A Portfolio-Based BDCP Conceptual Alternative

The eight components described below represent a conceptual alternative, not a proposed BDCP project. The analysis of this alternative is intended to assist BDCP in developing the most cost-effective and environmentally beneficial final BDCP project that can be implemented and produce benefits rapidly. Variations on the approaches below should be analyzed as well, including a full range of conveyance capacities.

Guiding Principles

Science-Based Ecosystem Management: Credible, proven science will determine ecosystem improvements and water management, using on-the-ground results as the central driver of decision-making.

Water Supply Reliability: The BDCP can contribute to improved water supply reliability by reducing the physical vulnerability of Delta water supplies and embracing a portfolio approach that recognizes that water suppliers and the public have a broad range of options both in and outside of the Delta to meet their water needs and improve reliability.

A Strong Business Case: A strong business case is central to the success and financial viability of the BDCP. Sound economic principles and cost-benefit analysis must inform water supply improvements so that water ratepayers understand that the benefits they will receive from the project are reasonably proportional to what they are being asked to pay.

Water Quality: Delta water quality will be strongly influenced by the final BDCP plan, with potential impacts and benefits to export water users, local municipalities, Delta residents, Delta farmers and the ecosystem.

Conceptual Elements of a Diversified Portfolio Approach

New Conveyance Facility: Focus BDCP analysis on one 3,000 cfs North Delta intake facility and a single tunnel sized for 3,000 cfs gravity flow. This smaller facility would lower BDCP costs, improve reliability and reduce opposition. If implementation proves successful in meeting biological goals and objectives, a second phase could be constructed subsequently, but would not be permitted at this time.

Project Operations: Analyze, as a starting point for analysis of future SWP and CVP operations, the best science available today. In particular, analyze the operations proposal developed by state and federal biologists to conserve and manage a full range of covered Delta fish species, including consideration of the need to protect upstream fisheries resources.[1] Project operations should utilize a "big gulp, little sip" approach that increases exports in wet years – when water is available in excess of environmental needs

[1] The work of state and federal agency biologists to produce a science-based operational scenario is summarized on pages 1-16 of this BDCP presentation - http://www.essexpartnership.com/wp-content/uploads/2012/11/BDCP_CS5_Update_NGO-Meeting_11_14_12v3.pdf

– and reduces diversions in average and drier years, particularly during key periods such as the spring and fall. Such an operations proposal has been developed over the past year by state and federal fish agency biologists. This is an important agency analysis that should be subjected to additional refinement in an open, transparent process, utilizing independent external peer reviewers. It is essential not to delay a detailed analysis of the likely yield of a new facility based on the best available science.

Estimated Water Exports: ~ 4 - 4.3 MAF/ year (2025). This is an initial estimate of average exports. BDCP has not yet modeled a 3,000 cfs facility with additional South of Delta storage and the agency-developed operational scenario included in this proposal.

Reduced Reliance on the Delta through Investments in South of Delta Water Supplies: DWR, many Urban Water Management Plans and other analyses have concluded that local water supply tools including conservation, water recycling, and other approaches, can provide reliable, sustainable and plentiful new sources of supply that will also be cost-effective over the long run. These sources can also be provided rapidly through additional investments. There is approximately as much new water available from these new water supply sources as is currently exported from the Delta.

This conceptual alternative proposes a smaller capital investment in a Delta facility, in comparison with the current BDCP preliminary project, and investment of savings in local water supply projects. For analytical purposes, this alternative includes a $2 billion investment in water recycling (at a capital cost of approximately $6,430 - 6,470 per AF of permanent water recycling capacity) and a $3 billion investment in urban conservation (at an initial/capital cost of $3,230-4,860 per AF).[2] Urban stormwater capture, groundwater cleanup, and conjunctive use should be included as cost-effective methods for generating future new sources of water, and would also be important elements of a large-scale effort to invest in new local water sources. Additional cost-effective savings can also be obtained from investments in agricultural conservation.[3]

Estimated Yield: 926,000 - 1,245,000 acre-feet of permanent water supply. (309,000 – 311,000 acre-feet from water recycling and 617,000 - 934,000 acre-feet from urban efficiency.)

Improved Water Agency Integration: The principles of integrated regional water management planning should form the foundation for improving cooperation and integration among Bay Area, Central Valley, and Southern California water agencies to provide improved water supply reliability and quality benefits. Increasing integration and

[2] See attachment for additional detail regarding cost and yield estimates. Note that these are initial/capital costs, not annual per-acre-foot unit costs. A comprehensive BDCP analysis should also address operations and maintenance costs of a full range of alternative investments.
[3] The Department of Water Resources Bulletin 160-2009 http://www.waterplan.water.ca.gov/cwpu2009/index.cfm (Volume 2,Chapter 2, page 2-13) states that agricultural water conservation costs range from $35-$900 per AF. Because of the width of this cost range, agricultural conservation is not included in the conceptual cost and yield numbers above. A final BDCP portfolio proposal should, however, include agricultural water use efficiency investments.

cooperation among these agencies could produce substantial potential benefits and cost-savings. For example, more than a dozen significant water agencies serve the Bay Area. Improved physical connections and increased cooperation among these agencies could reduce risks related to earthquakes and localized drought conditions, facilitate wastewater recycling, and utilize existing infrastructure more efficiently.

In Southern California, additional benefits could be obtained, for example, by facilitating water management agreements and programs among agencies with the potential to construct water recycling facilities and agencies that have groundwater storage resources. The Metropolitan Water District could operate its system to facilitate innovative and cost-effective water management programs between agencies in Southern California and elsewhere in the state. Southern California groundwater agencies could allow water from Southern California surface storage facilities to be managed conjunctively with regional groundwater storage facilities. This could, in essence, create new surface storage capacity at the far lower cost associated with groundwater storage. This approach could help take advantage of the supplies available during "big gulp" opportunities in the Delta. Similar potential benefits may exist through increased integration and cooperation in the agricultural sector.

In all of these opportunities it is imperative that program costs be clearly identified and allocated to the water suppliers that benefit. In this way, each public water supplier is able to account to the public it serves that their water ratepayer dollars are being spent wisely, according to law and in a manner that provides clear benefits.

New South of Delta Surface and/or Groundwater Storage: Include up to 1 MAF[4] of new South of Delta storage, with funding allocated through competitive bidding to evaluate proposed surface, groundwater and conjunctive use projects. Investments should be focused on projects that can be completed quickly and that are most cost-effective. Additional South of Delta storage[5] can allow for greater water exports in wetter years. As discussed above, surface storage south of the Delta could be used conjunctively with groundwater facilities to store wet-year exports for future dry years. This increase in storage capacity must be accompanied by new Delta operations that ensure that the new storage will be operated to implement "big gulp, little sip" operations.

Levee Improvements: Improve existing levees and build setback levees as part of habitat restoration. A $1 billion additional investment could improve Delta levees to protect life, property, and important infrastructure, and also upgrade key levees including the eight western Delta islands to a higher standard with improved stability and resilience

[4] This 1 MAF storage target is based on limited BDCP modeling and may be revised based on further analysis.

[5] As used in this proposal, South of Delta storage is defined as storage integrated into the existing SWP and CVP Delta export system, including surface and groundwater storage in the Bay Area, the west side of the San Joaquin Valley, Kern County and Southern California. It includes storage controlled by the CVP, the SWP, MWD, Kern County Water Agency and other regional and local agencies.

in the face of seismic risk. Upgrading these key levees would provide significant water reliability benefits and would be an appropriate use of exporter funds.

Regardless of the size of a Delta facility, maintaining and improving Delta levees is critical to ensuring the physical reliability of Delta exports. Even with new conveyance, the CVP and SWP will continue to rely on water exports from the South Delta, particularly in drier years. With a 9,000 cfs facility, exports from the South Delta would constitute approximately 50 percent of total exports. In critically dry years, BDCP currently anticipates that 75 percent of total exports would be diverted from the South Delta.[6] Therefore, the benefits of this proposed investment in levee improvements would be particularly significant in dry years. BDCP does not currently include a strategy to reduce the physical vulnerability of the portion of Delta exports that would continue to rely on the Delta levee system.

East Bay Municipal Utility District, Contra Costa Water District and Delta landowners currently contribute to the maintenance of the levees upon which they rely. An analogous investment by export agencies would produce significant reliability benefits. For example, with average exports of 4 MAF/y, a contribution of $8/AF would produce $480 million to help improve Delta levees over the coming 15 years. Public funds for levee improvements are appropriate to protect Delta residents and infrastructure of regional and state importance (e.g. highways). Additional local contributions may be required.

Delta Floodplain and Tidal Marsh Habitat Restoration: Implement a large scale, approximately 40,000 acre habitat restoration program to benefit Delta fish and wildlife species, to provide a broad range of ecosystem functions and to be integrated with Delta flood management improvements. There is strong scientific evidence that floodplain habitat restoration, combined with adequate flows, can benefit salmon and other species. However, agency "red flag" memos and the National Research Council review of the existing biological opinions concluded that floodplain restoration cannot substitute for required ecosystem flows. Restoration of tidal marsh habitat, also a desirable activity, nonetheless, has far greater uncertainty associated with it, regarding benefits for many covered species, in comparison with the likely benefits of floodplain restoration. Tidal marsh restoration should be included in the BDCP plan as a complement to flow augmentation and floodplain restoration, as it is more likely to benefit some covered fish species in combination with these elements. Habitat restoration, particularly tidal marsh restoration, should in any case be implemented within an adaptive management framework. Existing CVP and SWP mitigation responsibilities, as well as new mitigation responsibilities associated with a new Delta facility, will be paid for by water exporters, while public funding should be focused on conservation benefits that go beyond

[6] BDCP Draft Effects Analysis, April 13,2012. Tables C.A-24 and C.A-27 from Appendix 5.C - Attachment C-A, which can be found on p. C.A. 83 and C.A. 92 at this link: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Effects_Analysis_-_Appendix_5_C_Attachment_C_A_-_CALSIM_and_DSM2_Results_4-13-12.sflb.ashx

mitigation. This proposal is focused on the coming 15-20 years. Long-term restoration efforts are likely to require additional funding.

Integrating Science into Delta Management: Increase the integration of the best available science into all aspects of Delta and related resource management. The Delta is a complex and highly dynamic system. During the past decade, an expanded investment in science has improved our understanding of this ecosystem. With ongoing investments, that understanding will continue to improve. A long-term investment in science and a program to integrate new scientific results into ongoing management are essential to long-term success. Therefore, BDCP should include the following:

- External independent scientific review at critical points, with clear mechanisms to incorporate peer review results.
- Quantified performance objectives, such as SMART[7] biological objectives and criteria for ecosystem restoration and water operations.
- Governance and adaptive management processes designed to ensure that goals and objectives are achieved, to obtain the best available science over time, and to ensure that scientific results are fully integrated into on-the-ground management.
- Carefully designed roles for the state and federal projects, as well as other stakeholders, to ensure a reliance on objective science.

This science-based approach is not anticipated to result in large increases in project costs. In fact, this approach would increase the cost-effectiveness of BDCP efforts, and should result in savings.

Affording, and Paying for the Portfolio-Based Conceptual Alternative

Our organizations strongly support an analytically-based beneficiary pays approach to BDCP financing. We believe that the analysis of this portfolio approach will assist BDCP in developing detailed cost allocations and in attracting additional funding partners. It will also help reduce pressure for public funds and ensure that such funds are spent effectively and appropriately.

Preliminary cost estimates indicate that this conceptual alternative is less expensive than the current preliminary preferred BDCP project. In addition, some of the investments in this portfolio alternative, such as levee and local water supply investments, are likely to be necessary even with a large Delta facility. Therefore, the actual cost difference between these two different approaches may be larger than indicated here.

This conceptual alternative is more financially viable than the preliminary preferred 9,000 cfs Delta facility project. That project, pegged at $14 billion or more, is proposed to be paid for by water exporters. Proposed habitat restoration could cost up to an

[7] SMART objectives are those that are specific, measurable, achievable, relevant to the goal and timebound.

additional $4 billion, raising the total capital cost of the current approach to approximately $18 billion. By reducing the size of the project to a 3,000 cfs, single-bore facility, many billions of dollars can be freed up to invest in more local supply development and the water exporter shares of the other conceptual alternative components.

The water code requires water users to pay for a new Delta facility.[8] The public share of this conceptual alternative could be funded in part by a reduced water bond. The increased benefits and reduced cost of this approach can assist BDCP in attracting increased funding from beneficiaries, reducing the pressure on the water bond. We believe that the diversified portfolio approach in this conceptual alternative could assist in the effort to develop a broadly supported and effective new water bond.

Estimated Cost Summary

Conceptual Portfolio Component	**Estimated Cost**	**Source of Funding**
New 3,000 cfs North Delta Facility	~ $5-$7 billion[9]	Export water agencies
Local Supply Development	$5 billion	Local water agencies and cost share per state Integrated Regional Water Management Program (IRWMP)
Improved Water Agency Integration	TBD (may be funded through local supply funds described above)	Water agencies and cost share per state IRWMP
New South of Delta Surface and/or Groundwater Storage	~$1.2 billion[10]	Exporters or local water agencies, and public cost share per IRWMP
Levee Improvements	$1 billion	Public, water exporters and other beneficiaries and Delta community
Delta Floodplain and Tidal Marsh Habitat Restoration	$1.7 billion	Export agencies and public
Integrating Science into Delta Management	TBD	Public and water agencies
Total Conceptual Alternative Cost	~$14 to $16 billion	

[8] California Water Code Section 85089.
[9] A BDCP July 1, 2010 presentation estimated the capital cost of a 3,000 cfs facility with 2 18-foot diameter tunnels at $7.2 billion. Using a single tunnel would reduce costs significantly.
[10] See attachment for details regarding cost estimates.

Total Conceptual Alternative Water Supply Benefits

~ 4.9-5.5 MAF/YR.

Delta exports: ~ 4-4.3 MAF/Y.

New South of Delta sources: ~ .93-1.2 MAF/Y