



October 16, 2013

Attention: Imported Water Committee

Bay-Delta Conservation Plan Implementation Process and Evaluation of Portfolio Alternative. (Discussion)

Purpose

The purpose of this memo is to provide information related to the Bay Delta Conservation Plan (BDCP) schedule and process for implementation of the program, and to provide a report on the California Natural Resources Agency's evaluation of the Natural Resources Defense Council's (NRDC) Portfolio Alternative.

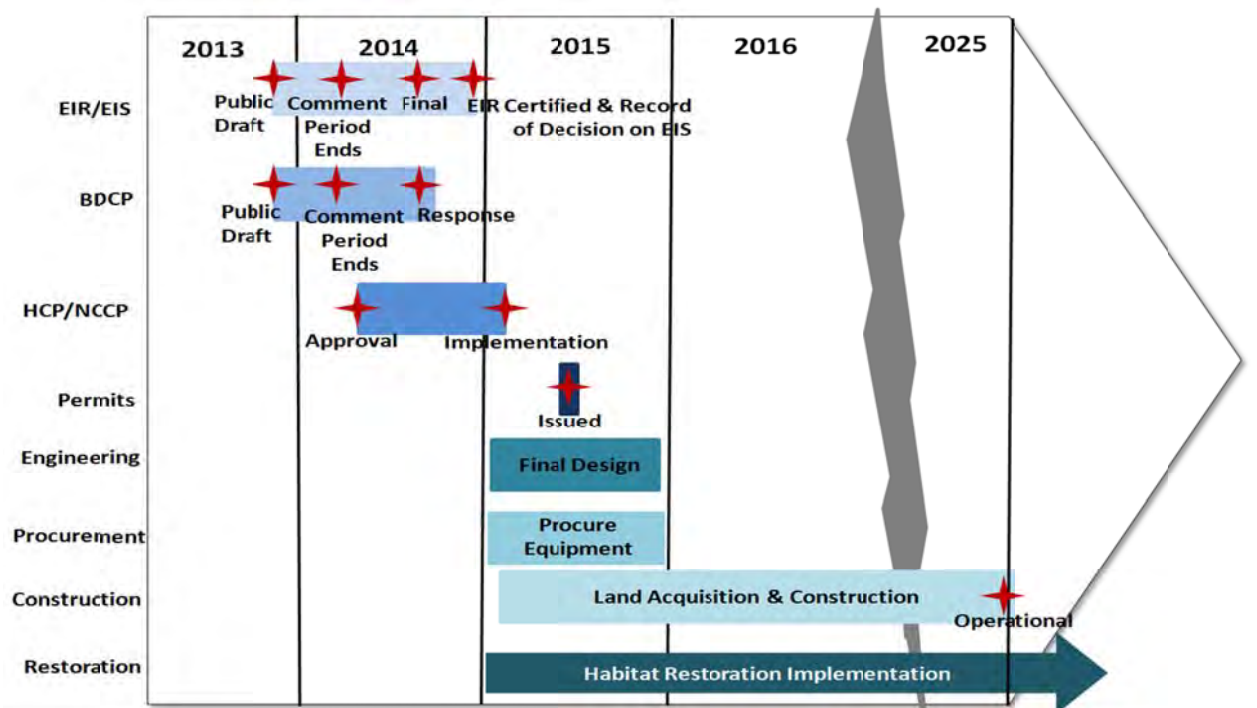
Background

BDCP Implementation Timeline and Process

The BDCP process, timeline, and implementation strategy for the state to fully implement the BDCP and its related conservation elements is largely based upon commonly understood environmental review and permitting milestones for large public works projects. From today through the point in time in which the selected conveyance project is anticipated to be operational, the following represent the key environmental review, permitting, engineering design, and construction milestones that BDCP needs to achieve:

1. Release of draft environmental impact report (EIR)/environmental impact statement (EIS) and public draft BDCP for public review
2. Formal comment period on the EIR/EIS (state has announced a 120-day comment period)
3. BDCP response to comments
4. Release of final EIR/EIS
5. EIR certified by state lead agency (Department of Water Resources)
6. Record of Decision issued by federal lead agencies (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, and National Marine Fisheries Service)
7. Final EIR/EIS submitted to state/federal regulatory agencies for approval and permit authorization
8. Approval of Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP)
9. HCP/NCCP Implementing Agreement executed
10. Individual agency endangered species act (ESA) "take" permits issued
11. BDCP habitat restoration and implementation of conservation actions begin
12. Engineering final design
13. Procure equipment
14. Land acquisition
15. Conveyance project construction begins
16. Conveyance project operational
17. Continued habitat restoration

Given the modified timeline for BDCP document production that the program has experienced over the past years, and in light of the state’s recent announcement that the public drafts of the BDCP and the EIR/EIS would be released for public review on November 15, 2013, the state has not published an updated timeline and schedule plotting the milestones on a calendar to reflect the process toward full implementation. However, based upon previous iterations of the BDCP calendar, and taking into account recent information regarding the schedule of activities in the near-term, the following timeline represents an estimate for the BDCP to achieve the various milestones that need to be accomplished leading up to the point at which the conveyance project could become operational.



In addition to these common environmental review, permitting, engineering design, and construction milestones, Chapter 6 of the administrative draft of the BDCP (*Plan Implementation, Section 6.1.1.3*) highlights a number of additional significant permitting actions that may be required for implementation of the 22 conservation measures in the BDCP:

1. Additional project-level review under CEQA and NEPA
2. Permits under Sections 401 and 404 of the federal Clean Water Act (dredge and fill permits)
3. California Water Code Sections 1000 et seq. (water rights)
4. California Water Code Sections 13000 et seq. (water quality)
5. Sections 10 and 14 of the Rivers and Harbors Act of 1899
6. Section 1602 of the California Fish and Game Code (streambed and lakebed alteration)
7. Section 106 of the National Historic Preservation Act
8. Encroachment permits for work on levees from the Central Valley Flood Protection Board and reclamation districts
9. Permits under the Clean Air Act
10. Permits under the Rivers and Harbors Act
11. Permits under the Coastal Zone Management Act

While BDCP has identified a number of important environmental review, permitting, engineering design, and construction milestones that need to be accomplished leading up to the conveyance project becoming operational, there are a number of additional actions not included along this continuum of regulatory actions that must be undertaken and successfully negotiated for the BDCP program to advance through implementation. The following represent some of the additional processes that must be undertaken – either separately or in parallel with the timeline identified above – before the BDCP program could be implemented:

Additional Action Needed for BDCP Implementation	How is This Action Related to BDCP Implementation?
<p>Approval of the BDCP as part of the Delta Stewardship Council’s Delta Plan</p>	<p>The Delta Stewardship Council (DSC), created in 2009 by SBX7-1, is charged with developing a Delta Plan to achieve the “coequal goals of providing a more reliable water supply for California and protecting, restoring and enhancing the Delta ecosystem.” If the BDCP meets the statutory criteria for establishing an HCP pursuant to the federal ESA and an NCCP under state law, the DSC must incorporate the BDCP into the Delta Plan. With adoption of the Delta Plan by the DSC in May 2013, any public agency that commences work on a covered action that falls within the limits of the Delta Plan (such as BDCP conservation elements), must certify to the DSC for review that the action is consistent with the provisions of the Delta Plan.</p> <p>Appendix 3I of the BDCP EIR/EIS provides an evaluation of BDCP compliance with the 2009 Delta Reform Act (SBX7-1). Having this evaluation already performed at this stage could help the BDCP expedite this action toward implementation.</p>
<p>Approval from the State Water Resources Control Board on the new point of diversion</p>	<p>The State Water Resources Control Board (SWRCB) has a separate responsibility to consider and approve any water project changes that affect the Water Quality Control Plan for the Delta, or the water rights permits of the SWP and CVP. In July 2013, the SWRCB sought the assistance of the DSC’s Delta Science Program in identifying one or more scientifically defensible methods to develop flow criteria for tributaries to the Delta. The SWRCB is specifically requesting the Delta Science Program to provide a written</p>

	<p>recommendation that identifies a method or methods to determine in-stream flow criteria that are:</p> <ul style="list-style-type: none"> • Scientifically defensible • Cost-effective • Applicable to a broad range of each tributary’s watershed • Able to be implemented in a timely fashion <p>The SWRCB plans to use the recommendation to inform a general approach for developing flow criteria and establishing flow objectives for a minimum of five priority tributaries in the Bay-Delta watershed by June 2018, and the remaining priority tributaries thereafter. The SWRCB update may impact the operations of the BDCP, and, ultimately, the yield from the project.</p>
<p>Approval of amended State Water Project contracts or some other mechanisms for contractors to finance the BDCP</p>	<p>To ensure enforceable commitments to pay for any and all BDCP-related costs allocated to State Water Project contractors, existing contracts for those State Water Project contractors electing to participate in the BDCP program will be required to be amended or replaced, or new mechanisms to finance the costs must be developed and implemented, to account for the substantial new cost allocation.</p>

There are also a number of opinions as to what additional external processes the BDCP program will need to navigate to move the entire program forward in a successful manner. For instance, there are stakeholder groups that believe the public must be afforded a vote prior to implementation of the BDCP, particularly given the veto referendum action by the electorate on Proposition 9 (relating to the Peripheral Canal) in 1982. Even though the BDCP program may not consider them to be a relevant part of the BDCP implementation process, the following represent differing stakeholder perspectives as to the additional external processes that may need to be undertaken to implement the BDCP. It is important to note that these external processes that could potentially delay BDCP implementation may or may not materialize.

<p>Possible External Processes That Could Affect BDCP Implementation</p>	<p>Issues For Consideration</p>
<p>Development of a comprehensive finance plan that includes cost allocation among state and federal contractors and subcontractors, and allocation among agricultural and urban water users</p>	<p>The issue of cost allocation – between the state and federal water projects, among state water contractors, among federal water contractors, including among agricultural and urban water user subsets – is a significant, unresolved issue</p>

	<p>for BDCP. Negotiations remain under way, but many interested observers have voiced skepticism over the linkage between costs and benefits received, as well as a variety of contract terms, including how funding would be assured if any contractors default on payments (step-up provisions).</p>
<p>Passage of multiple water bonds in order to secure the state's share of funding to finance implementation of BDCP habitat restoration and conservation measures</p>	<p>The BDCP has identified two future statewide water bonds as the funding source for nearly \$4 billion in Delta ecosystem restoration, enhancement, and protection costs. The water bond originally passed by the Legislature in 2009 has been delayed from the ballot on two occasions, and is presently on the November 2014 ballot. There is currently a great deal of uncertainty regarding the water bond package that is planned for an upcoming ballot or whether a water bond should even be on the November 2014 ballot.</p> <p>The proponents of BDCP have indicated the passage of a water bond in 2014 is not required for the BDCP to move forward, as there is time for one or more bonds to pass before the new conveyance is placed into operation. However, if the water bond is rejected by voters or continues to be delayed, there may be pressure placed on the contractors to fund the restoration.</p>
<p>Litigation</p>	<p>Like any major public works project, there is a strong likelihood that the state and federal environmental documents for the BDCP will be legally challenged by multiple parties shortly after a Record of Decision and Notice of Determination are adopted and filed by federal and state lead agencies. Additionally, there is a possibility that the state and federal ESA permits could also be legally challenged after issuance. Litigation could delay the BDCP implementation process.</p>
<p>Action by the State Legislature</p>	<p>Although there are no presently identified direct actions relating to BDCP implementation that are scheduled to be considered by the State Legislature, some observers suggest that the Legislature should have a role through legislative action. In a column appearing in the September 22, 2013</p>

	<p>edition of the <i>Sacramento Bee</i>, Executive Editor Joyce Terhaar argued for a more active role for the Legislature¹. There will likely be others, particularly within the Delta stakeholder community, arguing for a more inclusive process that includes legislative consideration of BDCP implementation activities.</p> <p>Action by the Legislature with respect to future water bonds could greatly affect the BDCP implementation process. If future water bonds do not include sufficient funding to advance the Delta ecosystem components of BDCP, attempts could be made to shift those costs to water users, which would create new funding dynamics for moving the program forward.</p>
<p>Action by the electorate</p>	<p>Given the strong opposition to BDCP from in-Delta stakeholders and other interests, there is a possibility that an active signature-gathering effort could be undertaken to place an initiative on the ballot that would either stop the BDCP implementation process or add substantial new hurdles and challenges to implementation.</p>

The road to BDCP implementation and a new conveyance project being operational is likely long and filled with many challenges. On the side of the BDCP preferred alternative and the effort to advance the BDCP in a steady and focused manner is Governor Jerry Brown. If Governor Brown is elected to a second term in November 2014, many of the key milestones could be reached during his term in office (through 2018). The continuity provided by strong and determined leadership from the Administration would improve the opportunities for success by the BDCP program and would likely bolster the program’s chances of minimizing or overcoming some of the significant challenges that could be presented from external factions.

Water Authority Response to State’s Evaluation of Portfolio Alternative

In January 2013, the NRDC advanced a proposed alternative method for reducing conflict in the Delta that would utilize a “portfolio-based” approach to the BDCP. The portfolio alternative includes a smaller conveyance facility (starting with a single 3,000 cfs tunnel), increased local supply development, levee improvements, and south of Delta storage. NRDC, along with a number of environmental groups, urged state and federal officials to study the approach as a stand-alone alternative in the BDCP. Following NRDC’s announcement of the portfolio alternative, a group of urban water agencies also asked state and federal officials to evaluate the portfolio alternative. The Water Authority was a signatory to a letter that included seven urban water agencies (Attachment 1) seeking an evaluation of the portfolio alternative within the BDCP process.

¹ “Currently state and federal officials say they will build the tunnels without a vote of elected lawmakers or the public. *The Bee’s institutional stand...is that the process must be more inclusionary.*”

On September 11, 2013, California Natural Resources Secretary John Laird sent a letter to Water Authority Chairman Tom Wornham and General Manager Maureen Stapleton (Attachment 2) that summarized its evaluation of the portfolio alternative and concluded that, *“Although the portfolio proposal, with its emphasis on conservation, diversification, and improved storage, has considerable merit from a policy standpoint, the proposal as a package is not practical as an alternative to the BDCP proposed project.”* In rejecting the portfolio alternative as an alternative to the BDCP preferred alternative, Secretary Laird’s letter and evaluation outlined four specific premises and conclusions regarding the portfolio alternative:

Resources Agency’s Assumed Premise of the Portfolio Alternative	Resources Agency’s Conclusion
It would be cheaper and more cost-effective to build a smaller Delta water export facility.	Building a 3,000-cfs tunnel has a benefit/cost ratio of less than 1, and results in a reduction in the Delta water supply of 500,000 acre-feet per year compared to the 9,000-cfs tunnels.
Spending the money saved on the smaller facility to develop water supply alternatives would be more cost effective than building the larger facility.	California will need investments in all alternatives due to increasing demand for water, especially since existing supplies will be reduced by climate change. Many such investments should occur independent of, and parallel to, the BDCP. But investment in protecting the water supply from the Delta is the most cost effective way to protect an important source of California water supply from disruption.
The biological goals and objectives of the BDCP could be met by the “portfolio based” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan under the federal Endangered Species Act, and a Natural Community Conservation Plan under the California Natural Community Conservation Planning Act.	Based on the best available science, restoration of tidal marsh is an important habitat for some species and DWR is committed to doing more, not less to meet the biological goals and objectives of the plan. The portfolio plan may undermine this biological objective.
A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the south Delta due to the flooding of Delta islands following an earthquake or major storm.	Building a 3,000-cfs tunnel would leave California dangerously exposed to a 75 percent reduction in Delta water supply after a major earthquake or storm. Building an emergency facility in the event of a major Delta island failure would cost more than building the 9,000-cfs tunnels now and would have to be done under enormous pressure to restore water supply reliability.

While the Water Authority staff had hoped that the Resources Agency’s evaluation of the Portfolio Alternative would be helpful to the Water Authority’s ongoing review and analysis, the information contained in the September 11 letter and evaluation raised more questions than it answers. On

October 4, 2013, Water Authority General Manager Maureen Stapleton sent Secretary Laird a response letter raising the following issues and seeking clarification to afford a meaningful apples-to-apples comparison of the portfolio alternative with the BDCP preferred alternative and other Delta fix alternatives. The letter, which also requests that the Water Authority be allowed an opportunity to directly participate in any and all cost allocation negotiations, is attached to this memo (Attachment 3).

- The Resources Agency letter states that a single-tunnel, 3,000 cfs conveyance facility (which is proposed in the Portfolio Alternative) would cost \$6 billion less than the BDCP preferred alternative (9,000 cfs twin tunnels) - \$8.5 billion compared to \$14.5 billion. However, on September 16, a corrected version of the evaluation was posted on the BDCP website, which indicates that the 3,000 cfs single-tunnel conveyance facility would only cost \$3 billion less than the BDCP preferred alternative. Further, none of these numbers match Dr. David Sunding's economic benefit analysis, which he shared with the Water Authority at the September 12 Board of Directors workshop, which identified the cost at \$10 billion.

Many entities that are undertaking review and analysis of the Delta fix options would benefit from reliable cost estimates for the conveyance features of the Portfolio Alternative. The lack of clarity in the cost estimate has made it challenging to have a meaningful cost comparison of the various conveyance feature sizes. The Water Authority has requested the Natural Resources Agency to provide an apples-to-apples cost comparison of the 3,000, 6,000, and 9,000 cfs conveyance project sizes.

- In terms of the benefit cost ratio of alternatives, the Resources Agency evaluation indicates that *"the 3,000-cfs tunnel has a negative benefit cost ratio, largely because the cost of the 3,000-cfs tunnel is approximately two-thirds of building the proposed 9,000-cfs twin tunnels but the water yield is much smaller."* The evaluation may be accurate; however, with the numerous cost estimates for the conveyance features included in the Resources Agency's evaluations, it is difficult to definitively understand the benefit cost ratio at which the evaluation arrives. A more comprehensive evaluation and identification of the appropriate assumptions would be valuable for those seeking to undertake independent analysis of cost-related information.
- The Resources Agency evaluation regarding the potential water supply yield in water recycling and water use efficiency projects that could be achieved from a \$3 billion investment in local and regional water supply projects requires additional analysis. The evaluation indicates, that with respect to investments in local and regional water recycling projects and water conservation projects, *"it is doubtful that a \$3 billion investment would produce even 100,000 acre-feet of reliable new water supply in urban areas, and would do nothing for agricultural users."* But this evaluation appears at odds with the Department of Water Resources' California Water Plan Update, which provides an analysis from which it may be concluded that a \$3 billion investment in water recycling projects could actually produce approximately 400,000 acre-feet of new water supplies (2009 Water Plan Update, Page 11-10). In addition, data developed by the Water Authority on local project costs and implementation also indicates that BDCP's estimate is very low. Staff believes this certainly warrants additional analysis to better understand how the Resources Agency's evaluation

arrived at a potential yield of 100,000 acre-feet or less.

- The Resources Agency evaluation with respect to the ability to export water from the south Delta following a significant seismic event stated that, *“It may take from one to 10 years to rebuild enough Delta levees to once again allow substantial exports from the south Delta.”* While certainly more work remains to be completed in terms of the efforts that have been undertaken through the Delta Emergency Rock and Transfer Facilities Project and the Delta Emergency Response Program to secure water supply reliability following a significant seismic event, it is staff’s understanding that significant progress has been made to reduce the worst-case export outage. A more comprehensive analysis on this issue would be beneficial.

Next Steps

Staff is continuing to undertake its multidisciplinary evaluation and analysis of the four Delta fix options. At the November 14, 2013 special Board workshop, staff will provide the following informational components for the Board’s consideration:

- Introductory identification of BDCP physical features and facilities
- Supply and demand evaluation and analysis

Prepared by: Glenn A. Farrel, Government Relations Manager
Amy Chen, Director of the MWD Program

Approved by: Dennis A. Cushman, Assistant General Manager

Attachment 1: Letter dated January 16, 2013, seeking support to analyze NRDC’s portfolio-based approach to BDCP

Attachment 2: September 11, 2013 correspondence from California Natural Resources Agency Secretary John Laird transmitting evaluation of the NRDC Portfolio Alternative

Attachment 3: Letter from Water Authority General Manager Maureen Stapleton to Resources Agency Secretary John Laird in response to September 11, 2013 letter and September 16 corrected evaluation

January 16, 2013



The Honorable Ken Salazar
Secretary
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

The Honorable John Laird
Secretary
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dr. Jerry Meral
Deputy Secretary
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

The Honorable Michael L. Connor
Commissioner
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

Dear Secretary Salazar, Secretary Laird, Deputy Secretary Meral,
and Commissioner Connor:

We are writing to you in advance of the planned release of the public review draft of the Bay Delta Conservation Plan (BDCP), out of a deep concern over the status of this effort. We are united in a desire for a successful project that can be supported by project proponents, Delta stakeholders, and the public. That chance for success is substantially diminished as a result of the alternatives analysis that we have seen thus far. Up to now, the BDCP process has been strongly focused on advancing a large capacity conveyance which, along with the suite of associated conservation measures, will be burdened with large uncertainties and for which a solid business case has not yet been made. These unquantified risks include impacts on listed species, impacts on the Delta landform, hydrology and water quality, open-ended costs to direct water users and to the public, political controversy, and potentially lengthy litigation.

Secretary Salazar, Secretary Laird, Deputy Secretary Meral,
and Commissioner Connor
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Absent so far has been a portfolio-based alternative that features a smaller conveyance facility with additional, complementary investments in local water supply sources, regional coordination, south of Delta storage, levee improvements, and habitat restoration (see attachment) as advanced in the coalition letter sent by other organizations today. We believe that it is critical to evaluate in detail a conveyance as small as 3,000 cfs, as it would provide considerable water supply benefits to the export community while better protecting broader interests in the Delta. Such a facility would also realize significant financial savings in comparison with a larger conveyance facility, face fewer legal and political challenges, and potentially be completed sooner. With accompanying investments in proven, cost-effective regional water strategies, this approach could increase export area water supplies and reduce the vulnerability of water supplies and Delta infrastructure to disruption from earthquakes and other disasters. We urge that this conceptual alternative be seriously considered in the BDCP process, including the required CEQA/NEPA analyses and the Clean Water Act Section 404 alternatives analysis.

A portfolio approach could produce superior benefits at a similar or lower cost to water users and the public, and at reduced levels of environmental impacts. It has the potential to be consistent with the best available science and, as a result, may be more readily permissible and capable of delivering benefits more rapidly. It would appear that a solid business case can be made for such an alternative; in any event, the business case must be made before any project proceeds.

We fully appreciate the magnitude of the challenges facing the Delta, and urge a comprehensive solution that is both affordable and science-based. We recognize the enormous effort you have undertaken toward this end, and hope that this conceptual alternative will continue to advance the discussion.

Sincerely,



Jerry Brown
General Manager
Contra Costa Water District

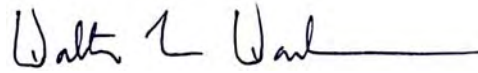


Maureen A. Stapleton
General Manager
San Diego County Water Authority

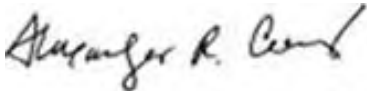
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Michael P. Carlin
Deputy General Manager
San Francisco Public Utilities Commission



Walter L. Wadlow
General Manager
Alameda County Water District



Alexander R. Coate
General Manager
East Bay Municipal Utility District



Mark Watton
General Manager
Otay Water District



Bob Filner
Mayor
City of San Diego

Attachment



September 11, 2013

Dear Chair Wornham and Ms. Stapleton:

Working together, California stands at a precipice not reached in more than 40 years: decisions in the California Delta that will stabilize our water reliability for generations to come. I want to thank the San Diego County Water Authority (SDCWA) for its considerable contribution to that progress, and, in the spirit of transparent and informed public policy, I would also like to detail a framework of issues and processes that yet remain before us.

In January of this year, the SDCWA along with other water agencies and environmental groups asked that a proposal containing a wide variety of elements be considered as an alternative to the proposed Bay Delta Conservation Plan (BDCP). Please find attached an evaluation of the potential of such a concept to meet the co-equals of water supply reliability and ecosystem restoration in the Delta established by the California Legislature in 2009.

While there are many areas of agreement in regard to local water supply development, water use efficiency, storage, and other essential water management strategies, the fundamental premise that cost savings from building a smaller facility could generate funding for substantial and adequate investments in other regional and local water supply to meet California's future water needs does not bear out. That said, the portfolio of water management strategies you identified in January will be the foundation upon which my agency, in collaboration with the California Environmental Protection Agency, and California Department of Food and Agriculture will embark on the development of a broad water action strategy for California. This is also described in more detail in the attached document.

I want to thank the ratepayers, board, and professional staff of the San Diego County Water Authority, for their ongoing financial, policy and technical support of the BDCP and its environmental review documents. After six years of study, and hundreds of millions of dollars of sound science, evaluation, assessment and collaboration, the BDCP has seen its first public release – and is several weeks away from initiating formal public review of a draft proposed plan for environmental actions and infrastructure investments needed to reach the twin goals.

Please do not hesitate to contact me with further questions. I look forward to continuing our work together to meet California's water needs in an efficient and sustainable way.

Sincerely,

A handwritten signature in black ink that reads 'John Laird'.

John Laird
 California Secretary for Natural Resources

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**Portfolio Approach to Statewide Water Management
and the Bay Delta Conservation Plan**

September 11, 2013

The Bay Delta Conservation Plan (BDCP) is one effort among many others aimed at developing a broad and sustainable water portfolio for California's water future. The California Natural Resources Agency (CNRA), the California Environmental Protection Agency (Cal EPA) and the California Department of Food and Agriculture (CDFA) are collaborating to develop a statewide approach that identifies specific actions to most efficiently and sustainably manage our water resources statewide.

There are key integrated water management elements that help achieve the co-equal goals of the BDCP, but which are not within the BDCP's specific scope, including:

- Increased water use efficiency and conservation (as mentioned above).
- Increased water supply through storage, desalination, water recycling, and groundwater management.
- Improved operational efficiency through other water conveyance projects, increased Central Valley Project and State Water Project operational efficiencies, and voluntary water transfers/exchanges.
- Ecosystem enhancements throughout California watersheds.

The BDCP is governed by the legislatively-mandated co-equal goals to restore the ecosystem of the Delta and determine what water can be exported in a way that's environmentally sustainable and reliable in the face of an extreme event or disaster made more likely by climate change. The ability of the BDCP to meet these coequal goals is the lynchpin for broader, statewide integrated water management. Without a successful BDCP, the effectiveness of local efforts to improve groundwater management, maintain and improve water quality, and develop recycled water supplies to meet California's water future will be greatly diminished.

The BDCP is significant, because for the first time, and as a direct result of the co-equal goals provided by the Legislature, biological objectives will help determine water deliveries. The water project will meet the stringent requirements of the Endangered Species Act and Natural Community

Conservation Planning Act. State and federal agencies have been working together to define a project that can be permitted within these laws.

The BDCP will be one of the largest and most complex water supply and habitat conservation plans in the nation. Hundreds of millions of dollars have gone into its planning in the form of engineering work, biological studies, economic analyses and water supply modeling. The state Department of Water Resources (DWR) has worked in close partnership with water agencies, environmental groups, scientists, and state and federal fish and wildlife experts to move the plan forward. If the BDCP is to be approved by state and federal fish agencies, the plan must meet the stringent environmental standards of both state and federal law. The current “proposed project” includes, among other things, a new 9,000 -cubic feet per second (cfs) north Delta export facility (three intake structures and two parallel tunnels from near Hood to the state and federal pumps in the South Delta) and 65,000 acres of restored tidal marsh habitat.

Response to the January, 2013 Portfolio Concept

In January, 2013, some environmental groups and water agencies asked that a proposal containing a wide variety of elements be considered as an alternative concept to the proposed BDCP project. This “portfolio” proposal includes a new 3,000- cfs north Delta water export facility (one intake structure and a single tunnel), reduced habitat restoration, increased water storage and conservation around the state, funds for Delta levee repairs, and other elements. The proponents of this statewide proposal suggest that it might save the water exporters money, which could be used for more diverse water sources, such as water conservation, wastewater recycling, and other types of water management.

Although the portfolio proposal, with its emphasis on conservation, diversification, and improved storage, has considerable merit from a policy standpoint, the proposal as a package is not practical as an alternative to the BDCP proposed project. The portfolio alternative has four premises. The first two are explicit, while the second two are implicit.

1. It would be cheaper and more cost-effective to build a 3,000- cfs north Delta water export facility with a single tunnel than to build a 9,000- cfs facility with two parallel tunnels.

2. The 3,000- cfs facility, combined with the existing south Delta facilities, could export annually about 1 million acre feet less water than is being exported today. This lost water would be

made up by other water management techniques such as water conservation, wastewater recycling, groundwater management, and additional water storage that are more cost-effective and more protective of the environment than the BDCP proposed project.

3. The biological goals and objectives of BDCP could be met by the “portfolio” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan (HCP) under the federal Endangered Species Act, and a Natural Community Conservation Plan (NCCP) under the California Natural Community Conservation Planning Act. These stringent goals and objectives would be met despite continued very heavy reliance on exports from the south Delta.

4. A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the South Delta due to the flooding of Delta islands following an earthquake or major storm.

Each of these premises are examined below.

1. Premise: It would be cheaper and more cost-effective to build a smaller Delta water export facility.

From an engineering point of view, redundancy in underground water systems (tunnels) is highly desirable to allow for maintenance and unforeseen outages. The BDCP proposed 9,000- cfs project includes two tunnels in order to provide this redundancy. The portfolio proposal does not provide the desired infrastructure redundancy. If the project were to include two tunnels the cost would be about \$1 billion more than the single bore version.

The present value capital cost of a 3,000-cfs tunnel would be \$9.2 billion, a savings of \$3 billion as compared to a 9,000-cfs tunnel*. Based on Chapter 9 of the BDCP, water supply from a 3,000- cfs tunnel project would be an average of 4.2 million acre- feet per year. Water supply from a 9,000- cfs project, in contrast, would average at least 4.7 million acre-feet per year, a loss of over 500,000 acre-feet annually.

The substantial reduction in water supply provided by the 3,000- cfs facility would result in a large reduction in economic benefits compared to the larger facility. The economic analysis performed in BDCP Chapter 9 shows that most alternatives to the proposed project have positive benefit cost ratios. But the 3,000- cfs tunnel has a negative benefit cost ratio, largely because the cost of the 3,000- cfs tunnel is approximately two thirds of building the proposed 9,000- cfs twin

tunnels but the water yield is much smaller. (Right-of-way and equipment mobilization costs are not much smaller for a small project than for a large one.)

The proposed project would increase the reliability of exports by allowing more flexibility to deliver water from the north Delta when environmental conditions are appropriate, while increasing total average annual exports from 3.5 million acre feet per year (with no project) to 4.7 million acre feet per year even if very high Delta outflows are required to protect sensitive fish species.

Conclusion: Building a 3,000- cfs tunnel has a benefit/cost ratio of less than 1, and results in a reduction in the Delta water supply of 500,000 acre- feet per year compared to the 9,000- cfs tunnels.

2. Premise: spending the money saved on the smaller facility to develop water supply alternatives would be more cost effective than building the larger facility.

DWR believes that Delta improvements and a wide variety of water supply alternatives will be needed to meet California's future water needs. This is particularly true because climate change will adversely impinge on existing water supplies in a several ways:

- Snowfall in the Sierra will gradually be replaced by rain. The slow and steady snowmelt will be somewhat replaced by immediate rain runoff. The rain will come when reservoirs must be drawn down for flood control, whereas snowmelt allows reservoirs to fill gradually after the flood season is over. These changes will make storage of the rain runoff difficult.
- Less reliable and more variable water supplies will lead to greater demand for groundwater, increasing groundwater overdraft. This trend will gradually lead to a greater demand for surface water supplies as groundwater becomes less affordable.
- The water supply from the Colorado River to Southern California may decline due to climate change and the increasingly erratic precipitation pattern in the Colorado River watershed. Also, demand for Colorado River water by other states in the watershed is increasing.
- If increased rainfall leads to higher peak winter flows in the Central Valley rivers, the U.S. Army Corps of Engineers may increase the flood reservation requirements in the major reservoirs.

Such a change in reservoir operations could reduce the water supply, hydroelectric, recreational, cold water pool, and other benefits of the reservoirs.

These impacts, along with increased water demand to relieve groundwater overdraft and to accommodate economic and population growth, are challenges that transcend the BDCP. For that reason, as mentioned above, CNRA, Cal EPA, and CDFG are working to develop a broader statewide action plan. The action plan will also be designed to contribute to achieving the goal of the Delta Reform Act to reduce future reliance on the Delta by making the most efficient use of the existing Delta system.

The portfolio plan calls for a \$2 billion investment in water recycling and a \$3 billion investment in urban conservation. The proposal also calls for unspecified investments in agricultural conservation. As described above, reducing the size of the tunnels from 9,000 cfs to 3,000 cfs only saves \$3 billion* while producing less water for export, a lack of redundancy, and fewer economic benefits. Also, many statewide conservation, efficiency, recycling and other water management programs are underway, and while they are not part of the BDCP, they were studied at length in the BDCP Appendix 1C (Demand Management Measures). These water management strategies are already anticipated to contribute to the success of the BDCP and will be addressed in the water action plan.

Investing \$3 billion in the most cost effective forms of water conservation and wastewater recycling would not come close to replacing the water supply lost as a result of reducing the size of the tunnels. Water recycling costs are often in the range of \$1,000 - \$1,500 per acre-foot per year, and sometimes much higher. Conservation is often somewhat less expensive than recycling, but in most urban areas served by the SWP, has a cost of \$1,000 per acre-foot and above. Indeed, reviewing the actual costs of recent water recycling projects in California, it is doubtful that a \$3 billion investment would produce even 100,000 acre-feet of reliable new water supply in urban areas, and would do nothing for agricultural users. Further, investing \$3 billion in conservation and recycling to make up for the smaller tunnel size would use up the most cost effective water conservation and wastewater recycling opportunities, making it more expensive to implement water conservation and wastewater recycling in the future.

The portfolio proposal includes development of new surface or groundwater storage south of the Delta. DWR agrees such new storage should be part of an overall water supply program for California in coming decades, this is made clear in BDCP Appendix 1B (Water Storage).

In the past two decades, significant new water storage space in the form of reservoirs and groundwater storage banks has been created south of the Delta. Improving the Delta conveyance system will increase the ability to use this new storage space and set the stage for additional future storage investments.

Conclusion: California will need investment in all alternatives due to increasing demand for water, especially since existing supplies will be reduced by climate change. Many such investments should occur independent of, and parallel to, the BDCP. But investment in protecting the supply of water from the Delta is the most cost effective way to protect an important source of California water supply from disruption. A more detailed discussion of water supply management alternatives is in Appendix 1C (Demand Management Measures) of the BDCP administrative draft EIR/EIS.

3. Premise: The biological goals and objectives of BDCP could be met by the “portfolio based” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan under the federal Endangered Species Act, and a Natural Community Conservation Plan under the California Natural Community Conservation Planning Act.

The portfolio alternative reduces by one-third (from 65,000 acres down to 40,000 acres) the amount of tidal marsh habitat that would be restored. This reduction would save money, but would also reduce the environmental benefits of BDCP. The BDCP is an ecosystem-based plan designed to restore fish and wildlife species while also providing a more reliable water supply. The goal is to do more, not less, to help the environment. The proposed project includes a tidal habitat restoration target of 65,000 acres because tidal marsh habitat may contribute to the recovery of some critical fish species, and will surely provide a wide variety of other environmental benefits. There appears to be sufficient land available to achieve this goal over the first 40 years of BDCP implementation. Adaptive management could allow for subsequent adjustment of this program. DWR looks forward to working with the portfolio signatories through the adaptive management process to make adjustments as necessary to achieve BDCP biological goals and objectives.

According to the analysis contained in Chapter 9 of the BDCP, 72 percent of mean total CVP and SWP deliveries would be diverted through south Delta intakes with the 3,000- cfs proposal, compared with 51 percent under the BDCP proposed action’s 9,000- cfs project. The south Delta is where fish species are most at risk from pumping. When more water is diverted through the south

Delta intakes, such action increases the potential for take of aquatic species from entrainment and predation. Thus, the reduced opportunity to divert from the north Delta when environmental conditions are appropriate represents a reduced opportunity to address existing, ongoing adverse environmental conditions in the south Delta. Under both scenarios, pumping is maximized during wet periods, and minimized during dry periods.

Conclusion: Based on the best available science restoration of tidal marsh is an important habitat for some species and DWR is committed to doing more, not less to meet the biological goals and objectives of the plan. The portfolio plan may undermine this biological objective.

4. Premise: A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the south Delta due to the flooding of Delta islands following an earthquake or major storm.

The United States Geological Survey has stated that, in the next 40 years, there is a high likelihood of a major earthquake that will collapse from several to many Delta islands. (Appendix 3E of the 2nd Administrative Draft discussed Seismic Risk and Climate Change in the Delta). Another likely event is a major storm that would cause the same result. If many Delta islands fail, sea water will enter the Delta, replacing fresh water in the Delta and greatly reducing water exports. It may take from one to 10 years to rebuild enough Delta levees to once again allow substantial exports from the south Delta. It may even be impossible to fully restore enough islands to allow export from the south Delta to resume on a reliable basis. The Delta is currently nearly one fifth of the state's water supply. Large regions in the Bay Area (e.g., the Silicon and Livermore valleys, and the Contra Costa Water District), Central Valley, and Southern California rely on the Delta for 25 percent to 100 percent of their water supply. Delta exports averaged 5.3 million acre-feet per year over the last 20 years. If it appears that Delta exports are not possible for several to many years, a tunnel project would likely have to be built to provide water as soon as possible to prevent an economic catastrophe. Statewide economic impacts of a multi-year Delta outage could be as high as \$10 billion per year, and job losses could be as high as 40,000 per year. In this scenario, a 3,000- cfs facility would be insufficient to meet the State's water needs and avert huge economic losses. Adding an additional 6,000 cfs under urgent conditions to avert this disaster would cost more than \$11 billion (in addition to the \$9 billion of building the 3,000- cfs facility initially). The portfolio concept includes \$1 billion in levee improvements in the Delta to address

seismic risks. While this level of investment in Delta levees may be appropriate for the long term, it will not prevent the type of levee collapse that is threatened by earthquake, major storm events, and sea level rise. Nor can it substitute for the type of protection against levee collapse that the 9,000- cfs tunnels would provide.

Conclusion: building a 3,000- cfs tunnel would leave California dangerously exposed to a 75 percent reduction in Delta water supply after a major earthquake or storm. Building an emergency facility in the event of a major Delta island failure would cost more than building the 9,00-0 cfs tunnels now and would have to be done under enormous pressure to restore water supply reliability.

Conclusion

This analysis indicates that while the portfolio approach includes many worthwhile elements, it ultimately is not a viable solution for meeting the state's co-equal goals for restoration of the Delta ecosystem and a more reliable water supply. Moreover, integrating activities beyond the Delta into the permit process would be legally challenging and substantially increase the complexity of complying with the legal requirements of an NCCP, and is therefore not a practical alternative to the BDCP proposed project. But the proposed approach helpfully draws attention to the larger statewide policies that will contribute to the success of the BDCP and are needed as we plan for more sustainable water management. DWR is committed to working with the portfolio proponents to ensure that the elements identified in the portfolio approach are part of a broader statewide effort to manage water resources more efficiently and sustainably.

**Updated on 9/16/13 to correct reporting errors.*



San Diego County Water Authority

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October 7, 2013

Secretary John Laird
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

MEMBER AGENCIES

Carlsbad
Municipal Water District

City of Del Mar

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Otay Water District

Padre Dam
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Ramona
Municipal Water District

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San Dieguito Water District

Santa Fe Irrigation District

South Bay Irrigation District

Vallecitos Water District

Valley Center
Municipal Water District

Vista Irrigation District

Yuima
Municipal Water District

OTHER REPRESENTATIVE

County of San Diego

Dear Secretary Laird:

On behalf of the San Diego County Water Authority (Water Authority), thank you for your September 11, 2013 letter to Chair Wornham and me responding to a January 2013 multi-agency letter requesting analysis of the Natural Resources Defense Council's portfolio approach to statewide water management and the Bay-Delta Conservation Plan (BDCP).

We look forward to working with you to help develop a BDCP project that achieves the co-equal goals and is affordable. As the largest member agency of the largest State Water Contractor, the Metropolitan Water District, the Water Authority and its ratepayers are being counted upon to pay the second-largest share of BDCP costs.¹ Yet, we have been relegated to the status of an outside observer who may have no financial stake in the BDCP. Accordingly, we request the opportunity to become more directly engaged in the BDCP cost allocation discussions and negotiations process – and be part of the solution. The stakes are sufficiently high for the San Diego region to be afforded the opportunity to be at the cost allocation negotiating table.

As you know, the Water Authority has not endorsed any alternative that has been considered by the BDCP program or advanced by others, including the Natural Resources Defense Council's Portfolio Alternative and the Delta Vision Foundation's BDCP-Plus. However, we firmly believe that a thorough and comprehensive analysis of Delta fix alternatives is critical to help inform the ultimate selection of an implementable plan for achieving the co-equal goals.

The Water Authority is committed to helping find a Delta solution, and to that end, is continuing its multi-year effort to inform our Board of Directors and civic and business leaders in our region on a variety of issues associated with the Delta. In addition, over the past several months, the Water Authority Board and staff have been engaged in an intensive, comprehensive review of BDCP-related alternatives to assess how various options may improve the San Diego region's water supply reliability along with risks associated with each. This review process is ongoing, and is scheduled to continue into 2014. We were disappointed to learn from Natural Resources Agency Deputy Secretary Jerry Meral at our September 12 Board workshop that determinations regarding the cost allocation among contractors will not be concluded when the BDCP and its environmental documents are released for public review next month. Although we plan to

¹ Among MWD's member agencies, and second only to the Kern County Water Agency.

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A public agency providing a safe and reliable water supply to the San Diego region

Secretary John Laird
 October 7, 2013
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submit a formal comment letter during the BDCP environmental review process, the allocation of BDCP costs and the resultant rate impacts on San Diegans will remain a central element in our Board's consideration of which option to support.

While we had hoped that your Agency's evaluation of the Portfolio Alternative would be helpful to the Water Authority's ongoing review and analysis, some of the information contained in your September 11 letter raises more questions than it answers.

- The letter states that a single-tunnel, 3,000 cfs conveyance facility (which is proposed in the Portfolio Alternative) would cost \$6 billion less than the BDCP preferred alternative (9,000 cfs twin tunnels) - \$8.5 billion compared to \$14.5 billion. However, on September 16, a corrected version of the evaluation was posted on the BDCP website, which indicates that the 3,000 cfs single-tunnel conveyance facility would only cost \$3 billion less than the BDCP preferred alternative. Further, none of these numbers match Dr. David Sunding's economic benefit analysis, which he shared with us at our September 12 Board of Directors workshop, which identified the cost at \$10 billion.

Many entities that are undertaking review and analysis of the Delta fix options, like the Water Authority, would benefit from reliable cost estimates for the conveyance features of the Portfolio Alternative. The lack of clarity in the cost estimate has made it challenging to have a meaningful cost comparison of the various conveyance feature sizes. Could you please provide an apples-to-apples cost comparison of the 3,000 (single tunnel), 6,000 and 9,000 cfs conveyance project sizes?

- In terms of the benefit cost ratio of alternatives, your evaluation indicates that *"the 3,000-cfs tunnel has a negative benefit cost ratio, largely because the cost of the 3,000-cfs tunnel is approximately two thirds of building the proposed 9,000-cfs twin tunnels but the water yield is much smaller."* The evaluation may be accurate; we are not attempting to dispute or refute the calculations and findings. However, with the numerous cost estimates for the conveyance features included in your own evaluations it is difficult to definitively understand the benefit cost ratio at which the evaluation arrives. A more comprehensive evaluation and identification of the appropriate assumptions would be valuable for those seeking to undertake independent analysis of cost-related information.
- The evaluation regarding the potential water supply yield in water recycling and water use efficiency projects that could be achieved from a \$3B investment in local and regional water supply projects requires additional analysis. Your evaluation indicates, that with respect to investments in local and regional water recycling projects and water conservation projects, *"it is doubtful that a \$3 billion investment would produce even 100,000 acre-feet of reliable new water supply in urban areas, and would do nothing for agricultural users."* This evaluation appears at odds with the Department of Water Resources' California Water Plan Update, which provides an analysis from which it may be concluded that a \$3 billion investment in water recycling projects could actually

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produce approximately 400,000 acre-feet of new water supplies (2009 Water Plan Update, Page 11-10). In addition, data developed by the Water Authority on local project costs and implementation also indicates that BDCP's estimate is very low. We believe this warrants additional analysis to better understand how your evaluation arrived at a potential yield of 100,000 acre-feet or less. We would be happy to share the Water Authority's data and our observations on local supply development with your staff.

- The evaluation with respect to the ability to export water from the south Delta following a significant seismic event stated that, "*It may take from one to 10 years to rebuild enough Delta levees to once again allow substantial exports from the south Delta.*" While certainly more work remains to be completed in terms of the efforts that have been undertaken through the Delta Emergency Rock and Transfer Facilities Project and the Delta Emergency Response Program to secure water supply reliability following a significant seismic event, it is our understanding that significant progress has been made to reduce the worst-case export outage. A more comprehensive analysis on this issue would be beneficial.

We look forward to working with you to consider a BDCP project that is implementable, achieves the co-equal goals, and improves water supply reliability and is affordable within the San Diego region and the rest of the state. In addition, we look forward to arranging a meeting with you in the near-term to explore avenues for additional information sharing and the Water Authority's participation in the cost allocation negotiation process.

Sincerely,



Maureen A. Stapleton
General Manager

Attachments:

1. January 2013 multi-agency letter regarding NRDC Portfolio Alternative
2. September 11, 2013 correspondence and Portfolio Alternative evaluation from Secretary John Laird

January 16, 2013



The Honorable Ken Salazar
Secretary
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

The Honorable John Laird
Secretary
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dr. Jerry Meral
Deputy Secretary
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

The Honorable Michael L. Connor
Commissioner
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

Dear Secretary Salazar, Secretary Laird, Deputy Secretary Meral,
and Commissioner Connor:

We are writing to you in advance of the planned release of the public review draft of the Bay Delta Conservation Plan (BDCP), out of a deep concern over the status of this effort. We are united in a desire for a successful project that can be supported by project proponents, Delta stakeholders, and the public. That chance for success is substantially diminished as a result of the alternatives analysis that we have seen thus far. Up to now, the BDCP process has been strongly focused on advancing a large capacity conveyance which, along with the suite of associated conservation measures, will be burdened with large uncertainties and for which a solid business case has not yet been made. These unquantified risks include impacts on listed species, impacts on the Delta landform, hydrology and water quality, open-ended costs to direct water users and to the public, political controversy, and potentially lengthy litigation.

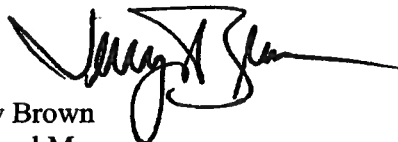
Secretary Salazar, Secretary Laird, Deputy Secretary Meral,
and Commissioner Connor
January 16, 2013
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Absent so far has been a portfolio-based alternative that features a smaller conveyance facility with additional, complementary investments in local water supply sources, regional coordination, south of Delta storage, levee improvements, and habitat restoration (see attachment) as advanced in the coalition letter sent by other organizations today. We believe that it is critical to evaluate in detail a conveyance as small as 3,000 cfs, as it would provide considerable water supply benefits to the export community while better protecting broader interests in the Delta. Such a facility would also realize significant financial savings in comparison with a larger conveyance facility, face fewer legal and political challenges, and potentially be completed sooner. With accompanying investments in proven, cost-effective regional water strategies, this approach could increase export area water supplies and reduce the vulnerability of water supplies and Delta infrastructure to disruption from earthquakes and other disasters. We urge that this conceptual alternative be seriously considered in the BDCP process, including the required CEQA/NEPA analyses and the Clean Water Act Section 404 alternatives analysis.

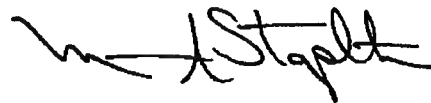
A portfolio approach could produce superior benefits at a similar or lower cost to water users and the public, and at reduced levels of environmental impacts. It has the potential to be consistent with the best available science and, as a result, may be more readily permissible and capable of delivering benefits more rapidly. It would appear that a solid business case can be made for such an alternative; in any event, the business case must be made before any project proceeds.

We fully appreciate the magnitude of the challenges facing the Delta, and urge a comprehensive solution that is both affordable and science-based. We recognize the enormous effort you have undertaken toward this end, and hope that this conceptual alternative will continue to advance the discussion.

Sincerely,



Jerry Brown
General Manager
Contra Costa Water District




Maureen A. Stapleton
General Manager
San Diego County Water Authority

Secretary Salazar, Secretary Laird, Deputy Secretary Meral,
and Commissioner Connor
January 16, 2013
Page 3



Michael P. Carlin
Deputy General Manager
San Francisco Public Utilities Commission



Walter L. Wadlow
General Manager
Alameda County Water District



Alexander R. Coate
General Manager
East Bay Municipal Utility District



Mark Watton
General Manager
Otay Water District



Bob Filner
Mayor
City of San Diego

Attachment



Secretary Ken Salazar
Department of the Interior
1849 C St, N.W.
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Secretary John Laird
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Commissioner Michael Connor
Bureau of Reclamation
1849 C Street NW
Washington DC 20240

Deputy Secretary Jerry Meral
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

January 16, 2013

Re: A Portfolio-Based Conceptual Alternative for BDCP

Dear Secretary Salazar, Secretary Laird, Deputy Secretary Meral and Commissioner Connor,

We represent a coalition of business and environmental organizations. We are writing to request that the attached conceptual alternative be considered in the BDCP process, including as a stand-alone alternative in the required CEQA/NEPA analyses and Clean Water Act Section 404 alternatives analysis. Our constituents believe strongly in the need for a science-based, cost-effective BDCP plan to help achieve the co-equal goals of restoring the Bay-Delta ecosystem and salmon fishery, and improving water supply reliability for California. None of us believes that the status quo in the Delta is acceptable.

Although many stakeholders have recommended that BDCP consider certain elements that are included in the attached document, we thought it would be most helpful at this point in the BDCP process to offer a *package* of actions and investments that, taken together, represent an alternative that could attract support from a diverse coalition of interests. This is a conceptual alternative, not a proposed BDCP preferred project. We believe that analysis of this alternative will assist BDCP in developing the most cost-effective, environmentally beneficial final BDCP project with the best chance of implementation.

Portfolio-Based BDCP Conceptual Alternative
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At the heart of the conceptual alternative are two simple principles. First, BDCP must be grounded in the best available science regarding ecosystem management. This approach is essential to designing a successful, long-term plan for a water supply system and ecosystem as complex and dynamic as the Bay-Delta. This approach is also essential to ensure that the BDCP plan can meet legal requirements and receive permits. We applaud Governor Brown and Secretary Salazar for emphasizing their commitment to a science-based approach to BDCP in their July 25, 2012 announcement.

The second core principle is that the BDCP make fiscal sense. The final BDCP plan must be both affordable and financeable or it will ultimately fail. We believe it is imperative at this point in the BDCP process to avoid the economics and financing issues that plagued CALFED and contributed to its eventual failure.

This conceptual alternative was also developed with two practical realities in mind. First, the conceptual alternative has been developed based on the reality that many California water suppliers are looking closer to home to meet their long-term water supply needs and are planning to reduce their demand for water imported from the Bay-Delta. The second reality is that cities and water agencies, as well as federal, state and local budgets are facing significant financial constraints. We believe that it is critically important to balance the timing and need for investments in the Delta with a strategy that also advances continued water agency investments in local water supply development.

This “portfolio-based” approach reflects the real world desire of water suppliers and the public to evaluate the relative benefits of investments both within and outside of the Delta, and is consistent with the increased discussion in BDCP, over the past six months, of South of Delta water supply alternatives.

One of the cornerstones of the conceptual alternative is a proposal to evaluate a 3,000 cfs, single-bore North Delta diversion facility. This facility would produce significant financial savings, in comparison with a larger conveyance facility, while still providing water reliability benefits. In fact, we believe it could produce greater overall benefits at a lower cost, with some of the savings invested in local water supply sources, new South of Delta storage, levee improvements and habitat restoration. For example, investments in proven, cost-effective local water supply strategies can both increase export area water supplies and reduce the risk of disruption from earthquakes and other disasters. Southern California 2010 Urban Water Management Plans have already identified 1.2 MAF of potential additional local supply projects, only a small fraction of which have been factored into Delta planning.

Many of these local investments could provide significant, broad and long-term benefits. For example, a relatively small investment (in comparison with the cost of a new Delta facility) in Delta levees would provide significant water supply benefits beyond those achievable by the BDCP as currently conceived. The BDCP currently anticipates that, even with a large facility, on average, approximately half of the water exported from the Delta would still be pumped by the South Delta facilities (with more than three quarters of exported water pumped from the

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South Delta in critically dry years). Therefore, reducing the vulnerability of Delta levees would provide significant water supply reliability benefits for South of Delta water users, particularly in dry years. Such an investment, in combination with local and public funds, would provide additional local benefits in the Delta. We believe that BDCP should include such “win-win” opportunities to collaborate with in-Delta interests.

It is essential not to delay an evaluation of the likely yield of a new Delta facility. The conceptual alternative also calls for the careful analysis of the best science available today regarding water project operations with a new facility. In particular, this approach calls for the analysis of an 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. We understand that state and federal biologists have undertaken an extensive effort to prepare such an operational scenario. The signatories to this letter have not endorsed these proposed operations. Rather, given that this operational scenario represents an important effort by state and federal biologists, it should be analyzed in the BDCP EIR/EIS, the Effects Analysis and the 404 analysis.

This conceptual alternative includes initial cost estimates that suggest that this approach could provide superior environmental results, increased water supply and greater reliability at a reduced cost. By expanding benefits and lowering costs, this portfolio approach could assist with project financing. We encourage BDCP to include this approach in its analysis of economics and financing issues, and to refine the cost estimates included in this conceptual alternative.

We sincerely believe that this conceptual alternative has the potential to produce superior benefits at a similar or lower cost to water users and the public. Because it is based on the best available science, we believe it would be more readily permittable. It also promises to deliver benefits more rapidly. And, finally, we believe that this approach will be helpful in attracting broader support for BDCP, both within and outside of the Delta.

We request that this conceptual alternative be analyzed as a stand-alone alternative in BDCP’s environmental documents. In addition, we recommend that BDCP use this portfolio approach to compare the potential benefits and impacts of multiple alternatives, including a full range of different conveyance facility capacities. Such comparisons are needed so decision-makers can fully understand the choices they face and can select the optimum portfolio of actions that will best serve the state.

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Thank you for your hard work to design an effective plan to meet the challenges we face in the Delta. We hope that this conceptual alternative will continue to advance the discussion. We look forward to an opportunity to discuss the conceptual alternative with you, including how it may best be incorporated into BDCP's analysis.

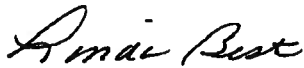
Sincerely,



Barry Nelson, Senior Policy Analyst
Natural Resources Defense Council



Tony Bernhardt
Environmental Entrepreneurs



Linda Best, President and CEO
Contra Costa Council



Gary Bobker, Program Director
The Bay Institute



Kim Delfino, California Program Director
Defenders of Wildlife



Jonas Minton, Water Policy Advisor
Planning and Conservation League

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

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– 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.

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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 MAF⁴ 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 storage⁵ 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.

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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

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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 SMART⁷ 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.

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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.

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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



September 11, 2013

Dear Chair Wornham and Ms. Stapleton:

Working together, California stands at a precipice not reached in more than 40 years: decisions in the California Delta that will stabilize our water reliability for generations to come. I want to thank the San Diego County Water Authority (SDCWA) for its considerable contribution to that progress, and, in the spirit of transparent and informed public policy, I would also like to detail a framework of issues and processes that yet remain before us.

In January of this year, the SDCWA along with other water agencies and environmental groups asked that a proposal containing a wide variety of elements be considered as an alternative to the proposed Bay Delta Conservation Plan (BDCP). Please find attached an evaluation of the potential of such a concept to meet the co-equals of water supply reliability and ecosystem restoration in the Delta established by the California Legislature in 2009.

While there are many areas of agreement in regard to local water supply development, water use efficiency, storage, and other essential water management strategies, the fundamental premise that cost savings from building a smaller facility could generate funding for substantial and adequate investments in other regional and local water supply to meet California's future water needs does not bear out. That said, the portfolio of water management strategies you identified in January will be the foundation upon which my agency, in collaboration with the California Environmental Protection Agency, and California Department of Food and Agriculture will embark on the development of a broad water action strategy for California. This is also described in more detail in the attached document.

I want to thank the ratepayers, board, and professional staff of the San Diego County Water Authority, for their ongoing financial, policy and technical support of the BDCP and its environmental review documents. After six years of study, and hundreds of millions of dollars of sound science, evaluation, assessment and collaboration, the BDCP has seen its first public release – and is several weeks away from initiating formal public review of a draft proposed plan for environmental actions and infrastructure investments needed to reach the twin goals.

Please do not hesitate to contact me with further questions. I look forward to continuing our work together to meet California's water needs in an efficient and sustainable way.

Sincerely,

A handwritten signature in black ink that reads 'John Laird'.

John Laird
 California Secretary for Natural Resources

1416 Ninth Street, Suite 1311, Sacramento, CA 95814 Ph. 916.653.5656 Fax 916.653.8102 <http://resources.ca.gov>



**Portfolio Approach to Statewide Water Management
and the Bay Delta Conservation Plan**

September 11, 2013

The Bay Delta Conservation Plan (BDCP) is one effort among many others aimed at developing a broad and sustainable water portfolio for California's water future. The California Natural Resources Agency (CNRA), the California Environmental Protection Agency (Cal EPA) and the California Department of Food and Agriculture (CDFA) are collaborating to develop a statewide approach that identifies specific actions to most efficiently and sustainably manage our water resources statewide.

There are key integrated water management elements that help achieve the co-equal goals of the BDCP, but which are not within the BDCP's specific scope, including:

- Increased water use efficiency and conservation (as mentioned above).
- Increased water supply through storage, desalination, water recycling, and groundwater management.
- Improved operational efficiency through other water conveyance projects, increased Central Valley Project and State Water Project operational efficiencies, and voluntary water transfers/exchanges.
- Ecosystem enhancements throughout California watersheds.

The BDCP is governed by the legislatively-mandated co-equal goals to restore the ecosystem of the Delta and determine what water can be exported in a way that's environmentally sustainable and reliable in the face of an extreme event or disaster made more likely by climate change. The ability of the BDCP to meet these coequal goals is the lynchpin for broader, statewide integrated water management. Without a successful BDCP, the effectiveness of local efforts to improve groundwater management, maintain and improve water quality, and develop recycled water supplies to meet California's water future will be greatly diminished.

The BDCP is significant, because for the first time, and as a direct result of the co-equal goals provided by the Legislature, biological objectives will help determine water deliveries. The water project will meet the stringent requirements of the Endangered Species Act and Natural Community

Conservation Planning Act. State and federal agencies have been working together to define a project that can be permitted within these laws.

The BDCP will be one of the largest and most complex water supply and habitat conservation plans in the nation. Hundreds of millions of dollars have gone into its planning in the form of engineering work, biological studies, economic analyses and water supply modeling. The state Department of Water Resources (DWR) has worked in close partnership with water agencies, environmental groups, scientists, and state and federal fish and wildlife experts to move the plan forward. If the BDCP is to be approved by state and federal fish agencies, the plan must meet the stringent environmental standards of both state and federal law. The current “proposed project” includes, among other things, a new 9,000 -cubic feet per second (cfs) north Delta export facility (three intake structures and two parallel tunnels from near Hood to the state and federal pumps in the South Delta) and 65,000 acres of restored tidal marsh habitat.

Response to the January, 2013 Portfolio Concept

In January, 2013, some environmental groups and water agencies asked that a proposal containing a wide variety of elements be considered as an alternative concept to the proposed BDCP project. This “portfolio” proposal includes a new 3,000- cfs north Delta water export facility (one intake structure and a single tunnel), reduced habitat restoration, increased water storage and conservation around the state, funds for Delta levee repairs, and other elements. The proponents of this statewide proposal suggest that it might save the water exporters money, which could be used for more diverse water sources, such as water conservation, wastewater recycling, and other types of water management.

Although the portfolio proposal, with its emphasis on conservation, diversification, and improved storage, has considerable merit from a policy standpoint, the proposal as a package is not practical as an alternative to the BDCP proposed project. The portfolio alternative has four premises. The first two are explicit, while the second two are implicit.

1. It would be cheaper and more cost-effective to build a 3,000- cfs north Delta water export facility with a single tunnel than to build a 9,000- cfs facility with two parallel tunnels.

2. The 3,000- cfs facility, combined with the existing south Delta facilities, could export annually about 1 million acre feet less water than is being exported today. This lost water would be

made up by other water management techniques such as water conservation, wastewater recycling, groundwater management, and additional water storage that are more cost-effective and more protective of the environment than the BDCP proposed project.

3. The biological goals and objectives of BDCP could be met by the “portfolio” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan (HCP) under the federal Endangered Species Act, and a Natural Community Conservation Plan (NCCP) under the California Natural Community Conservation Planning Act. These stringent goals and objectives would be met despite continued very heavy reliance on exports from the south Delta.

4. A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the South Delta due to the flooding of Delta islands following an earthquake or major storm.

Each of these premises are examined below.

1. Premise: It would be cheaper and more cost-effective to build a smaller Delta water export facility.

From an engineering point of view, redundancy in underground water systems (tunnels) is highly desirable to allow for maintenance and unforeseen outages. The BDCP proposed 9,000- cfs project includes two tunnels in order to provide this redundancy. The portfolio proposal does not provide the desired infrastructure redundancy. If the project were to include two tunnels the cost would be about \$1 billion more than the single bore version.

The cost of a 3,000- cfs tunnel would be \$8.5 billion. The cost of the 9,000- cfs tunnels would be \$14.5 billion. Based on Chapter 9 of the BDCP, water supply from a 3,000- cfs tunnel project would be an average of 4.2 million acre- feet per year. Water supply from a 9,000- cfs project, in contrast, would average at least 4.7 million acre-feet per year.

The substantial reduction in water supply provided by the 3,000- cfs facility would result in a large reduction in economic benefits compared to the larger facility. The economic analysis performed in BDCP Chapter 9 shows that most alternatives to the proposed project have positive benefit cost ratios. But the 3,000- cfs tunnel has a negative benefit cost ratio, largely because the cost of the 3,000- cfs tunnel is approximately two thirds of building the proposed 9,000- cfs twin tunnels but the water yield is much smaller. (Right-of-way and equipment mobilization costs are not much smaller for a small project than for a large one.)

The proposed project would increase the reliability of exports by allowing more flexibility to deliver water from the north Delta when environmental conditions are appropriate, while increasing total average annual exports from 3.5 million acre feet per year (with no project) to 4.7 million acre feet per year even if very high Delta outflows are required to protect sensitive fish species.

Conclusion: Building a 3,000- cfs tunnel has a benefit/cost ratio of less than 1, and results in a reduction in the Delta water supply of 500,000 acre- feet per year compared to the 9,000- cfs tunnels.

2. Premise: spending the money saved on the smaller facility to develop water supply alternatives would be more cost effective than building the larger facility.

DWR believes that Delta improvements and a wide variety of water supply alternatives will be needed to meet California's future water needs. This is particularly true because climate change will adversely impinge on existing water supplies in a several ways:

- Snowfall in the Sierra will gradually be replaced by rain. The slow and steady snowmelt will be somewhat replaced by immediate rain runoff. The rain will come when reservoirs must be drawn down for flood control, whereas snowmelt allows reservoirs to fill gradually after the flood season is over. These changes will make storage of the rain runoff difficult.
- Less reliable and more variable water supplies will lead to greater demand for groundwater, increasing groundwater overdraft. This trend will gradually lead to a greater demand for surface water supplies as groundwater becomes less affordable.
- The water supply from the Colorado River to Southern California may decline due to climate change and the increasingly erratic precipitation pattern in the Colorado River watershed. Also, demand for Colorado River water by other states in the watershed is increasing.
- If increased rainfall leads to higher peak winter flows in the Central Valley rivers, the U.S. Army Corps of Engineers may increase the flood reservation requirements in the major reservoirs. Such a change in reservoir operations could reduce the water supply, hydroelectric, recreational, cold water pool, and other benefits of the reservoirs.

These impacts, along with increased water demand to relieve groundwater overdraft and to accommodate economic and population growth, are challenges that transcend the BDCP. For that reason, as mentioned above, CNRA, Cal EPA, and CDFA are working to develop a broader statewide action plan. The action plan will also be designed to contribute to achieving the goal of the Delta Reform Act to reduce future reliance on the Delta by making the most efficient use of the existing Delta system.

The portfolio plan calls for a \$2 billion investment in water recycling and a \$3 billion investment in urban conservation. The proposal also calls for unspecified investments in agricultural conservation. As described above, reducing the size of the tunnels from 9,000 cfs to 3,000 cfs only saves \$5 billion while producing less water for export, a lack of redundancy, and fewer economic benefits. Also, many statewide conservation, efficiency, recycling and other water management programs are underway, and while they are not part of the BDCP, they were studied at length in the BDCP Appendix 1C (Demand Management Measures). These water management strategies are already anticipated to contribute to the success of the BDCP and will be addressed in the water action plan.

Investing \$3 billion in the most cost effective forms of water conservation and wastewater recycling would not come close to replacing the water supply lost as a result of reducing the size of the tunnels. Water recycling costs are often in the range of \$1,000 - \$1,500 per acre-foot per year, and sometimes much higher. Conservation is often somewhat less expensive than recycling, but in most urban areas served by the SWP, has a cost of \$1,000 per acre-foot and above. Indeed, reviewing the actual costs of recent water recycling projects in California, it is doubtful that a \$3 billion investment would produce even 100,000 acre-feet of reliable new water supply in urban areas, and would do nothing for agricultural users. Further, investing \$3 billion in conservation and recycling to make up for the smaller tunnel size would use up the most cost effective water conservation and wastewater recycling opportunities, making it more expensive to implement water conservation and wastewater recycling in the future.

The portfolio proposal includes development of new surface or groundwater storage south of the Delta. DWR agrees such new storage should be part of an overall water supply program for California in coming decades, this is made clear in BDCP Appendix 1B (Water Storage).

In the past two decades, significant new water storage space in the form of reservoirs and groundwater storage banks has been created south of the Delta. Improving the Delta conveyance

system will increase the ability to use this new storage space and set the stage for additional future storage investments.

Conclusion: California will need investment in all alternatives due to increasing demand for water, especially since existing supplies will be reduced by climate change. Many such investments should occur independent of, and parallel to, the BDCP. But investment in protecting the supply of water from the Delta is the most cost effective way to protect an important source of California water supply from disruption. A more detailed discussion of water supply management alternatives is in Appendix 1C (Demand Management Measures) of the BDCP administrative draft EIR/EIS.

3. Premise: The biological goals and objectives of BDCP could be met by the “portfolio based” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan under the federal Endangered Species Act, and a Natural Community Conservation Plan under the California Natural Community Conservation Planning Act.

The portfolio alternative reduces by one-third (from 65,000 acres down to 40,000 acres) the amount of tidal marsh habitat that would be restored. This reduction would save money, but would also reduce the environmental benefits of BDCP. The BDCP is an ecosystem-based plan designed to restore fish and wildlife species while also providing a more reliable water supply. The goal is to do more, not less, to help the environment. The proposed project includes a tidal habitat restoration target of 65,000 acres because tidal marsh habitat may contribute to the recovery of some critical fish species, and will surely provide a wide variety of other environmental benefits. There appears to be sufficient land available to achieve this goal over the first 40 years of BDCP implementation. Adaptive management could allow for subsequent adjustment of this program. DWR looks forward to working with the portfolio signatories through the adaptive management process to make adjustments as necessary to achieve BDCP biological goals and objectives.

According to the analysis contained in Chapter 9 of the BDCP, 72 percent of mean total CVP and SWP deliveries would be diverted through south Delta intakes with the 3,000- cfs proposal, compared with 51 percent under the BDCP proposed action’s 9,000- cfs project. The south Delta is where fish species are most at risk from pumping. When more water is diverted through the south Delta intakes, such action increases the potential for take of aquatic species from entrainment and predation. Thus, the reduced opportunity to divert from the north Delta when environmental

conditions are appropriate represents a reduced opportunity to address existing, ongoing adverse environmental conditions in the south Delta. Under both scenarios, pumping is maximized during wet periods, and minimized during dry periods.

Conclusion: Based on the best available science restoration of tidal marsh is an important habitat for some species and DWR is committed to doing more, not less to meet the biological goals and objectives of the plan. The portfolio plan may undermine this biological objective.

4. Premise: A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the south Delta due to the flooding of Delta islands following an earthquake or major storm.

The United States Geological Survey has stated that, in the next 40 years, there is a high likelihood of a major earthquake that will collapse from several to many Delta islands. (Appendix 3E of the 2nd Administrative Draft discussed Seismic Risk and Climate Change in the Delta). Another likely event is a major storm that would cause the same result. If many Delta islands fail, sea water will enter the Delta, replacing fresh water in the Delta and greatly reducing water exports. It may take from one to 10 years to rebuild enough Delta levees to once again allow substantial exports from the south Delta. It may even be impossible to fully restore enough islands to allow export from the south Delta to resume on a reliable basis. The Delta is currently nearly one fifth of the state's water supply. Large regions in the Bay Area (e.g., the Silicon and Livermore valleys, and the Contra Costa Water District), Central Valley, and Southern California rely on the Delta for 25 percent to 100 percent of their water supply. Delta exports averaged 5.3 million acre-feet per year over the last 20 years. If it appears that Delta exports are not possible for several to many years, a tunnel project would likely have to be built to provide water as soon as possible to prevent an economic catastrophe. Statewide economic impacts of a multi-year Delta outage could be as high as \$10 billion per year, and job losses could be as high as 40,000 per year. In this scenario, a 3,000- cfs facility would be insufficient to meet the State's water needs and avert huge economic losses. Adding an additional 6,000 cfs under urgent conditions to avert this disaster would cost more than \$11 billion (in addition to the \$9 billion of building the 3,000- cfs facility initially). The portfolio concept includes \$1 billion in levee improvements in the Delta to address seismic risks. While this level of investment in Delta levees may be appropriate for the long term, it will not prevent the type of levee collapse that is threatened by earthquake, major storm events,

and sea level rise. Nor can it substitute for the type of protection against levee collapse that the 9,000- cfs tunnels would provide.

Conclusion: building a 3,000- cfs tunnel would leave California dangerously exposed to a 75 percent reduction in Delta water supply after a major earthquake or storm. Building an emergency facility in the event of a major Delta island failure would cost more than building the 9,000- cfs tunnels now and would have to be done under enormous pressure to restore water supply reliability.

Conclusion

This analysis indicates that while the portfolio approach includes many worthwhile elements, it ultimately is not a viable solution for meeting the state's co-equal goals for restoration of the Delta ecosystem and a more reliable water supply. Moreover, integrating activities beyond the Delta into the permit process would be legally challenging and substantially increase the complexity of complying with the legal requirements of an NCCP, and is therefore not a practical alternative to the BDCP proposed project. But the proposed approach helpfully draws attention to the larger statewide policies that will contribute to the success of the BDCP and are needed as we plan for more sustainable water management. DWR is committed to working with the portfolio proponents to ensure that the elements identified in the portfolio approach are part of a broader statewide effort to manage water resources more efficiently and sustainably.

**Portfolio Approach to Statewide Water Management
and the Bay Delta Conservation Plan**

September 11, 2013

The Bay Delta Conservation Plan (BDCP) is one effort among many others aimed at developing a broad and sustainable water portfolio for California's water future. The California Natural Resources Agency (CNRA), the California Environmental Protection Agency (Cal EPA) and the California Department of Food and Agriculture (CDFA) are collaborating to develop a statewide approach that identifies specific actions to most efficiently and sustainably manage our water resources statewide.

There are key integrated water management elements that help achieve the co-equal goals of the BDCP, but which are not within the BDCP's specific scope, including:

- Increased water use efficiency and conservation (as mentioned above).
- Increased water supply through storage, desalination, water recycling, and groundwater management.
- Improved operational efficiency through other water conveyance projects, increased Central Valley Project and State Water Project operational efficiencies, and voluntary water transfers/exchanges.
- Ecosystem enhancements throughout California watersheds.

The BDCP is governed by the legislatively-mandated co-equal goals to restore the ecosystem of the Delta and determine what water can be exported in a way that's environmentally sustainable and reliable in the face of an extreme event or disaster made more likely by climate change. The ability of the BDCP to meet these coequal goals is the lynchpin for broader, statewide integrated water management. Without a successful BDCP, the effectiveness of local efforts to improve groundwater management, maintain and improve water quality, and develop recycled water supplies to meet California's water future will be greatly diminished.

The BDCP is significant, because for the first time, and as a direct result of the co-equal goals provided by the Legislature, biological objectives will help determine water deliveries. The water project will meet the stringent requirements of the Endangered Species Act and Natural Community

Conservation Planning Act. State and federal agencies have been working together to define a project that can be permitted within these laws.

The BDCP will be one of the largest and most complex water supply and habitat conservation plans in the nation. Hundreds of millions of dollars have gone into its planning in the form of engineering work, biological studies, economic analyses and water supply modeling. The state Department of Water Resources (DWR) has worked in close partnership with water agencies, environmental groups, scientists, and state and federal fish and wildlife experts to move the plan forward. If the BDCP is to be approved by state and federal fish agencies, the plan must meet the stringent environmental standards of both state and federal law. The current "proposed project" includes, among other things, a new 9,000 -cubic feet per second (cfs) north Delta export facility (three intake structures and two parallel tunnels from near Hood to the state and federal pumps in the South Delta) and 65,000 acres of restored tidal marsh habitat.

Response to the January, 2013 Portfolio Concept

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Although the portfolio proposal, with its emphasis on conservation, diversification, and improved storage, has considerable merit from a policy standpoint, the proposal as a package is not practical as an alternative to the BDCP proposed project. The portfolio alternative has four premises. The first two are explicit, while the second two are implicit.

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made up by other water management techniques such as water conservation, wastewater recycling, groundwater management, and additional water storage that are more cost-effective and more protective of the environment than the BDCP proposed project.

3. The biological goals and objectives of BDCP could be met by the “portfolio” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan (HCP) under the federal Endangered Species Act, and a Natural Community Conservation Plan (NCCP) under the California Natural Community Conservation Planning Act. These stringent goals and objectives would be met despite continued very heavy reliance on exports from the south Delta.

4. A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the South Delta due to the flooding of Delta islands following an earthquake or major storm.

Each of these premises are examined below.

1. Premise: It would be cheaper and more cost-effective to build a smaller Delta water export facility.

From an engineering point of view, redundancy in underground water systems (tunnels) is highly desirable to allow for maintenance and unforeseen outages. The BDCP proposed 9,000- cfs project includes two tunnels in order to provide this redundancy. The portfolio proposal does not provide the desired infrastructure redundancy. If the project were to include two tunnels the cost would be about \$1 billion more than the single bore version.

The present value capital cost of a 3,000-cfs tunnel would be \$9.2 billion, a savings of \$3 billion as compared to a 9,000-cfs tunnel*. Based on Chapter 9 of the BDCP, water supply from a 3,000- cfs tunnel project would be an average of 4.2 million acre- feet per year. Water supply from a 9,000- cfs project, in contrast, would average at least 4.7 million acre-feet per year, a loss of over 500,000 acre-feet annually.

The substantial reduction in water supply provided by the 3,000- cfs facility would result in a large reduction in economic benefits compared to the larger facility. The economic analysis performed in BDCP Chapter 9 shows that most alternatives to the proposed project have positive benefit cost ratios. But the 3,000- cfs tunnel has a negative benefit cost ratio, largely because the cost of the 3,000- cfs tunnel is approximately two thirds of building the proposed 9,000- cfs twin

tunnels but the water yield is much smaller. (Right-of-way and equipment mobilization costs are not much smaller for a small project than for a large one.)

The proposed project would increase the reliability of exports by allowing more flexibility to deliver water from the north Delta when environmental conditions are appropriate, while increasing total average annual exports from 3.5 million acre feet per year (with no project) to 4.7 million acre feet per year even if very high Delta outflows are required to protect sensitive fish species.

Conclusion: Building a 3,000- cfs tunnel has a benefit/cost ratio of less than 1, and results in a reduction in the Delta water supply of 500,000 acre- feet per year compared to the 9,000- cfs tunnels.

2. Premise: spending the money saved on the smaller facility to develop water supply alternatives would be more cost effective than building the larger facility.

DWR believes that Delta improvements and a wide variety of water supply alternatives will be needed to meet California's future water needs. This is particularly true because climate change will adversely impinge on existing water supplies in a several ways:

- Snowfall in the Sierra will gradually be replaced by rain. The slow and steady snowmelt will be somewhat replaced by immediate rain runoff. The rain will come when reservoirs must be drawn down for flood control, whereas snowmelt allows reservoirs to fill gradually after the flood season is over. These changes will make storage of the rain runoff difficult.
- Less reliable and more variable water supplies will lead to greater demand for groundwater, increasing groundwater overdraft. This trend will gradually lead to a greater demand for surface water supplies as groundwater becomes less affordable.
- The water supply from the Colorado River to Southern California may decline due to climate change and the increasingly erratic precipitation pattern in the Colorado River watershed. Also, demand for Colorado River water by other states in the watershed is increasing.
- If increased rainfall leads to higher peak winter flows in the Central Valley rivers, the U.S. Army Corps of Engineers may increase the flood reservation requirements in the major reservoirs.

Such a change in reservoir operations could reduce the water supply, hydroelectric, recreational, cold water pool, and other benefits of the reservoirs.

These impacts, along with increased water demand to relieve groundwater overdraft and to accommodate economic and population growth, are challenges that transcend the BDCP. For that reason, as mentioned above, CNRA, Cal EPA, and CDFA are working to develop a broader statewide action plan. The action plan will also be designed to contribute to achieving the goal of the Delta Reform Act to reduce future reliance on the Delta by making the most efficient use of the existing Delta system.

The portfolio plan calls for a \$2 billion investment in water recycling and a \$3 billion investment in urban conservation. The proposal also calls for unspecified investments in agricultural conservation. As described above, reducing the size of the tunnels from 9,000 cfs to 3,000 cfs only saves \$3 billion* while producing less water for export, a lack of redundancy, and fewer economic benefits. Also, many statewide conservation, efficiency, recycling and other water management programs are underway, and while they are not part of the BDCP, they were studied at length in the BDCP Appendix 1C (Demand Management Measures). These water management strategies are already anticipated to contribute to the success of the BDCP and will be addressed in the water action plan.

Investing \$3 billion in the most cost effective forms of water conservation and wastewater recycling would not come close to replacing the water supply lost as a result of reducing the size of the tunnels. Water recycling costs are often in the range of \$1,000 - \$1,500 per acre-foot per year, and sometimes much higher. Conservation is often somewhat less expensive than recycling, but in most urban areas served by the SWP, has a cost of \$1,000 per acre-foot and above. Indeed, reviewing the actual costs of recent water recycling projects in California, it is doubtful that a \$3 billion investment would produce even 100,000 acre-feet of reliable new water supply in urban areas, and would do nothing for agricultural users. Further, investing \$3 billion in conservation and recycling to make up for the smaller tunnel size would use up the most cost effective water conservation and wastewater recycling opportunities, making it more expensive to implement water conservation and wastewater recycling in the future.

The portfolio proposal includes development of new surface or groundwater storage south of the Delta. DWR agrees such new storage should be part of an overall water supply program for California in coming decades, this is made clear in BDCP Appendix 1B (Water Storage).

In the past two decades, significant new water storage space in the form of reservoirs and groundwater storage banks has been created south of the Delta. Improving the Delta conveyance system will increase the ability to use this new storage space and set the stage for additional future storage investments.

Conclusion: California will need investment in all alternatives due to increasing demand for water, especially since existing supplies will be reduced by climate change. Many such investments should occur independent of, and parallel to, the BDCP. But investment in protecting the supply of water from the Delta is the most cost effective way to protect an important source of California water supply from disruption. A more detailed discussion of water supply management alternatives is in Appendix 1C (Demand Management Measures) of the BDCP administrative draft EIR/EIS.

3. Premise: The biological goals and objectives of BDCP could be met by the “portfolio based” alternative, thus fulfilling the requirements of both a Habitat Conservation Plan under the federal Endangered Species Act, and a Natural Community Conservation Plan under the California Natural Community Conservation Planning Act.

The portfolio alternative reduces by one-third (from 65,000 acres down to 40,000 acres) the amount of tidal marsh habitat that would be restored. This reduction would save money, but would also reduce the environmental benefits of BDCP. The BDCP is an ecosystem-based plan designed to restore fish and wildlife species while also providing a more reliable water supply. The goal is to do more, not less, to help the environment. The proposed project includes a tidal habitat restoration target of 65,000 acres because tidal marsh habitat may contribute to the recovery of some critical fish species, and will surely provide a wide variety of other environmental benefits. There appears to be sufficient land available to achieve this goal over the first 40 years of BDCP implementation. Adaptive management could allow for subsequent adjustment of this program. DWR looks forward to working with the portfolio signatories through the adaptive management process to make adjustments as necessary to achieve BDCP biological goals and objectives.

According to the analysis contained in Chapter 9 of the BDCP, 72 percent of mean total CVP and SWP deliveries would be diverted through south Delta intakes with the 3,000- cfs proposal, compared with 51 percent under the BDCP proposed action’s 9,000- cfs project. The south Delta is where fish species are most at risk from pumping. When more water is diverted through the south

Delta intakes, such action increases the potential for take of aquatic species from entrainment and predation. Thus, the reduced opportunity to divert from the north Delta when environmental conditions are appropriate represents a reduced opportunity to address existing, ongoing adverse environmental conditions in the south Delta. Under both scenarios, pumping is maximized during wet periods, and minimized during dry periods.

Conclusion: Based on the best available science restoration of tidal marsh is an important habitat for some species and DWR is committed to doing more, not less to meet the biological goals and objectives of the plan. The portfolio plan may undermine this biological objective.

4. Premise: A smaller Delta water export facility would provide adequate protection against a prolonged inability to export water from the south Delta due to the flooding of Delta islands following an earthquake or major storm.

The United States Geological Survey has stated that, in the next 40 years, there is a high likelihood of a major earthquake that will collapse from several to many Delta islands. (Appendix 3E of the 2nd Administrative Draft discussed Seismic Risk and Climate Change in the Delta). Another likely event is a major storm that would cause the same result. If many Delta islands fail, sea water will enter the Delta, replacing fresh water in the Delta and greatly reducing water exports. It may take from one to 10 years to rebuild enough Delta levees to once again allow substantial exports from the south Delta. It may even be impossible to fully restore enough islands to allow export from the south Delta to resume on a reliable basis. The Delta is currently nearly one fifth of the state's water supply. Large regions in the Bay Area (e.g., the Silicon and Livermore valleys, and the Contra Costa Water District), Central Valley, and Southern California rely on the Delta for 25 percent to 100 percent of their water supply. Delta exports averaged 5.3 million acre-feet per year over the last 20 years. If it appears that Delta exports are not possible for several to many years, a tunnel project would likely have to be built to provide water as soon as possible to prevent an economic catastrophe. Statewide economic impacts of a multi-year Delta outage could be as high as \$10 billion per year, and job losses could be as high as 40,000 per year. In this scenario, a 3,000- cfs facility would be insufficient to meet the State's water needs and avert huge economic losses. Adding an additional 6,000 cfs under urgent conditions to avert this disaster would cost more than \$11 billion (in addition to the \$9 billion of building the 3,000- cfs facility initially). The portfolio concept includes \$1 billion in levee improvements in the Delta to address

seismic risks. While this level of investment in Delta levees may be appropriate for the long term, it will not prevent the type of levee collapse that is threatened by earthquake, major storm events, and sea level rise. Nor can it substitute for the type of protection against levee collapse that the 9,000- cfs tunnels would provide.

Conclusion: building a 3,000- cfs tunnel would leave California dangerously exposed to a 75 percent reduction in Delta water supply after a major earthquake or storm. Building an emergency facility in the event of a major Delta island failure would cost more than building the 9,000-0 cfs tunnels now and would have to be done under enormous pressure to restore water supply reliability.

Conclusion

This analysis indicates that while the portfolio approach includes many worthwhile elements, it ultimately is not a viable solution for meeting the state's co-equal goals for restoration of the Delta ecosystem and a more reliable water supply. Moreover, integrating activities beyond the Delta into the permit process would be legally challenging and substantially increase the complexity of complying with the legal requirements of an NCCP, and is therefore not a practical alternative to the BDCP proposed project. But the proposed approach helpfully draws attention to the larger statewide policies that will contribute to the success of the BDCP and are needed as we plan for more sustainable water management. DWR is committed to working with the portfolio proponents to ensure that the elements identified in the portfolio approach are part of a broader statewide effort to manage water resources more efficiently and sustainably.

**Updated on 9/16/13 to correct reporting errors.*