance consisting of:

41 1) Use of Sherman Island as an intake forebay, facilitated by removal of the peat soils and
42 modification of the levees to allow for water to infiltrate up to 15,000 cfs into the island
43 forebay from the surrounding rivers and sloughs (water inflow into Sherman Island
1 would occur when water elevation in Sherman Island is lower than water elevation in
2 the surrounding rivers and sloughs).

3 2) A pumping plant and one or more tunnels to convey water from Sherman Island to a
4 new reservoir near Clifton Court Forebay (Brushy Creek Reservoir).

5 3) Continued use of existing south Delta intakes with new fish screens (water would not be
6 conveyed from Sherman Island when salinity is high in the western Delta).

This is incorrect. Reconfigured South Delta intakes with completely new fish screens parallel to the flow in the Old River would be used only when there are high flows in the

Old River. This would be occasional use only during periods of high flows. On the occasions that water is extracted from the Old River, extraction would continue at Sherman Island to take advantage of these high flows, but the water extracted at Sherman Island would be stored temporarily in an expanded Los Vaqueros reservoir and/or the new Brushy Creek reservoir. At most, only up to 15,000 cfs can be moved south-of-the Delta by the existing South Delta pumps. The Sherman Island intakes and the reconfigured South Delta intakes, would have a combined capacity of up to 30,000 cfs, so temporary storage within the Delta region will be necessary to make this “Big Gulp” strategy work. The term dual conveyance should not be used to describe this dual point-of-diversion concept as it normally refers to a combination of through-Delta and isolated conveyance facilities. The reason for allowing continued extraction of water in the South Delta is entirely to maximize the capture of water during infrequent periods of high flows in both the San Joaquin and the Sacramento Rivers. It is not related to periods of high salinity in the Western Delta, which occurs when outflows are low rather than high. Minimum Delta outflow requirements will be increased as part of the WDIC which will benefit fish and reduce salinity intrusion into the Western Delta.

- 7 • Levees around Sherman Island along the Sacramento River, San Joaquin River, and Threemile
- 8 Slough would be replaced with permeable levees to allow water from the rivers to enter
- 9 Sherman Island but not flow from the island.

Not along Three Mile Slough - only along the Sacramento and San Joaquin Rivers where river flows and tides provide good sweeping velocities. Water will in fact flow both in and out through the permeable embankments. When the water surface inside the embankments is not lowered by pumping, the water surface inside the Sherman Island Forebay will simply rise and fall with the tides, which will help minimize clogging of the permeable embankments. During an extended drought if there is not enough water in the reservoirs to keep X2 west of Sherman Island, some salty water might penetrate the permeable embankments but the salty water will: (1) tend to be flushed out naturally when X2 is moved back to the west; and (2) be pumped out and wasted or run through a possible future brackish water desalination facility) without using more than a small percentage of the annual energy costs of the WDIC (the forebay will only have a capacity of several hundred thousand acre-feet as opposed to the average 6 million acre-feet that might be extracted annually). There might be some mixing of fresh water with salty water in this process but since the extraction would be from the bottom of the forebay, the salty water should be taken out preferentially.

- 10 ● Conversion of the Delta Cross Channel gates into a boat lock to prevent fish passage from the
- 11 Sacramento River into the central Delta.
- 12 ● New Brushy Creek Reservoir near Clifton Court Forebay (with a capacity of at least 1 million
- 13 acre-feet), which could be used to store water diverted from Sherman Island when the total
- 14 Delta exports exceed the 15,000 cfs capacity of the SWP and CVP pumping plants. A conveyance

15 could be constructed between Brushy Creek Reservoir and Los Vaqueros Reservoir for
16 additional storage capacity. If Los Vaqueros Reservoir is expanded (to a capacity of at least 1
17 million acre-feet), the two reservoirs could be designed with a pumped storage hydro-electric
18 facility.

- 19 ● Operation of SWP and CVP in accordance with the 2008 USFWS Biological Opinion and the 2009
20 NMFS Biological Opinion, as well as all existing operating criteria established by regulatory
21 agencies.

Nowhere has it been said that the WDIC would operate in accordance with existing biological opinions. The WDIC would restore a much more natural flow regime to the Delta and new Biological Opinions would likely be required. It is, however, the general intent that all upstream operations would remain similar to the existing upstream operation except that increased minimum Delta outflow requirements would be required to provide the necessary fish and ecosystem benefits. It is ironic that the BDCP, which is intended to benefit fish, proposes no increase in minimum Delta flows for the Evaluated Starting Operations (Alternative 4, Scenario H3) relative to the existing or no-action cases.

- 22 ● Construction of storage facilities south of the Delta, including additional groundwater storage
23 and western San Joaquin Valley surface water storage facilities.²⁰

While one of the principles on which the WDIC is based is that at times of high flows, water that is surplus over environmental needs and immediate demand should be extracted and then used primarily to recharge the groundwater basins south of the Delta that have been overdrawn in dry years, no specific storage facilities are proposed for construction as part of either the WDIC or a subset of the WDIC that constitutes a project that is directly comparable to the BDCP. Rather, the specific means of using this surplus water to provide longer-term reliability of water supplies is left up to the participants in the CVP and the SWP. The WDIC at least allows this possibility. The BDCP does not, and therefore the BDCP cannot possibly achieve water supply reliability as called for in the Delta Reform Act of 2009.

It is also disingenuous for the BDCP EIR/EIS to claim that the BDCP is a project whose impacts can be or are entirely confined to the Delta when, for instance, the announcement that Dr. Jerry Meral, who has directed the BDCP for the last three years, is joining the Natural Heritage Institute says: "The infrastructure improvements (*of the BDCP*) may also provide substantial benefits beyond the delta itself. NHI has worked for decades to illuminate opportunities for conjunctive use of surface and groundwater resources, many of which would rely on a more flexible system of moving water across the delta. When it becomes easier to move water to new off-stream storage facilities and empty groundwater basins in the San Joaquin Valley and Southern California, it will be possible to undertake stream enhancement north of the Delta, benefitting both the environment and water users of all regions." Not that the BDCP would actually make it any easier to move water to new off-stream storage facilities and empty groundwater basins, but the WDIC would.

- 24 ● A new lined canal to convey water from the SWP California Aqueduct and the CVP Delta-
25 Mendota Canal into the San Joaquin River upstream of Vernalis.
- 26 ● Ecosystem restoration of tidal and sub-tidal habitat at the western end of Sherman Island,
27 Lower San Joaquin River Bypass, and Franks Tract.
- 28 ● Installation of fish screens along Old River at the entrance to Clifton Court Forebay.
- 29 Some of these components are already reflected in EIR/EIS alternatives that are being carried
30 forward or in potential alternatives that have been screened out. For example, the Pyke Proposal
31 includes portions of the western Delta conveyance analyzed under the EIR/EIS Alternatives 1C, 2C,
32 and 6C. The proposal also includes fish screen facilities along Old River that were eliminated from
33 further evaluation in the Initial Screening Conveyance Alternative C4.

The nature and use of the fish screens that are proposed in the WDIC for use along the Old River are in no way comparable to the fish screens associated with Initial Screening Alternative C4, which involved through-Delta conveyance from the Sacramento River, and to suggest that they are shows incompetence or ill-intent on the part of whoever has prepared this draft EIR/EIS. Similarly it is nonsensical to suggest that the WDIC includes any portion of Alternatives 1C, 2C and 6C, as shown in Figure 3-6 of this draft EIR/EIS, which shows a combination canal/tunnel/canal conveyance from the North Delta along an alignment that passes to the east of Sherman Island.

²⁰ These elements of the Pyke Proposal are beyond the purpose and scope of the BDCP, as was the case with similar elements in the Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and the WACO Proposal, as described earlier. The BDCP is a permit-driven process in which DWR is seeking a long-term incidental take authorizations for the loss of endangered and threatened species in connection with the operation of the State Water Project. Proposals that seek to develop state-wide water management principles and practices will be helpful in other contexts, however. These include DWR's process for developing the Statewide Water Plan, the Delta Stewardship Council's process for creating its Delta Plan, and various water agencies' processes for preparing Integrated Regional Water Management programs.

This footnote is incorrect. There is a subset of the WDIC as described in Robert Pyke's white paper that is directly comparable to the BDCP, except that instead of being permit driven it is results driven. The core of the WDIC involves restoration of more natural flows through the Delta in conjunction with the construction of facilities that allow the possibility of more reliable water exports from the Delta to points south of the Delta. It will vastly exceed the BDCP in terms of meeting the goals of restoring the Bay-Delta ecosystem and avoiding jeopardy for listed species. It will improve both in-Delta and export water quality, rather than improving export water quality at the expense of in-Delta water quality. It meets the project objectives and purpose and need statements in Chapter 2 of this draft EIR/EIS better than the BDCP does. It does not seek to develop statewide water management principles and practices except for emphasizing that in an era of limited resources and growing population, it is necessary to reconfigure the water conveyance facilities in the Delta in such a way that more water can be extracted in wet periods with high flows so that less water has to be extracted in dry periods with low flows. The suggestion that the WDIC could inform the Delta Stewardship Council's process for creating its Delta Plan is laughable for a number of reasons.

1 The Pyke Proposal also raises a number of challenges and problems. For example, the proposal also
2 could result in limited use of the western Delta intake due to the presence of high salinity waters
3 near Sherman Island, and salinity of the water stored in the island could increase if Delta waters
4 migrated through groundwater or the levees into the island storage facility. More specifically, Delta
5 water quality may limit the use of the Sherman Island reservoir. Sherman Island is located at
6 approximately 92 kilometers from the Golden Gate. The Western Delta Intake Concept Alternative
7 (Pyke 2012) indicates that diversions would not occur unless X2 is located “well west of Sherman
8 Island.” Generally, X2 is located near Chipps Island (74 kilometers from the Golden Gate) to provide
9 freshwater to the western Delta intakes. Under existing conditions (as described in Appendix 5A,
10 *BDCP EIR/EIS Modeling Technical Appendix*), X2 would be located at or to the west of Chipps Island
11 in January through June of wet water years; in January through May in below normal water years;
12 and generally not at all in critically dry years. Also, as water would be diverted at Sherman Island,
13 the X2 location would move eastward unless additional water is released from upstream reservoirs.
14 Therefore, diversions of up to 15,000 cfs would be limited near Sherman Island in a similar manner
15 as north Delta diversions of up to 15,000 cfs are limited under Alternatives 1, 2, and 6 in the
16 EIR/EIS, (as described in Appendix 5A, *BDCP EIR/EIS Modeling Technical Appendix*).

17 Water quality could be difficult to maintain in the Sherman Island forebay in the summer. During the
18 summer and fall months, western Delta salinity near Sherman Island could range from 500 to over
19 2,000 micromhos/centimeter. The saline water could migrate through the groundwater into the
20 Sherman Island forebay. This would be more likely if the volume of stored water is low. The
21 potential for migration from the Delta into Sherman Island also would be more likely under this
22 potential alternative as compared to the existing conditions because of the removal of up to 45 feet
23 of peat soils.

One of the stated principles of the WDIC is that the intake facilities should be located in the Western Delta so that natural flows pass through as much of the Delta as possible before any surplus water is extracted and so that the system would be self-regulating with respect to water rights priorities and assurances because water could only be exported from the western Delta when salinities were low, i.e., when surplus flows were available. Preliminary calculations have indicated that even with this restriction, longer-term average exports might even be increased from present levels if more than 15,000 cfs of water is extracted during periods of high flow. While the average export water quality might not be quite as good as would be provided by North Delta intakes, it would be significantly better than the current exports from the South Delta. Should X2 move as far east as Sherman Island in an extended drought, the Forebay can easily be flushed out once the drought breaks, as discussed previously.

24 In addition to the water quality concerns described above, water quantities under the Pyke Proposal
25 could also be limited.

This statement is both unsupported and incorrect. The preparers of the Public Draft EIR/EIS do not appear to have understood the proposed plan for operating the WDIC. Water will be extracted using the reconfigured South Delta intakes only at times of high flows in the San Joaquin and Old Rivers. Preliminary calculations by the WDIC team have indicated that average water exports could be maintained or even increased, even with higher overall Delta outflow requirements and with minimal use of the reconfigured South Delta intakes. It does not appear that the BDCP has done any calculations to confirm or deny this finding or has in fact done any serious study of alternate points of diversion other than those on the Sacramento River in the North Delta. Even if the project under

consideration is, by definition of its sponsors, confined to actions within the Delta to restore the Delta ecosystem with a view to removing listed species from jeopardy and to restore and protect water supplies of the SWP and the CVP south-of-the-Delta within a stable regulatory framework, when the existing South Delta point-of-diversion is widely acknowledged to be imperfect, a serious study of alternate points-of-diversion is called for with at least some quantitative evaluation of the possible export water quantities. Location of the principal point-of-diversion in the Western Delta must be considered among these alternatives both because such a location genuinely helps restore a more natural pattern of flows through the Delta, recreating an environment that will favor native fish species, and because a concept such as the WDIC is largely self-regulating and is inherently more stable than the complex and perhaps changing operating rules and governance scheme of the BDCP. If the project defined by the sponsors is limited to intakes in the North Delta because the primary goal of the BDCP is to provide better export water quality to satisfy the quest of the Metropolitan Water District of Southern California to hold on to its retail water agency customers, then the EIR/EIS should say that, but it does not.

26 Diversions of up to 15,000 cfs at the south Delta intakes probably would not
27 occur due to current limitations under State Water Board water quality and water rights decisions,
28 the 2008 USFWS Biological Opinion, and the 2009 NMFS Biological Opinion. Under the existing
29 conditions, diversions at the south Delta intakes rarely approach 11,000 cfs. Due to the limitations of
30 diversions near Sherman Island and diversions at the south Delta intakes, it would be difficult to
achieve the water supply reliability goals of the BDCP.

One of the principal limitations on exports from the South Delta facilities is the permit issued by the U.S. Corps of Engineers under the provisions of the Clean Water Act. The reconfiguration proposed in the WDIC would render this permit moot but there appears to be no good reason why new permits could not be obtained as necessary, since the WDIC appears to be more environmentally friendly than any other suggested project that both fulfills the basic objectives of the BDCP and complies with the Delta Reform Act of 2009. The WDIC will offer real fish benefits such as increased minimum flows and much higher OMR limits. An irony of the BDCP proposed project is that it actually makes OMR flows worse in many months, even though moving diversions to the north Delta was supposed to stop those reverse flows in the south Delta. The proponents of the BDCP argue the worsening of OMR occurs only in months when key fish species are not present but that cannot be predicted in advance with any certainty and the entire fish population needs better ecosystem conditions year-round.

31 The Pyke Proposal calls for permeable levees²¹ to allow water to enter Sherman Island while
32 avoiding or reducing fish entrainment. Although, in concept, the reduction in entrainment is an
33 excellent feature, the construction of the proposed levees would likely be impractical. Levee designs
34 that include rock and sand to reduce fish entrainment in the facilities are of limited use and success
35 in a project this size. A permeable embankment capable of passing 15,000 cfs at a velocity of 0.002
36 ft/sec (100 times less than existing approach velocity criteria) would have to be about 95 miles long
37 (assuming 15 feet of wetted area). Sherman Island only has about 19.5 miles of existing levees.

This undocumented calculation is incorrect. Preliminary calculations using the computer program SEEP/W have indicated that inflows of up to 15,000 cfs with approach velocities in the order of 0.002 ft/sec could in fact be obtained using the proposed geometry.

38 The methodology is unclear for controlling diversions through a permeable levee during periods
39 when diversions would not occur in summer and fall to maintain freshwater conditions in the
40 western Delta. If Delta surface water elevations were lower than the surface water elevation within
41 the island, water may “leak” out of the reservoir back into the Delta. If Delta surface water elevations
42 were higher than the surface water elevation within the island, higher salinity water may move
1 through the permeable barrier and increase the salinity of the stored water. Although not included
2 in the Pyke Proposal, this plan may require a dual levee system with an outside permeable barrier to
3 allow water to flow through with limited fish entrainment, as well as an inside solid levee with inlet
4 gates to prevent water from flowing back into the Delta or Delta water mixing with the stored water
5 during periods of higher salinity.

It should be obvious that if the water level inside the Sherman Island Forebay is not drawn down by pumping, the water level inside and outside the permeable embankments will tend to equalize and the water surface inside will rise and fall with the tide. See previous comments regarding salinity control. Whoever prepared the draft EIR/EIS is seeing complications that do not exist.

6 Inundation of Sherman Island would create its own problems. Constructing a reservoir in the
7 western Delta on peaty soils combined with more saline water will increase the potential
8 formation of trihalomethanes. Alternatively, should the peat soils be removed during construction,
9 very substantial amounts of excavation, with attendant environmental impacts, would be necessary.
10 Although the actual size of the Sherman Island Forebay has not been described, it would need to be
11 at least several hundred acres to provide an operational buffer and take advantage of off-peak
12 pumping. At some locations on Sherman Island, the peat can be up to 40 feet deep. Assuming the
13 forebay size to be 750 acres and the average depth of peat to be 20 feet, removal of over 653 million
14 cubic yards could be required.

The size of the proposed Sherman Island Forebay is shown in the figures included in the white paper that describes the WDIC. That white paper makes it clear that the peat would be removed using hydraulic dredging techniques and used to create tidal and sub-tidal habitat on the western portion of Sherman Island and the submerged portion of Sherman Island that lies further west. While the volumes involved are substantial, the cost of moving this material would be relatively small and it constitutes a win-win, for both water supply and the environment.

15 As noted above, the Pyke Proposal would convert the Delta Cross Channel into a boat lock, which
16 would require removing the existing radial gate structure and replacing it with two sets of miter
17 gates located at each end of the Cross-Channel. The lock would also include a pump system with fish
18 screens needed to fill the locks. This structure could have a significant impact on boating traffic,
19 especially during holiday weekends.

The design of boat locks is commonly accomplished worldwide and should not be beyond the capability of the State of California and its engineering consultants. The reason for having a boat lock is to allow for the passage of boats during active salmon runs when the Cross Channel gates are now sometimes closed. At other times of year the lock could be left open. The net result would be positive for both the salmon and recreational boaters.

20 In summary, the Pyke Proposal includes components that are similar to alternatives already being
21 addressed within the various formal EIR/EIS alternatives described herein (including EIR/EIS
22 Alternatives 1C, 2C, and 6C), as well as components of alternatives that have been eliminated from
23 further evaluation, including fish screen facilities along Old River (considered in Initial Screening

24 Conveyance Alternative C4). Those aspects of the Pyke Proposal that are not reflected in other
25 proposals—such as the use of permeable levees at Sherman Island, and conversion of the Delta
26 Cross Channel into a boat lock—are not workable. Therefore, the Pyke Proposal was not identified
27 for evaluation in the EIR/EIS.

This summary paragraph is incorrect. There are no components of the WDIC that have been studied and rejected as parts of other alternatives. No legitimate reasons have been given for suggesting that either the concepts of permeable embankments at Sherman Island or a boat lock in the Cross Channel are unworkable. The overall description of the WDIC in this section is incomplete, incorrect and misleading. The preparers dismiss the WDIC without any real quantitative operations and water quality analyses being performed and without any Effects Analysis for fish. The WDIC would provide real substantive benefits for key fish species, unlike the BDCP proposed project that acknowledges harm to key fish species, including many listed under the federal and state Endangered Species Acts. The WDIC would improve all Delta fisheries by restoring more natural flows through the Delta, both in pattern and quantity, by adding food supply where it is most useful, and by extracting surplus water only in periods of high flow through permeable embankments which exceed current standards for fish screens by a factor of 100.