

REDUCED EXPORTS PLAN

Developed by the Environmental Water Caucus
May 2012

The following summarizes the main actions supported by the Environmental Water Caucus in relation to the Sacramento-San Joaquin-San Francisco Bay Delta and Estuary. **This plan demonstrates how water supply reliability can be improved while reducing exports from the Bay Delta Estuary.** Many of these recommendations have been presented to the Delta Stewardship Council as part of Alternative 2 for the Delta Plan. We have now packaged this series of related actions into a single alternative for evaluation in any future NEPA or CEQA evaluations, or by the State Water Resources Control Board. The actions are largely based on the EWC report *California Water Solutions Now*, (ewccalifornia.org)_ which can be referenced for supporting details. This package of actions (“The Plan”) represents the EWC alternative to the BDCP.

This Plan includes a unique combination of actions that will open the discussion for alternatives to the currently failed policies which continuously attempt to use water as though it were a limitless resource. The Plan is about far more than just reduced exports. The uniqueness of this Plan is that while it will reduce the quantity of water exported from the Bay Delta Estuary, in order to protect the health of the Estuary’s habitat and fisheries with increased inflows and outflows, it also contains actions that will reduce the demand for water and increase supplies for exporters south of the Delta in order to compensate for the reduced south-of Delta exports. It will also provide increased self-reliance for south-of-Delta water users through inter-regional water transfers and south of Delta water storage, and it will provide increased reliability of the water supplies through the Delta by strengthening Delta conveyance levees beyond current plans. And it will accomplish the legislated goals of Estuary restoration and water reliability for billions of dollars less costs than currently contemplated plans.

In addition to the commonly accepted NEPA and CEQA requirements for any Delta Estuary plan, there are five fundamental criteria that any plan for recovering the health of the Bay Delta Estuary and fish species must successfully meet. Those criteria are:

1. A cost/benefits analysis must be conducted to determine economic desirability of any plan.
2. A water availability analysis must be conducted to align water needs with availability.
3. Public trust and sociological values must be balanced against the value of water exports.
4. Existing water quality regulations must be enforced in order to recover the Estuary.
5. The plan must meet the NCCP *recovery* standard for fish species.

All of the current and past plans for the Delta Estuary have failed, partly because the responsible state and federal authorities have refused to apply or to test their projects with these criteria. The EWC would welcome this Reduced Exports Plan being judged by these pragmatic and acceptable criteria.

The main actions included in The Plan are underlined and described below:

1. Reduce Exports To No More Than 3MAF In All Years, In Keeping With SWRCB Flows Criteria.

The Delta Flows Criteria promulgated by the State Water Resources Control Board (SWRCB) clearly indicates that the state has reached – and exceeded – the amount of water that can responsibly be diverted from the Bay Delta and Estuary. As a result, this plan anticipates future limitations on Delta exports below the level of the 2000-2007 time periods in its plan to meet Delta ecosystem restoration goals. The recent PPIC report reinforces this: “given the extreme environmental degradation of this region, water users must be prepared to take less water from the Delta, at least until endangered fish populations recover.”

Over the years, a number of processes have identified the need to dramatically improve outflows in order to recover listed species to a sustainable level and restore ecosystems in the Bay-Delta and Estuary. During the last three decades both the SWRCB and the state legislature have recognized and acknowledged the need for greater outflow and reduced exports, which have not been achieved. That recognition started in 1988 with the SWRCB’s proposed standards that would have required an average increase in outflow of 1.5 million acre-feet over the lower diversion levels of the period before the late 1980’s; that proposal was withdrawn without public comment. Similarly, as recently as 2009 the California legislature adopted a new policy of reducing reliance on the Delta for water supply uses.

As indicated in the recent SWRCB report,¹ in order to preserve the attributes of a natural variable system to which native fish species are adapted, many of the criteria developed by the State Water Board are crafted as percentages of natural or unimpaired flows. These criteria include:

- 75% of unimpaired Delta outflow from January through June;
- 75% of unimpaired Sacramento River inflow from November through June, compared with
- 60% of unimpaired San Joaquin River inflow from February through June.

This compares with the historic flows over the last 18 to 22 years, which have been:

- About 50% on average from April through June for Sacramento River inflows;
- Approximately 30% in drier years to almost 100% of unimpaired flows in wetter years for Delta outflows;
- Approximately 20% in drier years to almost 50% in wetter years for San Joaquin River inflows.

In 2014, the State Board is required to develop flow criteria that will fully protect public trust resources in the Delta and Estuary. In all the years since 1988, no information has been developed that would contradict the Board’s 1992 draft finding that maximum Delta pumping in wet years should not exceed 2.65 million acre-feet in order to provide the necessary outflows to protect fish and the Bay-Delta and Estuary ecosystems. The rebuttable presumption, consistent with the evidence of the last two decades and with the new state policy to reduce Delta water supply reliance, is that a total export number of no more than 3 million acre-feet in all water year types, except for drought years, is prudent.

¹ State Water Resources Control Board and California Environmental Protection Agency. DRAFT Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. July 2010. Pp. 5.

The current approach of managing the Delta for water supply will almost certainly lead to intense pressures to make increased exports the major goal of a Peripheral Canal or tunnel while the health of the Delta and Estuary will be a lower priority. One of the main objectives of this Reduced Exports Plan is to decrease the physical vulnerability and increase the predictability of Delta supplies, not to increase average annual Delta exports. The current fallacy of the BDCP to increase exports while somehow recovering fish species and ecosystems leads directly to a warped scientific program as pointed out by The Bay Institute in their recent Briefing Paper on the BDCP Effects Analysis.²

Recent letters from the EPA and the Bureau of Reclamation indicate that the EPA believes that the (BDCP) EIS/EIR will need to include a significant analysis of alternatives reflecting reduced Delta inflow and reduced exports³ and that a significant increase in exports out of the Delta is inconsistent with recent state legislation (to reduce reliance on the Delta).⁴

Reduced dependence on the Delta by south-of-Delta water users would also obviate the need for new conveyance around or through the Delta (a Peripheral Canal or tunnel) and new surface storage reservoirs, avoiding costs of perhaps tens of billions of dollars for taxpayers and the potential for stranded assets resulting from climate change and sea level rise in the Bay-Delta and Estuary. This reorientation will undoubtedly require some south-of-Delta infrastructure enhancements, but not nearly to the magnitude of costs for a Peripheral Canal and a new reservoir north of the Delta.

Implementation and Funding. Implementation (and funding, if necessary) for the level of reduced exports will depend on the results of the State Water Resources Control Board hearings on Delta flows, which are scheduled to be completed during 2014. Subsequent to those hearings, implementation and funding plans will most likely fall within the purview of the state legislature.

2. Expand Statewide Water Efficiency And Demand Reduction Programs Beyond The Current 20/20 Program And Maximize Regional Self-Sufficiency In Accordance With The 2009 Delta Reform Act.

Recommendations to the Delta Stewardship Council included an aggressive urban water conservation and efficiency program – more aggressive and of longer duration than the 20/20 program – and included both urban and agricultural users as a necessary component for reducing reliance on the Delta and achieving the water supply reliability goals for south-of-Delta users. A more aggressive conservation program also supports the goal of the reduced exports level of this alternative. We intend to continue our advocacy for this type of program with the Delta Stewardship Council.

² The Bay Institute and Defenders of Wildlife. The BDCP Effects Analysis, Briefing Paper. February 2012. <http://www.bay.org/assets/BDCP%20EA%20Briefing%20Paper%2022912.pdf>

³ http://www.epa.gov/region9/water/watershed/sfbaydelta/pdf/EPA_Comments_BDCP_3rdNO_051409.pdf

⁴ <http://www.epa.gov/region9/water/watershed/sfbay-delta/pdf/EpaR9CommentsBdcpPurpStmt6-10-2010.pdf>

Overwhelming evidence shows that a suite of aggressive conservation and water efficiency actions will reduce overall demand and provide cost effective increases in available and reliable water supply. These measures will handle California's water needs well into the foreseeable future and will do so at far less financial and environmental cost than constructing more storage dams and reservoirs. This conclusion is reinforced by the current State Water Plan (Bulletin 160-09), by the Bay Institute's "Collateral Damage" report, and by actual experience in urban areas and farms.

These water efficiency and water use reduction actions are:

- Urban Water Conservation – including installing low-flow toilets and showerheads, high-efficiency clothes washers, retrofit-on-resale programs, rainwater harvest, weather-based irrigation controllers, reducing water for landscaping via drip and xeriscape, more efficient commercial and industrial cooling equipment, and tiered price structures.⁵ According to the 2009 State Water Plan, total urban water demand can be reduced by 2.1 million acre-feet with these measures.⁶ A Los Angeles Economic Development Corporation report found that in Los Angeles, Orange, San Bernardino, San Diego, Riverside and Ventura counties, "urban water conservation could have an impact equivalent to adding more than 1 million acre-feet of water to the regional supply" (about 25 percent of current annual use).⁷ The same LAEDC report shows that urban conservation is by far the most economical approach, at \$210 per acre-foot, and especially compared with new surface storage at \$760 to \$1,400 per acre-foot.
- Urban Conservation Rate Structures – including the establishment of mandatory rate structures within the Urban Best Management Practices that strongly penalize excessive use and reward low water usage customers with lower rates, with the lowest being a lifeline rate to provide water for low income and low-water-using ratepayers. The savings that result from pricing policies are included in the 2.1 million acre-feet reduction cited above.
- Agricultural Water Conservation – including the continuing trend towards use of drip, micro sprinklers and similar higher technology irrigation, reduced deficit irrigation, transition to less water-intensive crops, reduced overall farmland acreage, elimination of the irrigation of polluted farmland, and tiered price structures. Conservation measures also include the elimination of indirect water subsidies provided to agriculture for Central Valley Project (CVP) water, which will drive some of the efficiencies shown in Figure 1. Demand reduction of as much as 5 million acre-feet per year could be achieved by 2030, according to Pacific Institute's *California Water 2030: An Efficient Future* report.⁸
- Recycled Water – including the treatment and reuse of urban wastewater, gray water, and storm water, and achievement of the State Water Resources Board goal of increasing water recycling by at least an additional 2 million acre-feet per year by 2030. The 2009

⁵ A detailed treatment of urban water conservation is contained in *Waste Not, Want Not: The Potential for Urban Water Conservation in California*, by the Pacific Institute. http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf.

⁶ California Department of Water Resources. Update 2009. California Water Plan Update. Bulletin 160-09. V-2, P3-23. http://www.waterplan.water.ca.gov/docs/cwpu2009/0310final/v2c03_urbwtruse_cwp2009.pdf.

⁷ Los Angeles County Economic Development Corporation (LAEDC). 2008. Where Will We Get the Water? Assessing Southern California's Future Water Strategies. P 6. http://www.laedc.org/consulting/projects/2008_SoCalWaterStrategies.pdf.

⁸ Pacific Institute. *California Water 2030: An Efficient Future*. September 2005. http://www.pacinst.org/reports/california_water_2030/ca_water_2030.pdf

State Water Plan indicates a figure of 2.25 million acre-feet that could be recovered. The LAEDC report shows recycled water costs \$1,000 per acre-foot.

- Groundwater Treatment, Demineralization and Desalination – including the treatment of contaminated groundwater and the use of groundwater desalination. The cost of groundwater desalination ranges from \$750 to \$1,200 per acre-foot.
- Conjunctive Management – which engages the principles of conjunctive water use (the planned release of surface stored water to recharge groundwater basins), where surface water and groundwater are used in combination to improve water availability and reliability. It also includes important components of groundwater management such as monitoring, evaluation of monitoring data to develop local management objectives, and use of monitoring data to establish and enforce local management policies. Without scientific studies that are needed to support conjunctive water management many aquifers and surrounding groundwater can be harmed by the biggest users. While conjunctive management does not reduce water demand, it does reduce the need for costly new surface storage.
- Storm Water Recapture and Reuse – The 2008 Scoping Plan for California’s Global Warming Solutions Act of 2006 promotes storm water collection and reuse. The plan finds that up to 333,000 acre-feet of storm water could be captured annually for reuse in urban southern California alone.⁹ The LAEDC report also found the potential for “hundreds of thousands of acre-feet” of water from storm water capture and reuse in southern California counties.¹⁰ The Los Angeles and San Gabriel Watershed Council has estimated that if 80 percent of the rainfall that falls on just a quarter of the urban area within the watershed (15 percent of the total watershed) were captured and reused, total runoff would be reduced by about 30 percent. That translates into a new supply of 132,000 acre-feet of water per year or enough to supply 800,000 people for a year.¹¹

Based on data from the State Water Plan (Bulletins 160-05 and 160-09),¹² the Planning and Conservation League (PCL)¹³ and the Pacific Institute,¹⁴ the savings that can be achieved from these efficiency scenarios are estimated to be 13 million acre-feet per year (Figure 1). Perhaps the most authoritative report on the subject, the Pacific Institute’s *California Water 2030: An Efficient Future* shows that overall statewide water usage can be reduced by 20 percent below 2000 levels – given aggressive efforts to conserve and reduce usage with readily available technology and no decrease in economic activity. The urban water savings of approximately 5 million acre-feet a year (when including recycled municipal water and part of the groundwater

⁹ Climate Change Scoping Plan Appendices Volume I. December 2008. Pursuant to AB 32 The California Global Warming Solutions Act of 2006. C-135.

http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf.

¹⁰ Los Angeles County Economic Development Corporation (LAEDC). 2008. Where Will We Get the Water? Assessing Southern California’s Future Water Strategies. P 32-33.

http://www.laedc.org/consulting/projects/2008_SoCalWaterStrategies.pdf.

¹¹ California Department of Water Resources. Update 2005. California Water Plan Update. Bulletin 160-05. P..21-3.

<http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm>

¹² California Department of Water Resources. Update 2005. California Water Plan Update. Bulletin 160-05. V2 1-5.

<http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm>

¹³ Planning and Conservation League. 2004. Investment Strategy for California Water. P. 8-11.

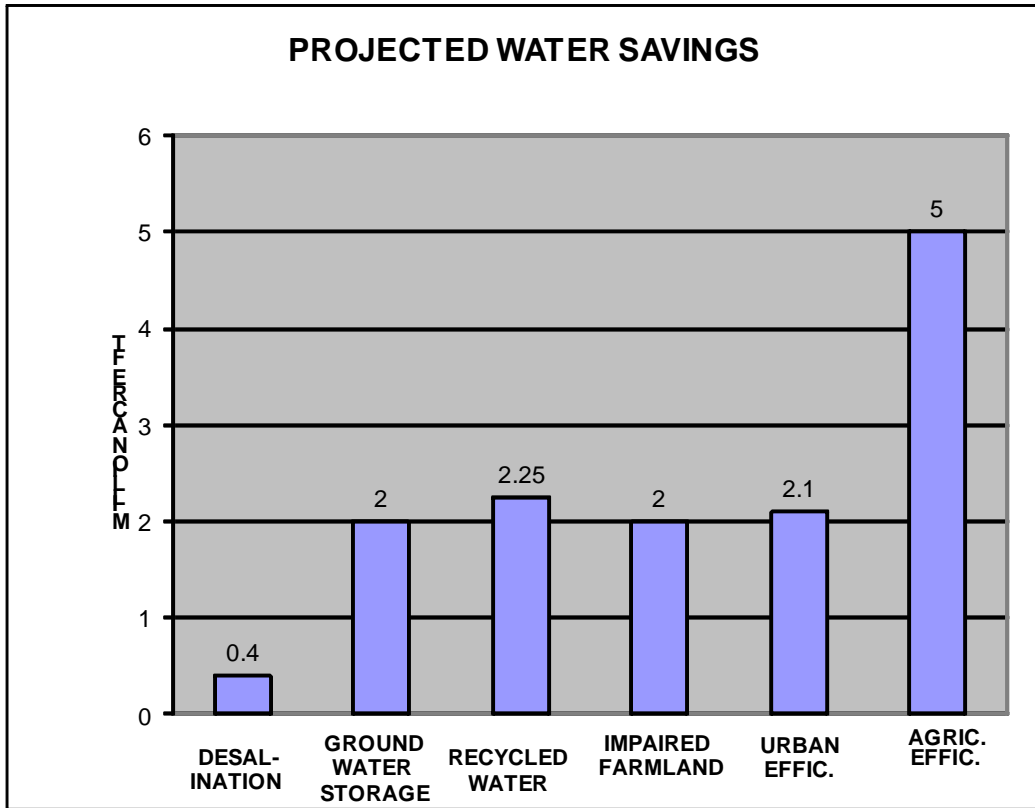
<http://www.pcl.org/projects/investmentstrategy.html>

¹⁴ Pacific Institute. 2005. California Water 2030: An Efficient Future. ES-2.

http://www.pacinst.org/reports/california_water_2030/ca_water_2030.pdf

storage) shown in Figure 1 is enough water to support a population growth of almost 30,000,000 people. According to the California Water Plan Update 2009, the state’s population can be expected to increase by 22,000,000 over the next 40 years if current population trends hold. Clearly, a well-managed future water supply to take us to 2050 is within reach with current supplies and with an aggressive water conservation program.

Figure 1



In order to translate these aggressive efficiency measures into actual demand reductions, we need heightened public awareness of these targets and focused state oversight and coordination of local and statewide actions. Existing success stories from urban communities and on-farm operations reinforce the savings potentials and the need for efficiency-driven policies; they are described in detail in a number of the references cited in this report. The Governor’s recent mandate for a 20 percent reduction in per capita urban water use by 2020 is the kind of action that will help this effort, although it may prove insufficient in view of projected population growth. Under the Governor’s plan, per capita urban use would be reduced from the current 192 gallons per capita daily to 154 gallons, resulting in an annual savings of 1.74 million acre-feet. The projected water savings shown in Figure 1 are more aggressive than the Governor’s plan. A similar mandate should be extended to agriculture, since agriculture uses more than three quarters of the state’s developed water supplies. Water savings through efficiency measures can result in direct reductions in the volume of Delta exports since most of the savings would occur in cities and farms south of the Delta. These water savings are necessary to reduce the exports and to restore the stream flows called for in this plan.

The Natural Resources Defense Council's report *Transforming Water Use: A California Water Efficiency Agenda for the 21st Century* cites the state's successes in energy efficiency as a model for water efficiency while noting that the state lags far behind in water efficiency policies, programs, and funding. A key component of the success in energy efficiency has been the development of a priority system called a Loading Order.¹⁵ As applied to water policy, a Loading Order system would require demand reductions through improved water efficiency to be the first priority in addressing water supply, the second priority would be developing alternative sources including water recycling, groundwater clean-up and conjunctive use programs, and third would be the use of more traditional supply options. A Loading Order approach, if applied to statewide, regional, and local water plans, would shift the emphasis to the more efficient and cost effective approaches advocated in this report. Reducing water use through conservation efficiencies or water recycling also has a favorable impact on energy use, as pointed out by *Energy Down the Drain*, a report produced by the Natural Resources Defense Council and the Pacific Institute.¹⁶ The report makes a strong case for the link between water and energy efficiencies. All of these conservation and efficiency methods are known to produce available water at significantly less cost than constructing new storage dams and reservoirs—the third option in the Loading Order. According to the Los Angeles County Economic Development Corporation (LAEDC) report,¹⁷ water produced from the proposed Sites and Temperance Flat Reservoirs would cost \$760 to \$1,400 per acre-foot, while conserved or recycled water typically costs between \$210 and \$1,000 per acre-foot. New surface storage is by far the highest cost alternative per acre-foot of water for all the alternatives examined by the Legislative Analysts Office (LAO) report *California Water: An LAO Primer*,¹⁸ while providing less total annual yield than most alternatives. Statewide, the costs of all of these efficiency measures will in all probability not exceed the potential \$78 billion price tag for the various Peripheral Canal and new surface storage proposals.¹⁹ For all of these reasons – as well as the historically ecosystem damaging impacts of major dams – EWC member organizations oppose the construction of Sites and Temperance Flat Reservoirs and the raising of Shasta Dam in favor of the more effective efficiency measures described above. Raising Shasta Dam on the Sacramento River would also be illegal because of its impact on the Wild River status of the McCloud River and its damaging impact on Winnemen Wintu sacred areas.

Implementation and Funding. Implementation requires legislative to accomplish the following:

- Establish a statewide oversight unit responsible for the coordination of the level of supply enhancements and demand reductions called for in this report. This measure can be accomplished with little additional cost to the state by utilizing some of the existing

¹⁵ Natural Resources Defense Council. 2007. *Transforming Water Use: A California Water Efficiency Agenda for the 21st Century*. P. 2. www.deltavision.ca.gov/BlueRibbonTaskForce/Feb28_29/Handouts/BRTF_Item_5A_HO2.pdf.

¹⁶ Natural Resources Defense Council and Pacific Institute. 2004. *Energy Down the Drain*. ES-v. http://www.pacinst.org/reports/energy_and_water/index.htm.

¹⁷ Los Angeles County Economic Development Corporation (LAEDC). 2008. *Where Will We Get the Water? Assessing Southern California's Future Water Strategies*. P 32-33. http://www.laedc.org/consulting/projects/2008_SoCalWaterStrategies.pdf.

¹⁸ Legislative Analyst's Office. 2008. *California's Water: An LAO Primer*. P. 67. http://www.lao.ca.gov/2008/rsrc/water_primer/water_primer_102208.aspx.

¹⁹ Strategic Economic Applications Company. 2009. *The Sacramento San Joaquin Delta – 2009, An Exploration of Costs, Examination of Assumptions, and Identification of Benefits*, Draft.

DWR staff, supplemented with additional funding to coordinate the water efficiency program targets.

- Pass legislation and provide funding to establish a California water efficiency education and publicity program, similar to other health and safety programs that are sponsored and publicized by the state. The program must ensure the equitable distribution of conservation investments among rural and low income communities.
- Adopt the Natural Resources Defense Council’s recommendations to the Delta Vision Commission regarding water efficiency Loading Order. That would include a Loading Order policy through the State Water Control Resources Board, the State Public Utilities Commission and the Legislature that establishes water use efficiency as the top priority as well as a public goods surcharge on every acre-foot of water delivered in California, with the proceeds used to fund or subsidize efficiency programs.

Funding for the above actions can come from existing or future bond funds, from Title 16 funding, or through regulatory changes. Additionally, since rate payers will bear the ultimate costs of these and other types of changes, rate payers will have to be given a voice in the choices made.

3. Provide Public Trust Protections And Thorough Economic And Sociological Analyses Of Reasonable Alternatives To Various Export Levels.

The California Supreme Court, in the Mono Lake decision, explicitly set forth the state’s “affirmative duty to take the public trust into account in the planning and allocation of water resources and to protect public trust uses whenever feasible.” Planning and allocation of limited and oversubscribed resources imply analysis and balancing of competing demands. So far we find little effort to balance the public trust obligations and resolve competing demands within the current planning processes (BDCP).

One of the significant flaws of previous and unsuccessful Bay-Delta proceedings has been the absence of a comprehensive economic evaluation of the benefits of protecting the estuary and in-Delta beneficial uses compared to the benefits of diverting and exporting water from the estuary. This absence has deprived decision makers and the public of critical information fundamental to reaching informed and difficult decisions on balancing competing demands.

Beyond protecting California’s common property right in public trust resources, the balancing of limited water supplies must address the relative economic value of competing interests. For example, what is the societal value in providing Kern County, comprising a fraction of one percent of the state’s population and economy, the same quantity of Delta water as the South Coast, with half the state’s population and economy? What is the value to society of using public subsidies to irrigate impaired lands to benefit some 600 landowners, and that, by the nature of being irrigated, discharge harmful quantities of toxic waste that impairs other beneficial uses? What is the economic value of using twice the amount of water to irrigate an orchard in the desert than is required elsewhere? What are the costs and benefits of reclamation, reuse, conservation, and development of local sources? The preceding are only examples of the difficult questions that must be addressed in any allocation of limited resources and balancing of

the public trust. Economic analysis is crucial to providing the insight and guidance that will enable and Delta plan to meet its mandate. Without such analysis, we do not believe a Delta plan can successfully or legally comply with its legislative and constitutional obligations.

An excellent description of the public trust type of issues caused by the current operations in the Delta and Estuary are contained in the Bay Institute report “Collateral Damage.”²⁰

Implementation and Funding for a balancing of the public trust values will depend on the results of the State Water Resources Control Board hearings on Delta flows, which are scheduled to be completed during 2014. Subsequent to those hearings, implementation and funding plans will most likely fall within the purview of the state legislature.

4. Reinforce Core Levees Above PL84-99 Standards.

This plan accepts and supports the Delta Protection Commission’s recommendation in their Economic Sustainability Plan to: “Improve many core Delta Levees beyond the PL 84-99 standard that addresses earthquake and sea-level rise risks, improve flood fighting and emergency response, and allow for vegetation on the water side of levees to improve habitat. Improvement of most core Delta levees to this higher standard would cost between \$2 to \$4 billion.”²¹

There is a plausible public interest in providing public funds to Delta reclamation districts and other Delta interests for levee upgrades since the Delta serves as the water conveyance facility for much of California. Water exporters should be required to identify which levees, if any, *they want to fund to a higher standard* (for example more earthquake resistant) to protect their water supply, beyond the current standards. Recommendations should also include assisting Delta counties and communities in meeting FEMA/NFIP programs. The plan should also contain a recommendation to support and increase public funding for permanent continuation of existing and highly successful statutory cost-share formula and funding for Delta (Subventions) Levee Program. Public safety and flood protection must remain the top priority of the State Plan of Flood Control, including its levees and bypasses. The levees should be vegetated with native species to help stabilize the levees and support endangered species.

Because earthquake risks to the levees are one of the main justifications for a Peripheral Canal or Tunnel in the Delta, and there is evidence that the earthquake risks to the Delta levees may have been exaggerated in previous drafts of the Economic Sustainability Plan, the comparison of costs of the two alternatives (\$2 to \$4 billion for levee strengthening versus \$15-\$16 billion for new conveyance) is significant and should be incentive enough to immediately initiate this levee reinforcement program and make catastrophic levee failure a questionable justification for new conveyance.

²⁰ The Bay Institute. Collateral Damage. March 2012. <http://www.bay.org/publications/collateral-damage>

²¹ Draft Executive Summary, Economic Sustainability Plan for the Sacramento-San Joaquin River Delta, March 10, 2011 http://www.delta.ca.gov/res/docs/ESP_ESUM.pdf

Implementation and Funding would be in keeping with the Delta Protection Commission's Economic Sustainability Plan.

5. Install Improved Fish Screens At Existing Delta Pumps.

The EWC supports the development and implementation of significantly improved fish screens with the best available technology at the existing Delta Estuary export pumps, in keeping with original CALFED plans, and at other existing in-Delta diversions. This would include installation of positive barrier fish screens on all diversions greater than 250 cfs in both the Sacramento and San Joaquin River Basins as well as a significant percentage of smaller and unscreened diversions in these ecosystems.

6. Keep Water Transfers Within The Revised Delta Export Limits.

Water transfers through the Sacramento-San Joaquin-San Francisco Delta and Estuary – which include individual water sales transactions, Article 21 State Water Project pumping and the pumping of the Central Valley and the State Water Projects' contracts – play a significant role in the movement and transfer of water throughout the state and have significant impacts on the ecology of the Estuary. The two latter projects provide the largest percentage of transfers through the Delta while water sales and Article 21 pumping in some years is significant.

A new paradigm is required that would simultaneously reduce the transfer pumping through the Delta to a level that maintains a healthy ecosystem while providing more logical and reliable sources of water for south-of-Delta water users. Instead of continuing to export extraordinary amounts of water from the Delta – with the impacts on fish and wildlife species, water quality, ecosystem conditions, flow volumes and directions, and the condition of groundwater aquifers in the Sacramento Valley – south-of-Delta water users could obtain significant amounts of water from localized south-of-Delta sources in the San Joaquin Valley region. This type of move toward regional self-sufficiency has been a large component of the two most recent State Water Plans (Bulletin 160). As of early 2012, however, pending federal legislation would go in the opposite direction and allow more dependence on Delta exports through water sales and “surplus” water pumping.

A more favorable scenario than the present and contemplated heavy north-to-south Delta pumping consists of the following changes in supply orientation:

- San Joaquin Valley water users could be incentivized to voluntarily share resources by providing southern Sierra water to south-of-Delta water users through new interties with existing infrastructure, or by providing for the movement of agricultural water from the east side of the San Joaquin Valley, where water is more abundant, to west side agriculture, where the water supply is more limited. This kind of change can be facilitated with efficiency incentives for east side water users and might result in as much as 500,000 acre-feet of additional water for the west side. Although politically difficult, this is an elegantly simple and effective solution for regional self-dependency for south-

of-Delta agriculture users and for all of California. This kind of change would have to consider the required outflows to the Delta Estuary from the San Joaquin River.

- Supplies for the Metropolitan Water District and other south-of-Delta users could be sourced from the natural reservoir that is Tulare Lake by allowing flows from the Kern, Kings, Kaweah, and Tule Rivers to flow into the Tulare basin. This option is being advocated by the San Joaquin Valley Leadership Forum, which has determined that surface storage capacity in the Tulare Lake Basin could be more than 2.5 million acre-feet. This option may require a new Kern-San Joaquin intertie. Reorienting water transfer policies to benefit south-of-Delta water users will require further detailed analysis to confirm its feasibility; however, the potential for these measures to comply with the state requirement to reduce reliance on the Delta to the level recommended above deserves serious consideration.

A Water Transfer Matrix and a set of Water Transfer Principles are included in the referenced EWC report *California Water Solutions Now*.

As called for in the California Water Code, transfers that use State, regional or a local public agency's facilities require that the facility owner determine that the transfers not harm any other legal user of water, not unreasonably affect fish and wildlife, and not unreasonably affect the overall economy of the county from which the water is transferred. Unfortunately, there is no enforcement mechanism except litigation, which is an onerous burden for the public. This is a particular concern in the Sacramento Valley, where existing healthy aquifers could be over drafted by willing sellers in order to supply the same San Joaquin irrigators who caused the existing overdraft conditions in the San Joaquin areas. In addition, the State Water Plan points out that "some stakeholders worry that State laws and oversight of water transfers may not be adequate to protect the environment, third parties, public trust resources, and broader social interests that may be affected by water transfers, and transfers that involve pumping groundwater, crop idling, or crop shifting." The EWC plan would come down on the side county of origin protections and the "precautionary principle" in order to protect existing healthy groundwater aquifers north of the Delta Estuary.

7. Eliminate Irrigation Water On Drainage-Impaired Farmlands Below The Bay Delta.

Since the late 1960s and 1970s, the State Water Project and Central Valley Project have been supplying water to approximately 1.3 million acres of drainage impaired land on the west side of the San Joaquin Valley; this is a clear violation of the State Constitution's prohibition against unreasonable use of the state's water. Eliminating or reducing the irrigation of this land would save up to 2 million acre-feet of water in most years.

Farmers and water districts throughout the Western San Joaquin Valley try to reduce their drainage water. However, retiring these lands from irrigated agriculture remains by far the most cost-effective and reliable method to eliminate harmful drainage discharges to water bodies and aquifers. The Westlands Water District has already retired 100,000 acres; a recent federal report discusses an option to retire 300,000 acres of drainage-impaired lands. Any long-term solution to the west side's drainage problem must be centered on larger-scale land retirement,

complemented by selective groundwater pumping, improved irrigation practices, and application of new technologies where appropriate. Any approach that is not founded on land retirement will ultimately continue to store and concentrate selenium and salts in the shallow aquifers, where they may be mobilized by flood events or groundwater transport.

Taking much of these “badlands” out of production would reduce demand for Delta water diversions and significantly improve water quality in the San Joaquin River. A planned program of land retirement and other drainage volume reduction actions should also provide for mitigation for impacts to the farm labor community. Even if irrigation deliveries continue, these lands will ultimately go out of production because of drainage impairment, as pointed out in the federal “Rainbow Report.” A far better use of these impaired farmlands would be to provide state or federal incentives for the production of solar energy farms.

8. Restore Delta Estuary and Riverine Habitats and Integrate Floodplains With Rivers.

In keeping with the Legislature which has expressly declared that *permanent protection* of the Delta's natural and scenic resources is the *paramount* concern to present and future residents of the state and nation, habitat restoration projects should be aimed at public lands as a first priority. Habitat restoration projects must consider connectivity between areas to be restored and existing habitat areas needed for the full life cycle of species targeted to benefit from the restoration project. Where feasible, restoration should be accomplished along with levee reinforcement and where possible, restoration projects should emphasize the potential for water quality improvement. Restoration projects should also incorporate input from effected Delta landowners.

Priorities for restoration should include the following areas, since they would meet most of the criteria described above:

- Cache Slough Complex
- Cosumnes River–Mokelumne River Confluence
- Cosumnes River ground water basin depletion
- Lower San Joaquin River Floodplain
- Suisun Marsh
- Yolo Bypass

Although the EWC has not estimated the amount of acreage that would be involved in the priority areas, our estimate would be well below the more than 100,000 acres called for in the BDCP plan. That plan is impractical from the viewpoint of costs and from the opposition it will engender among residents and landowners in the Delta. Any resulting plans would need to heavily involve residents of the Delta, something that has not been accomplished to date.

Floodplains benefit the people and ecology of California in numerous ways. The flood plain of a river is a relatively level area on both sides of the stream channel that carries excess waters the channel cannot handle at various times. During a flood, the floodplain becomes the additional part of the stream to do the extra work for the stream channel. The floodplain allows flood waters

to spread out, thus reducing the flood water's potential energy. As a result, less damage occurs downstream. If the flood plain is not allowed to work properly and the channel is narrowed, dredged, or rip wrapped the stream is forced to handle more of the flow and damage occurs. Channelization and dredging have caused the disappearance of the river's healthy sandbars and islands. Flood plains contain wetlands which function to slow and filter flood water, thus improving water quality. Wetlands also provide habitat for a diversity of wildlife. Floodplains, therefore, are extremely productive ecosystems that support high levels of biodiversity and provide valuable ecosystem services. Studies have shown that healthy floodplains can have an extremely high monetary value due to these ecosystem services, which also include flood attenuation, fisheries habitat, groundwater recharge, water filtration, and recreation.

To function properly, floodplains must, by definition, periodically flood. The extent of functional floodplains in California has been dramatically reduced from historical conditions because levees, dams, flood control projects, and development have reduced or eliminated connectivity between rivers and floodplains. To reverse these losses, numerous agencies and organizations have spent significant resources to restore floodplains while simultaneously minimizing future flood risk.

With climate change, we can expect to have less snowpack, quicker spring snow melts, and increased flood pressures. Establishing natural floodplains connected with our rivers and avoiding development in floodplains will become more critical to community sustainability in the future.

The current restoration plans for the Yolo Bypass, including more frequent use of the Yolo Bypass, and similar conservation actions are encouraged as a part of this plan.

The following actions need to be included with any planned floodplain restoration:

- Where possible, remove or at least set levees back from riverbanks to allow for floodwaters to expand into the floodplain.
- Where it is not possible to remove levees, they should at least be vegetated with native riparian vegetation to provide the maximum achievable ecosystems functions.
- Make the purchase of floodplains or flowage easements a top priority for flood control agencies and prevent new levees from being constructed and development in floodplains.
- Ensure that low-income communities impacted by floodplain restoration are involved in the development of restoration plans, and that any impacts of restoration are fully mitigated.

9. Return The Kern Water Bank To State Control, Restore Article 18 Urban Preference, And Restore The Original Intent Of Article 21 Surplus Water In SWP Contracts.

The Monterey Amendments changed significant provisions of the original State Water Project and, as an unintended consequence, increased pressure for exports from the Delta and increased

pumping beyond healthy limits. The changes that caused these conditions were: the elimination of Article 18a, the “Urban Preference;” the elimination of Article 18b, the “Paper Water” safeguard; the change of orientation for Article 21 “surplus water;” and the privatization of the Kern Water Bank.

As a part of this plan, the following changes should be made in order to reduce reliance on the Delta, to assure Public Trust protections for a public resource, and to provide greater reliance for urban water users in the state’s largest population centers.

- The “urban preference,” that was eliminated as a component of State Water Project contracts due to the Monterey Amendments, must be reinstated. California should return to its original plan of giving priority to the water needs of its burgeoning population rather than giving farm water equal priority, per the Monterey Amendments changes.
- The contracted amounts of water for CVP and SWP Table A users are unrealistically high and must be brought in line with historic “firm yield” experience, as required in the contracts. The overall water supply reductions forecasted with global climate change adds to the urgency to bring these contracted amounts in line with current realities and for future planning.
- The pumping of “Article 21” (so-called surplus) water is unnecessary and has proven to be damaging to the fisheries and ecology of the estuary, especially the pumping of this “surplus” water in dry years, which should never be permitted. In reviewing the different types of water transfers that can occur throughout the state, some are more logical and favorable from an ecosystem and cost viewpoint, while others are clearly damaging by the same two criteria.
- The Kern Water Bank – initially a public asset – has been inappropriately turned over to private interests as a part of the Monterey Amendments and must be reestablished as a state entity under the ownership and operational control of the Department of Water Resources (DWR) for the benefit of all Californians, as it was when DWR purchased the land for the bank in the 1980s. When combined with the reinstatement of the urban preference in the State Water Project, this change would enhance water supply reliability for urban southern California users and would eliminate profiteering from the public’s water by private corporate interests.

10. Conduct Feasibility Study For Tulare Basin Water Storage.

Supplies for south-of- Delta users and the Metropolitan Water District could be sourced from the natural reservoir that is Tulare Lake by allowing flows from the Kern, Kings, Kaweah, and Tule Rivers to flow into the Tulare basin. This option is being advocated by the San Joaquin Valley Leadership Forum, which has determined that surface storage capacity in the Tulare Lake Basin could be more than 2.5 million acre-feet.²² The concept would require bi-directional conveyance with both the Kern Canal and the California Aqueduct.

²² San Joaquin Valley Leadership Forum, www.sjvwlf.org

The restoration of the Tulare Lake basin in the San Joaquin Valley is a unique opportunity to provide for the quality, quantity, and reliable regional sourcing and use of water for agricultural, economic development and environmental needs on a self-sufficiency basis. At one time, Tulare Lake was the largest freshwater body west of the Mississippi River storing up to 25 million acre feet. The concept proposal put forth by the San Joaquin Valley Leadership Forum is based upon technical, financial, and environmental analysis which is superior to the only other storage proposal currently under study within the San Joaquin Valley – known as Temperance Flat on the Upper San Joaquin River above Millerton Lake/Friant Dam. As an example, the restoration of just 10% of the historic Tulare Lake would be nearly twice the surface storage capacity of Temperance Flat – let alone the fact that the Tulare Lake basin provides ground water storage capabilities as well – and Temperance does not. Another important distinction between Temperance Flat versus Tulare Lake is the fact that the Tulare Lake basin can support the collection and management of flood waters from at a minimum of four south Sierra river systems – Kings, Kaweah, Tule, and Kern – as well as the upper San Joaquin. Temperance Flat would only support the flood waters of the upper San Joaquin River.

There is a possibility of ground contaminants in the basin that may be at harmful levels. The feasibility study would need to examine this potential issue closely. California does not need another set of impaired lands similar to what already exists in the west side of the San Joaquin.

Implementation. This proposed concept should be evaluated as part of this “Reduced Exports” plan. The preliminary concept described by the San Joaquin Valley Leadership Forum is estimated to cost \$800 million.

11. Restore Water Quality In The Estuary And In Impaired Rivers.

California’s Porter-Cologne Act of 1969 and the 1972 federal Clean Water Act both were enacted with the goal of restoring the quality of our water resources. These resources have been seriously degraded by over a century of heavy industry and agriculture, the indiscriminate extraction of natural resources, and the continued discharge of inadequately treated sewage. Progress in reversing this degradation has been slow. While upgrades to wastewater treatment and discharge requirements for industrial polluters have improved water quality in many areas, the fact remains that almost 700 reaches of California waterways are still unable to support beneficial uses, including providing potable water supply and supporting ecosystem health.

These problems have contributed to ecosystem crashes in San Joaquin Valley rivers and the Delta, severe groundwater depletion and contamination in the San Joaquin Valley and Central Coast that impacts low-income rural communities, and ocean pollution. Though state and federal laws already give regulators ample powers to improve water quality, this authority has not been exercised sufficiently to protect the health of the state’s waterways or its residents. The continuing acceptance of agricultural waivers by Regional Water Quality Control Boards is a major contributor to the state’s impaired waterways.

Diverting Sacramento River flows for export without significantly protecting existing groundwater basins and increasing the amount of fresh water flow dedicated to reaching San

Francisco Bay, as currently planned for BDCP, will only degrade water quality and habitat conditions and aggravate the negative impact on Delta aquatic and terrestrial species. On the other hand, a future scenario that places less emphasis on the Delta as a water supplier and allows more water to be left instream, can dramatically reduce the environmental and water quality effects of exporting water – whether through or around the Delta. Although increasing flows, as described in this “Reduced Exports” alternative, will improve many aspects of Delta water quality, this plan must continue to pursue specific and targeted water quality actions in order to contribute to restoring the health of the Delta.

12. Monitor And Report Statewide Groundwater Usage.

Environmental organizations are generally disappointed with the groundwater monitoring features that were built into the Delta Reform Act of 2009. Earlier drafts of the 2009 legislation required groundwater monitoring and reporting throughout the state, while the final legislation was weakened to make groundwater reporting a voluntary effort. Since groundwater represents 30% of California’s water supply in most years, the state must face this politically difficult situation with actions for mandatory groundwater reporting throughout the state.

This action needs to include a discussion of the Water Code’s requirement for additional South-of-Delta underground storage, and the ability to meet that requirement through public control and expansion of the Kern Water Bank. The impacts of the additional capacity for Delta exports as provided by a public Kern Water Bank should be considered here. Given its location, size, and relative cost of development compared to surface storage, the Kern Water Bank is a facility which could greatly assist balanced export controls for the Delta and could be the single greatest improvement to overall state-wide water supply reliability. This plan strongly advocates for the return of the Kern Water Bank to state control as a water management conservation measure.

13. Provide Fish Passage Above And Below Central Valley Rim Dams For Species Of Concern.

Dams have made California a well-watered paradise for most of its human inhabitants. Dams are also killers of river habitats. Although California’s vast system of water storage, hydropower and flood control dams has provided enormous economic benefits, it is not without downsides. Dams have been a major factor - in many cases the major factor - in the decline and extinction of numerous fish species, especially anadromous fishes that migrate to and from the ocean and must have access to the more favorable upper reaches of rivers to spawn and rear the next generation. Every salmon and steelhead run in Central Valley rivers is either extinct, endangered, or in decline due to the overall habitat destruction and degradation caused by dams. A 1985 California Department of Fish and Game study has indicated that the economic losses due to the declines of salmon, steelhead and striped bass which spawn in the Central Valley tributaries at \$116,000,000 per year.

The most serious fishery problem caused by major dams is the blockage of migratory fish passage. Over 95 percent of the historic salmon and steelhead spawning habitat in Central Valley river systems has been eliminated by the construction of large dams on every major river. Fish passage was not a serious consideration in the early part of the last century when most of the major dams were built; there were no Endangered Species Act or National Environmental Policy Act considerations at the time. California Fish and Game Code Section 5937, which mandates that dam operators keep fish in good condition below dams has largely been ignored outside the Mono Basin. The construction of Friant Dam on the San Joaquin River resulted in the extinction of the largest spring-run chinook population in the state. The dam blocked upstream spawning grounds that were known to be the best of the Central Valley rivers.

There are numerous solutions available that can provide fish passage around dams. They include construction of fish ladders or upstream fish channels, fish elevators, trap and truck operations, downstream bypasses, removal of smaller fish barriers, and dam removal. All of these techniques have been used at multiple locations with varying success rates. Some of the larger dams on the Columbia River system have been operating fish ladders for many years. While the costs of many of the techniques are substantial, the economics of industries and recreational activities that depend on healthy rivers and fish stocks can justify the investment. The appropriate comparison by which to measure such costs is the sum of agricultural, industrial, and municipal benefits that accrue via the diversion of tens of millions of acre-feet of water annually. Tourism and recreation is now California's largest industry at more than \$96 billion annually, and river recreation is a large part of that industry. Recreational fishing generates \$1.5 billion annually in retail sales and provides thousands of jobs.

An important aspect of fish passage above dams is the benefits to Native American Tribes in gaining access to historic cultural resources. These would include: the Winnemen Wintu on the Upper Sacramento, McCloud, and Pit Rivers; the Karuk Tribe on the Klamath; and the California Valley Miwok and Maidu on the American and Feather Rivers.

This plan supports, as a conservation measure, the National Marine Fisheries Service Biological Opinion on CVP and SWP operations that recommends fish passage pilot program plans and analysis for dams connected to the Delta, such as the Sacramento, American and Stanislaus rivers. This plan also encourages the State Water Board to direct the controlling agency of each Central Valley rim dam connected to the Delta to study the feasibility of fish passage for each dam that blocks the passage of listed salmonid species, similar to the NMFS Biological Opinion. Costs should be borne by the dam operators since they are the main beneficiaries of the water storage operations.

14. Retain Cold Water For Fish In Reservoirs.

Salmon, steelhead, and trout need cold water for their existence. As California has grown in size, the dams that have been built on virtually every major river have significantly changed both upstream and downstream river flows; high downstream water temperatures are one of the damaging results. Temperatures of 57-67 degrees Fahrenheit (F) are typically ideal for upstream fish migration and 42-56 degrees (F) are ideal for spawning. Water temperatures over 70 degrees

(F) can be lethal to anadromous fish but are common on major rivers in the summer. Some fish populations have been able to adapt and carry on spawning and rearing below these major barriers, though in much smaller numbers than previously. Because farms need the most water in the summer, water behind reservoirs is low by the fall when many of the remaining populations of migrating fish return to the rivers. At that point the lack of cold water is a clear threat to their survival. Many of these fish species are now listed under the federal Endangered Species Act (ESA), and maintaining water temperatures suitable for survival has become a critical part of the actions required under the ESA.

This plan supports, as a conservation measure, the NMFS Biological Opinion recommendations for cold water releases on rivers connected to the Delta, such as the Sacramento, American, and Stanislaus rivers, as well as supporting regulations and legislation to retain sufficient water in other major reservoirs to support fish populations in Delta-connected rivers below dams. The latter would include the Trinity River, so long as the current management plan protections for the Trinity are complied with.

15. **Fund Agencies With User Fees.**

Agencies that benefit from any new or existing conveyance facilities should pay the full cost of the facilities, including mitigation costs.

Costs of fixing the Delta and Estuary that are related to existing and planned water delivery systems, including related costs of environmental mitigation and restoration, should be financed by the agencies that deliver water and ultimately should be passed on to their retail customers.

Cost responsibilities for land acquisition and restoration of river and Delta floodplains should be distributed 75 percent through a broad-based water use fee (applied to all agencies whose supplies are diverted from a river or the Delta watershed.) and 25 percent through public funds.

Agencies that divert water from the Delta should pay their fair share of maintaining and replacing the Delta levees on which they depend and for protecting water conveyance facilities. The share of Delta levee repair costs assigned to these agencies should reflect the extent to which the levee repairs are essential to ensuring uninterrupted diversions.

In developing funding sources, special care should be taken that low income communities not be impacted by new fees and second, that appropriate set-asides be created to ensure that these communities can access funding needed to comply with new regulations and policies.

