Public Review Draft

California Water Action Plan

California Natural Resources Agency

cdfa California Department of Food & Agriculture

California Environmental Protection Agency (Cal/EPA)

Dear Stakeholder,

We have reached a critical juncture for water policy in California. Climate change, drought and population growth pose significant challenges to our state. In May, Governor Brown directed our agencies to put together a multi-agency working group and identify key actions for the next one to five years that address urgent needs and provide the foundation for sustainable management of California's water resources.

The set of actions outlined in this document begin to deal with our challenges. While this won't resolve them all, it can put California on a firm path to sustainability. In order for this effort to be effective there must be collaboration between state, federal and local governments, regional agencies, Native American tribes, the private sector and members of the public.

This plan builds on the ideas and recommendations of a wide range of industry, government and non-governmental organizations, who understand the urgency of the task before us. We must work together and seize the opportunity to lay the foundation for sustainable water management in the coming decades.

Over the next several weeks, we will work to collect input on this public review draft of the California Water Action Plan. From this effort, we hope to drive participation in the many venues the state of California has for policy development and regulation for water. For more information about this water action plan or to submit comments and questions please email wateraction@water.ca.gov.

Sincerely,

John Laird
Secretary, California Natural Resource Agency

Matthew Rodriquez
Secretary, California Environmental Protection Agency

Karen Ross
Secretary, California Department of Food and Agriculture

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California Water Action Plan: Actions for Reliability, Restoration and Resilience

Introduction

After two years of dry weather and shrinking reservoir supplies, we are reminded once again that nothing focuses Californians' attention on our limited water resources like drought.

There is broad agreement that the state's water system is currently unable to satisfactorily meet both ecological and human needs, too exposed to wet and dry climate cycles and natural disasters, and inadequate to handle the additional pressures of future population growth and climate change. Solutions are complex and expensive, and they require the cooperation and sustained commitment of all Californians working together. Thoughtful, decisive action is needed now to put California's water resources on a safer, more sustainable path.

This report identifies actions that, in the next five years, will move California toward more sustainable water management by providing reliable water supply for our farms and communities, restoring important wildlife habitat and species, and helping the state's water systems and environment become more resilient. These actions are organized around long-term objectives. Some of the actions are new proposals. Some are being planned and should be completed more rapidly, implemented in a better way, or on a larger scale. Success will require the cooperation of many partners; the state's role is to lead, help others, and remove barriers to action. These actions will not address all of our challenges; nor should they distract from other important efforts being developed and implemented across the state. But, the actions described here are critical to moving the state forward now.

Risks to California's Water Resources

Water has always been a scarce resource in California. Most precipitation falls in the northern and eastern mountains, yet most of the population and irrigated farmland is located in the drier west and south. Precipitation is highly variable year-to-year, but the long warm summers are always dry. In the mid-20th century, state, federal, and local agencies built a vast system of reservoirs, canals, pumps and pipelines to store water and deliver it to agricultural and urban users in dry areas. This system has both helped create and support California's vibrant farms and communities, but has also resulted in unintended impacts on the~~—~~environment ~~natural world~~. In general, there is broad consensus about our challenges:

- ***Uncertain water supplies –*** Reductions in water from major sources like the Colorado River~~,~~ ~~and~~ the Sacramento River and ~~-~~San Joaquin River ~~Delta (Delta) —~~due to hydrologic and declining environmental conditions and regulatory requirements —have made these water supplies less reliable. Moreover, climate change impacts to these sources and to the Sierra Nevada headwaters further strains supply reliability from north to south. These sources are foundational supplies around which their communities develop and manage local resources~~, such as water use efficiency, recycled water and groundwater recharge~~. The unreliable nature of these supplies from both natural and regulatory requirements creates a significant uncertainty that threatens local, regional and statewide economies. The combined benefits of all of the actions in this plan will contribute to more reliable water supplies.

- ***Water scarcity/drought –*** California's hydrology has always had extended dry periods. Much of California's water system was originally planned to withstand a seven-year dry period without severe damage to the economy and environment. That original vision was not sustainable, and today some regions and many communities struggle to maintain adequate water supplies after only a year or two of dry conditions. Climate change coupled with increased regulatory requirements will make this situation even more challenging. Improving our ability to manage ~~scarce~~ finite water supplies, ~~and~~ better coordinate operations of major reservoirs, and increasing the carrying capacity in the headwaters is essential to economic and environmental sustainability. Taking action to address drought is especially urgent for agriculture and hydropower generation. Water quenches the thirst for the State's economic engine. Agricultural products feed this state and the world, and generate billions of dollars in economic activity. The water reservoirs, specifically in the North State, produce power to 14 million homes in the western United States. Hydropower generation has the added benefit of balancing the grid load for wind and solar power generation. ~~where crops wither without water, and the world's population growth and food demand creates food security concerns.~~ Effective state preparedness reduces impacts of shortages and lessens the costs of state response actions. The actions identified throughout this plan are specifically designed to help secure more reliable water supplies and ~~consequently improve drought preparedness~~ adapt to the changing climate conditions.

- ***Declining groundwater basins –*** Groundwater accounts for more than one-third of the water used by cities and farms—much more in dry years, when other sources are ~~cut back~~not available. Unfortunately, ~~much~~ some of California's groundwater is not sustainably managed. Regulatory requirements on surface water supplies, as well as proposed new requirements will increase the significance of this problem in the short-term. ~~,~~ In the long-term c~~C~~limate change ~~is~~ will exacerbat~~e~~ing ~~ongoing~~ problems with groundwater resources in California, including overdraft, seawater intrusion, land subsidence, and water quality degradation. Taking more than is returned lowers groundwater levels which makes pumping more expensive and energy- i~~i~~ntensive. It also serves to mobilize toxins that impair water quality and causes land subsidence, which damages infrastructure and permanently diminishes the capacity to store water for the future. Land subsidence due to groundwater overdraft is impossible to reverse. ~~Well-managed~~An adequate surface water supply managed in an integrated manner with groundwater has the potential to buffer against the impacts of climate change on our water resources. The actions identified in this plan will move California toward ~~better~~ better-integrated management of our groundwater resources.

- ***Poor water quality –*** Millions of Californians rely, at least in part, on contaminated groundwater for their drinking water. While most water purveyors blend or treat the water to meet public health standards, many disadvantaged communities cannot afford to do so. In addition, domestic wells in some regions are ~~rapidly~~ drying up. All Californians have a right to safe, clean, affordable and accessible water adequate for human consumption, cooking, and sanitary purposes. Safe water is necessary for public health and community prosperity. The actions in this plan will improve the organization of our water quality programs and create new tools to help ensure that every Californian has access to safe water.

- ***Declining native fish species and loss of wildlife habitat –*** California's once robust native fish populations are at or near historic lows. Federal and state fish agencies now list many species of salmon and other fish as endangered and threatened. Wildlife habitat is also being lost at a rapid pace. California's diverse and unique native ecosystems are, in many areas, being significantly impacted by invasive non-native species. ~~irreplaceable~~ If California is to properly manage its native ecosystems in a sustainable manner, it must control the adverse impacts caused by invasive non-native species, especially aquatic species~~and are part of the complex system that provides and protects California's water resources~~. Tourism and fishing, reliant on healthy ecosystems, also provide economic benefits to local communities and to the state. The actions

defined in this plan include ~~aggressive~~ native ecosystem restoration, invasive non-native species management, and other actions that will restore fish populations and benefit other wildlife.

- ***Floods –*** Over 7 million Californians live in a floodplain. Our state's capital, Sacramento, has one of the lowest levels of flood protection of any major city in the nation. Climate change will exacerbate this problem because more precipitation will fall as rain rather than snow, snowmelt will be faster and earlier and there will be more extreme weather events. There is a great deal of work to be done to capture and slow down the water in the watersheds to reduce the pressure on the levee system, while strengthening the infrastructure to improve flood protection for existing communities and infrastructure. The actions in this plan will coordinate and streamline flood related projects and identify new sources of funding.

- ***Wildfire –***The Sierra Nevada Mountain watersheds are the State's largest and most important natural winter reservoir. The provide 60% of the state's water supply. Wildfire is a huge and growing threat to our water supplies from the Sierra. An example is the Rim Fire that burned 257,000 acres. Fires adversely impact water supply by turning soil to sediment in our creeks, streams and reservoirs, reducing reservoir carrying capacity, degrading downstream water, increasing rainfall runoff, compared to the slower runoff from a well-managed forest, and causing long-term damage to threatened, endangered, and sensitive wildlife species and habitat. The actions in this plan will better equip us to address the state's watersheds and headwaters to help protect the State's water supply, water quality, hydropower generation, the environment, agriculture, tourism and recreation for all of California.

- ***Supply disruptions –*** ~~Many parts of~~ California's water system is~~are~~ vulnerable to earthquakes, wildfires, landslides, and flooding. Specific disruption threat varies by region, but virtually all regions of the state face exposure to some degree, albeit small localized events in some areas., ~~particularly t~~The Delta, which serves as the conveyance hub for a substantial percentage of all water supplies in the Bay Area, the San Joaquin Valley, and Southern California holds the greatest risk to urban areas in the Bay Area and south coast. A large earthquake along any of five major faults or a major storm-induced levee failure could render this water supply unusable for urban and agricultural needs for months. The combined benefits of all of the actions in this plan will better prepare us to manage through potential disruptions in the system.

Population growth and climate change further increase the severity of these risks. The state's population is projected to grow from 37 million to 50 million by 2049.[1]

The effects of climate change are already being felt and will worsen. Rising air temperatures and air pollution may already be ~~decreasing~~ reducing the Sierra snowpack, reducing natural water storage, ~~and~~ altering winter and spring flood flows, and changing the historic flow patterns of the major tributaries to the Delta. Higher river and ocean water temperatures will make it harder to maintain adequate habitat for native fish species. Higher ocean temperatures will alter the already changing weather patterns. Sea level rise threatens coastal communities and islands in the Delta. Sea level rise also amplifies the risk that the pumps that supply cities and farms with Delta water will be inundated with sea water in a large earthquake or storms that breach levees. More frequent and more severe dry periods will threaten the health of our natural ecosysystem~~systems~~ and our ability to meet our diverse water supply and water quality needs.

Fortunately, despite these challenges, there is ~~good~~ progress to report. State, regional, and local agencies have increasingly been pursuing a strategy of making regions more self-reliant by developing new or underused water

resources locally. California's diverse regions underscore the need for avoiding a "one size fits all" approach to integrated resources management. Therefore, specific strategies will vary from one area of the state to another. ~~I~~In the future, ~~most~~ new water will come from a combination of improved conservation and water use efficiency, technology, conjunctive use (coordinated management of local surface and groundwater), recycled water, watershed restoration and forest management, drinking water treatment, groundwater remediation, surface storage, and desalination. Agencies are also focusing on projects with multiple benefits, such as storm water capture and floodplain reconnection, that can help simultaneously improve the environment, flood management, and water supplies. Th~~ese~~ diversified ~~local water~~ portfolio~~s~~ will ~~relieve pressure on~~mitigate impacts to foundational supplies and help make communities more resilient against drought and climate change.

[1] http://www.dof.ca.gov/research/demographic/reports/projections/view.php California's population will cross the 50 million mark in 2049 and grow to nearly 52.7 million by 2060.

Reliability, Restoration, and Resilience

The actions outlined here are based on three broad objectives: more reliable water supplies, the restoration of important native species based ecosystem functions ~~species and habitat~~, and a more resilient, sustainably managed water system and environment that can better withstand inevitable pressures in the coming decades. These actions reflect an integration of new ideas with the important work that state, regional and local agencies are already engaged in. Together, these actions address the most pressing water issues that California faces while laying the groundwork for a sustainable and resilient future. All of these actions require coordination and collaboration across levels of government. Together, in the next five years, we must:

1. ~~Make conservation a California way of life~~Use water resources more efficiently throughout the hydrologic cycle from source headwaters to the Pacific Ocean;
2. Invest in integrated water management and increase regional self-reliance;
3. Reduce water quality impacts and the threat to water supply and infrastructure posed by wildfire by reducing fuels, controlling erosion and restoring landscapes.
4. Achieve the co-equal goals for the Delta, as well as the rest of the State, while assuring that one region's increased reliability does not adversely affect another's near or long-term supplies;
5. Protect and restore ~~important~~ native ecosystems;
6. Manage and prepare for ~~dry periods~~multiple year droughts;
7. Expand water storage capacity (i.e. Raise and/or dredge existing reservoirs, build new off-stream surface storage, provide for meadow and forest remediation to increase water yield, increase groundwater injection from winter run-off)
8. Recapture lost storage capacity due to sediment
9. Provide safe drinking water and secure wastewater systems to all communities; ~~;~~
10. Increase flood protection and reduce flood risk at the source;
11. Improve operational and regulatory efficiency while affirming California's water rights including area-of-origin protections;
12. Identify sustainable and integrated financing opportunities,
13. Develop storage south of the Delta to make the "big gulp" strategy of the BDCP work effectively;
14. ~~12.~~ The State needs to make the common sense business case to educate our citizens about the critical importance of investing in water infrastructure projects~~.~~

This list is not comprehensive. There are thousands of important projects that are being planned or implemented by all levels of government as well as by conservationists, farmers, water agencies, and others.

This fact underscores the breadth and complexity of managing our water resources. But, these are essential actions that California can take in the next five years to set the state on the right course. These actions will, in many cases, require collaboration between state, federal and local governments, regional agencies, Native American tribes, the public, and the private sector. The Legislature is also a key partner. Water has always been among California's most contentious issues. Only by working together, can we improve the state's water future for generations to come.

Actions

- Use water resources more efficiently throughout the hydrologic cycle from source headwaters to the Pacific Ocean

~~1. MAKE CONSERVATION A CALIFORNIA WAY OF LIFE~~

Californians cannot take their water supply for granted, and must adopt ~~conservation~~ an ethic of a more efficient use of water as part of their daily lives. It is imperative that California develop integrated water management strategies that recognize and incorporate the interrelationships between the various components, natural and engineered, that make up our complete water resource system. We must implement innovative approaches that can improve the productivity of each component and consequently, the reliability of our water supply throughout the state.

State land and resource management agencies with jurisdiction in the State's headwaters areas will draft a joint report to the Governor and the Legislature analyzing the impacts of Climate change on headwaters. The report should identify the benefits that headwaters currently provide, identify models to assess the impacts of climate change on these resources and outline strategies to adapt to those impacts. This work will be done in consultation with the Sierra Nevada Research Institute (U.C. Merced) and the U.S. Dept. of Agriculture and Interior. The report will provide a report outlining and prioritizing investments that can be made on public lands to improve the condition and functions of California's headwaters so as to benefit water supply reliability and water quality for the state.

In 2009, the state adopted the Water Conservation Act, through the passage of Senate Bill 7x7, which requires that we achieve a statewide 20 percent reduction in urban per capita water use by December 31, 2020, promotes expanded development of sustainable water supplies at the regional level, and requires agricultural water management plans and efficient water management practices for agricultural water suppliers. The Water Conservation Act also requires that we make incremental progress towards this goal by reducing per capita water use by at least 10 percent by December 31, 2015. While w~~W~~e must continue to build on our existing efforts to improve water use efficiency ~~conserve water~~, and promote the innovation of new systems for increased water conservation, we must be cognizant that this will provide less flexibility during extended drought periods, which will exacerbate the effects of the dry condition.

- **Expand Agricultural and Urban Water Conservation and Efficiency to Exceed SB7X7 Targets**
  The Administration will expand existing programs to provide technical assistance, shared data and information, and financial incentives to urban and agricultural local water agencies, as well as local governmental agencies, to enable locally cost effective agricultural and urban water conservation in excess of the amounts envisioned by SB 7X7, where feasible.

- **Provide Funding for Conservation and Efficiency**
  The administration will work with the Legislature to expand funding for urban and agricultural water use efficiency research, development and implementation through existing programs. The administration will give priority to funding integrated management plans that provide regional and statewide benefit

~~include robust existing or proposed water conservation measures~~ as well as priority funding for disadvantaged communities. ~~Conservation programs must include numeric targets.~~

- **Increase Coordinated Water-Energy Efficiency**
  The administration will promote regional and local projects that improve the efficiency of how water is collected, stored, pumped, transported, treated, ~~and~~ used and reclaimed. These actions will save water, energy, and money.

- **Promote Local Conservation Ordinances**
  ~~The City of Los Angeles~~Some water agencies prohibit~~s~~ certain types of water use for all of its citizens in an effort to conserve water. Examples of the prohibited water use include: watering of any hard surfaces such as sidewalks, walkways, driveways or parking areas; outdoor watering during periods of rain; and serving water to customers in restaurants unless specifically requested. Other cities should follow this example where applicable and feasible and consider ways their communities can ~~reduce water usage~~use water more efficiently.

- The Building Industry should establish standards for all new construction and require recycled water technology and stormwater recapture where applicable, and implement new standards calling out the the water/energy nexus.

- DWR and local water agencies should coordinate with groundwater management agencies, where applicable, to enhance conjunctive use opportunities and minimize the potential impacts on groundwater recharge that may result from water use efficiency and conservation efforts.

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- Based on 50 year projections for sea level rise, reduced Sierra snowpack, increased evapotranspiration, and the increased severity of drought conditions, California needs to expand its use of ocean desalination. Promising new technologies such as Flow Through Electrode Capacitance Desalination can provide reliable water supplies for less cost than the conventional reverse osmosis technology.

INCREASE REGIONAL SELF-RELIANCE AND INTEGRATE WATER MANAGEMENT ACROSS ALL LEVELS OF GOVERNMENT

While California has a vast state and federal managed natural and man-made infrastructure that allows managers to store and deliver water hundreds of miles from its origin, the majority of man-made infrastructure, management, and investment reside at the local and regional levels.

Sometimes that management comes in the form of regional multi-issue agencies dealing with flood control, water supply, transmission, and water quality. Other times, individual agencies deal with those issues separately. Over the past decade, the state has assisted regions in coming together in what is known as Integrated Water Management Planning, where multiple entities create a regional plan that integrates local agency water management infrastructure and operations to create new efficiencies and serve multiple purposes. State grants are provided to incentivize both regional integration and to leverage local financial investment.

Ensuring water security at the local level includes efforts to replace aging infrastructure, educate the public to ~~conserve and~~ use water more efficiently, management strategies to restore watersheds, to protect or create habitat for native~~local~~ species and reduce erosion, to recycle water for reuse, to capture and treat ~~stormwater~~storm water for reuse, and to remove salts and contaminants from brackish or contaminated water

or from seawater. But, mostly it requires integrating disparate or individual government efforts into one combined regional commitment where the sum becomes greater than any single piece.

- **Support and Expand Funding for Integrated Water Management Planning and Projects**

The administration will work with the Legislature to enhance the Integrated Water Management Planning program. Providing funding for locally-driven, multi-benefit projects is critical. The administration will target funding to local projects that increase the efficient use of water from the Sierra headwaters to south coast outfall, improve regional self-reliance and result in integrated, multi-benefit solutions for ensuring sustainable water resources and improved water quality.

- **Update Land Use Planning Guidelines**

The Governor's Office of Planning and Research will engage local land use authorities and water agencies and amend the general plan guidelines to promote local land use decisions that are consistent with local sustainable water management and offer methods to increase the efficient use of water throughout the hydrologic cycle and improve local water supplies~~.~~

- **Legislation for Local Self Reliance**

The administration will work with the Legislature to encourage local governments to adopt or amend local ordinances that enhance local water supply reliability and conservation, such as ordinances that establish minimum requirements for infiltration of water into the groundwater ~~table~~, ordinances that establish minimum requirements for injection of water into the groundwater such as for aquifer storage and recovery facilities, detection and prevention of utility system leaks, landscaping measures, and indoor/outdoor water use efficiency standards.

- **Demonstrate State Leadership**

All state agencies should take a leadership role in designing new and retrofitted state owned and leased facilities to increase water efficiency, use recycled water, and incorporate storm water runoff capture and ~~low impact~~ development strategies that improve the efficient use of water resources.

- **Provide Assistance to Disadvantaged Communities**

The administration will provide technical assistance, tools, and allocate dedicated funds for grant administration, project development and stakeholder collaboration to under-represented and economically-disadvantaged communities to promote greater participation and success in regional grant programs.

- **Encourage State Focus on Projects with Multiple Benefits**

The administration will direct relevant agencies and departments to evaluate existing programs and propose modifications to incentivize, recognize, and co-fund multi-benefit projects and integrated water management planning, such as storm water permitting for cities and counties and the correlation between water quality and water quantity, fuels reductions projects, fire and statewide water supply, the water/energy nexus, and water sequestration in the watershed and the increased downstream flood protection.

- **Increase the Use of Recycled Water**

California needs more high-quality water and recycling is ~~the~~ one key to getting there. By June 30, 2014 t~~T~~he state will adopt uniform water recycling criteria for indirect potable reuse of recycled water for groundwater recharge, and develop criteria for direct potable reuse (surface water augmentation).

- **Streamline Permitting for Local Water Reuse or Enhancement Projects**

The administration will, by June 30, 2014, review and propose measures to streamline permitting for local projects that make better use of local water supplies such as recycling, storm water capture, and desalination of brackish and sea water.

ACHIEVE THE CO-EQUAL GOALS FOR THE DELTA

The Delta is California's major collection point for water, serving two-thirds of our state's population and providing irrigation water for millions of acres of farmland. The region supports many local communities in the Delta, farming, wetland and riparian habitats, as well as numerous fish and wildlife species. In recent years, some ~~important~~ native fish populations have declined dramatically, leading to historic restrictions on water supply deliveries. Moreover, the current system relies on water flowing through a network of fragile levees from the northern part of the Delta to the pumps in the south, where two out of three fish trapped near the pumps die. These levees were not designed to resist a significant seismic event, the probability of which is greater than 60 percent over the next 50 years. They are also vulnerable to major floods and rising sea levels, all of which puts unacceptable risk on the people who live in the Delta as well as the water supply for 25 million people and 3 million acres of farmland. Plans are underway to address these problems. The issues are contentious and have been for decades. But, the status quo in the Delta is unacceptable and it would be irresponsible to wait for further degradation or a natural disaster before taking action.

The Delta Stewardship Council was created in legislation to achieve the state-mandated co-equal goals of providing a more reliable water supply for California and to protect, restore, and enhance the Delta ecosystem. Those two goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The council recently adopted its Delta Plan and will establish a high-level interagency coordinating body to commence implementation of a suite of actions designed to achieve the co-equal goals. The Implementation Committee can play a strong role in moving forward on the actions included in this plan, which include and build on many of the priorities included in the council's Delta Plan.

- **Begin Implementation of the Delta Plan**

The administration directs all of its relevant agencies to fully participate in the Implementation Committee established by the Delta Stewardship Council in an open, collaborative, and transparent process.~~.~~

- **Complete Comprehensive Plans to Recover Populations of Threatened and Endangered Species in the Delta and Improve Water Supply Reliability for Users of Delta Water**

State and federal agencies will complete planning for a comprehensive conservation strategy aimed at protecting dozens of species of native fish and wildlife in the Delta, while permitting the reliable operation of California's two biggest water delivery projects. The Bay Delta Conservation Plan (BDCP) would help secure a large element of California's water supply by building new water delivery infrastructure and operating the system to improve the ecological health of the Delta. It would also restore or protect approximately 145,000 acres of habitat to address the Delta's environmental challenges. The BDCP is made up of specific actions, called conservation measures, to improve the Delta ecosystem. It includes 22 conservation measures aimed at improving water operations, protecting water supplies and water quality, and restoring the Delta ecosystem within a stable regulatory framework. The project will be guided by 214 specific biological goals and objectives, improved science, and an adaptive management approach for operating the water conveyance facilities and implementing other conservation measures including habitat restoration and programs to address other stressors. As the Delta ecosystem improves in response to the implementation of the conservation measures, Delta water operations would become more reliable, offering secure water supplies for 25 million Californians, an agricultural industry that feeds millions, and a

thriving economy.

State and federal agencies will complete the state and federal environmental review documents; seek approval of the BDCP by the state and federal fishery agencies; secure all permits required to implement the BDCP; finalize a financing plan; complete the design of BDCP facilities; and, begin implementation of all conservation measures and mitigation measures, including construction of water conveyance improvements. Once the BDCP is permitted, it will become part of the Delta Plan.

The State is cognizant of, and committed to, honoring assurances made in the past. When the Central Valley Project (CVP) and the State Water Project (SWP) were built, assurances were incorporated in their authorizing statutes that water needed to meet present and future beneficial uses in the areas of origin (i.e., the Sacramento Valley, the east side of the San Joaquin Valley and the Delta) would be available to those areas when needed. The State agencies are committed to implementation actions that will augment storage and modify regulatory approaches to ensure positive storage balances can be maintained at all times to provide for improved water supply reliability.

In achieving the co-equal goals, t~~T~~he BDCP will be implemented such that its construction and operations will not reduce water supply reliability nor impose any obligation on water users upstream of the Delta to supplement flows in and through the Delta. The entities seeking to secure permits for the BDCP will be responsible for meeting all applicable conditions in the BDCP permits, including any obligations in those permits for Delta flow, which as required by law must avoid redirected impacts to upstream water users, including the Delta, unless provided for in voluntary agreements or settlements.

BDCP operational assurances and regulatory requirements will be so structured by the State such that no reservoirs within the Delta watershed will be operated so as to reach "dead pool" (a condition in which water levels fall below a dam's lowest outlets and the reservoir cannot deliver water for supply).

- **Restore Delta Aquatic and Intertidal Habitat**

In coordination with restoration proposed by the BDCP, a specific set of projects or acreage for restoration will be identified in the six priority areas listed in the Delta Plan: (1) Yolo Bypass; (2) Cache Slough Complex; (3) the confluence of the Cosumnes and Mokelumne rivers; (4) the lower San Joaquin River floodplain; (5) Suisun Marsh; and, (6) western Delta/eastern Contra Costa County. The Department of Water Resources, in consultation and coordination with the Department of Fish and Wildlife, the Delta Science Program, and the Delta Plan Implementation Committee will initiate projects to restore 8,000 acres of intertidal and – associated subtidal habitat in the Delta and Suisun Marsh.

- **Implement Near-Term Delta Improvement Projects**

In coordination with restoration proposed in BDCP, the Department of Water Resources will initiate a – project to remove fish passage barriers within the Yolo Bypass and modify the Fremont Weir to increase the amount and quality of fish rearing habitat by improving access to seasonal floodplain habitat.

- **Maintain Important Infrastructure**

The Department of Water Resources will continue implementation of the Delta Levees Subventions, Delta Special Projects, and Floodway Corridor Programs to provide financial assistance to local agencies for repair and improvement of levees and other multipurpose projects in the Delta.

- **Bay Delta Water Quality Control Plan**

The State Water Resources Control Board (State Water Board) has an opportunity to lead in the coordination of multiple-agency efforts to improve the Delta's water quality. The SWRCB will encourage and facilitate negotiated

programs, planning efforts and settlements that will implement flow and non-flow actions consistent with the need to protect beneficial uses and public trust balancing. The SWRCB will complete its update of the Water Quality Control Plan for the Delta and its upstream watersheds. The plan establishes both regulatory requirements and recommended actions. The SWRCB shall prioritize native species for protection above non-native species and shall work with the Resources Agency on development and implementation of a non-native aquatic predator control program on Delta tributaries to be implemented as a component of the Delta Water Quality Control Plan.

~~The State Water Board's action will balance competing uses of water including, municipal and agricultural supply, hydropower, fishery protection, recreation, and other uses.~~

~~2.~~1. PROTECT AND RESTORE IMPORTANT ECOSYSTEMS

Streams and rivers once ran freely from high in the mountains ~~to downstream reaches,~~ meandering naturally downstream through the foothills to the lowland and floodplain habitats, connecting with coastal estuaries and the Pacific Ocean. The variability of natural water flows in ~~this~~ the~~complex system~~natural infrastructure created ~~vibrant and~~ resilient habitat for many native species and functioned to store water, recharge groundwater, naturally purify water, and moderate flooding. Over 80 percent of the Central Valley's historical floodplain, riparian, and seasonal wetland habitats have been ~~lost~~ converted to agricultural or urban uses in the last 150 years. This ~~loss~~ changeaffects the physical and ecological processes of the Central Valley and beyond, contributes to the decline of salmon and steelhead, and restricts habitat ~~for waterfowl and~~for other species~~, and impacts water supply, flood protection, and sediment control~~. In some watersheds ~~around~~ in the state, fish and wildlife ~~no longer~~ have limited access to habitat or enough cold, clean water at key times of the year. However, in other watersheds the development of reservoirs has provided late season cold water supplies essential to maintaining some native aquatic species. In response to these ~~losses and~~ ecological ~~challenges~~conditions, as well as in anticipation of the effects of climate change on the timing, volume and temperature of water flows, activities to protect and restore the resiliency of our ecosystems will help support native fish and wildlife populations, improve water quality, and restore natural system functions. This effort will increase collaboration and transparency and ensure that management decisions are supported by the best available science.

- **Restore Key Mountain Meadow Habitat**

The Department of Fish and Wildlife in coordination with other state resource agencies, federal agencies, local entities and federally recognized tribes, ~~-~~will restore 100,000 acres of mountain meadow habitat in strategic locations in the Sierra Nevada and Cascade mountain ranges. This program will be carried out to restore the natural infrastructure~~,~~ ~~which~~ that can attenuate flood-flows, increase groundwater storage, improve water quality, reduce water temperatures in critical late-season periods and ~~provide~~ improve habitat for more than 100 native species.

- **Headwater Protection and Restoration, and Increased Water Yield**

~~, many of which are at risk as threatened or endangered~~.

The mountain forests that provide nearly all of the California's drinking water are at risk. Many headwaters are weakened by overgrowth and past forest management practices. These forested watersheds are seeing a rapid spread of endemic species like the mountain pine beetle, increases in the number of uncharacteristic wildfires, reduced water yield due from overgrown vegetation, and other stressors that damage watersheds. These challenges are threatening our watershed's ability to continue to provide clean, reliable supplies of water to meet the needs of our communities and must be remediated for long-term resilience. A forest thinned of brush, thickets, and ground fuels is resistant to fires and it produces more water throughout the year.

~~Nearly all of the state's water supplies originate in California's headwaters. More effectively managing these areas is essential to cost effective and sustainable mountain meadow habitat restoration and~~

~~optimizing the water supplies of those watersheds. The Resources Agency in coordination with other state resource agencies, federal agencies and local entities, will carry out fuel thinning~~ The Resources Agency, in coordination with other state and federal agencies, including the US Forest Service and Bureau of Land Management, will set goals and establish programs to reduce wildfire risk and maximize water yield for headwater lands. At a minimum, they will prioritize and carry out fuel hazard reduction thinning projects to reduce the fire risk and increase water yield on 250,000 acres each year.

- **Bring Back Salmon to the San Joaquin River**

The Department of Fish and Wildlife and the Department of Water Resources will lead the effort to achieve the state goal of restoring flows to the San Joaquin River from Friant Dam to the confluence of the Merced River, and bringing back a naturally-reproducing, self-sustaining Chinook salmon fishery while reducing or avoiding adverse water supply impacts. Chinook will be reintroduced pursuant to the San Joaquin River Restoration Program, and the Department of Fish and Wildlife will complete construction of the conservation hatchery and research facility. The administration will work with the Legislature and others to secure further funding as necessary to achieve these activities and the restoration goal.

- **Protect Key Habitat of the Salton Sea Through Local Partnership**

The Natural Resources Agency, in partnership with the Salton Sea Authority, will coordinate state, local, and federal restoration efforts and work with local stakeholders to develop a shared vision for the future of the Salton Sea. The Salton Sea is one of the most important migratory bird flyways in North America and is immediately threatened with reduced inflows and increasing salinity. The Department of Fish and Wildlife and the Department of Water Resources will begin immediately to implement the first phase of this effort with the construction of 600 acres of near shore aquatic habitat to provide feeding, nesting, and breeding habitat for birds. This project is permitted to increase to 3,600 acres and could be scaled even greater with additional resources. Concurrently, the Natural Resources Agency and the Salton Sea Authority are developing a roadmap for the Salton Sea that will evaluate additional restoration projects and identify economic development opportunities through renewable energy development.

- **Continue Restoration Efforts in the Klamath Basin**

The Department of Fish and Wildlife and the Natural Resources Agency will continue to work with diverse stakeholders to implement the Klamath Basin restoration and settlement agreements. Those agreements include measures to improve water quality in the Klamath River, restore native anadromous fish runs, including Chinook and Coho salmon, and improve water reliability for agricultural and other uses by providing a drought planning mechanism for low water years. The administration will work with Congress to secure the necessary federal authorizations for the agreements and secure the necessary funding for removal of four hydroelectric dams on the Klamath River and funding for the necessary basin restoration.

- **Restore Coastal Watersheds**

The Department of Fish and Wildlife in coordination with other state resource agencies will develop at least 10 off-channel storage projects, modernize at least 50 stream crossings, and implement at least 10 large- scale habitat projects along the California coast in strategic coastal estuaries to restore ecological health and natural system connectivity, which will benefit local water systems and help defend against sea level rise.

- **Water for Wetlands and Waterfowl**

The Department of Fish and Wildlife in coordination with other state resource agencies will develop and implement a water acquisition, management, and water use efficiency strategy in coordination with the U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Central Valley Project Improvement Act refuge water program, and Central Valley Joint Venture to secure reliable and affordable water for managed wetlands statewide. The administration will work with the Legislature, and others, to secure funding to acquire water and to replace or

repair the most in need conveyances for delivering water for wetlands.

- **Eliminate Barriers to Fish Migration**

This action has three parts. First, in coordination with the Central Valley Project Improvement Act Anadromous Fish Screen Program, the Department of Fish and Wildlife will create and publish a Priority Unscreened Diversion List in the Central Valley area. Second, the administration will work with the Legislature, and others, to secure funding to install or repair the top 10 unscreened diversions on the priority list described above. Third, in smaller watersheds around the state, the Department of Fish and Wildlife will complete a comprehensive analysis, working with other state resources agencies, to optimize barrier removal projects and river and stream priorities, and then complete 10 culvert and bridge improvement and small dam removal projects annually to provide anadromous fish species access to historic spawning and rearing habitat. Small dam removal projects shall not reduce the total storage capacity of the state, and shall in parallel be replaced with new storage consistent with this plan's objectives.

- **Assess Fish Passage at Large Dams**

The Department of Fish and Wildlife, in coordination with state and federal resource agencies, will develop a ~~strategic evaluation process for addressing~~ feasibility report for ~~-~~fish passage around~~for~~ California's rim dams. ~~and develop six rim dam solution plans.~~ Rim dams are the large dams at the base of most major river systems in California. They are too integral to California's water infrastructure to consider removing, but, ~~where feasible,~~ passage around the rim dams may be feasible depending on costs and biological soundness. ~~necessary to recover salmon and steelhead, because 95 percent of the historical habitat for these fish is above the dams.~~

- **Enhance Water Flows in Stream Systems Statewide**

The State Water Board and the Department of Fish and Wildlife will implement a suite of individual and coordinated administrative efforts to enhance flows statewide in at least ~~five~~ two stream systems (the Upper San Joaquin River and the Sacramento River) that support critical habitat for anadromous fish. These actions include developing defensible, cost-effective, and time- sensitive approaches to establish instream flows using sound science and through a publicly transparent process, taking actions necessary to maintain native fish in good condition through authorities such as Fish and Game Code section 5937, and promoting new off-stream water storage.

- **Implement Non-Flow management actions In some Stream Systems**

The SWRCB and the Department of Fish and Wildlife, working with local and regional entities will implement a suite of management efforts to enhance anadromous fish populations through non-flow measures. These measures will include but not be limited to the reduction of non-native predators within the subject river systems.

~~3.~~2. MANAGE AND PREPARE FOR DRY PERIODS

Water supply reliability is critical to maintaining California's economy. Temporary shortages caused today by extended, severe dry periods will become more frequent with climate change. Effective management of water resources through all hydrologic conditions will reduce impacts of shortages and lessen costs of state response actions. Many actions will help to secure more reliable water supplies and consequently improve drought preparedness. The actions identified below are specifically designed to address drought conditions and make California's water system more resilient.

- **Revise Operations to Respond to Extreme Conditions**

State natural resources and water quality agencies, in collaboration with their federal counterparts, will implement a series of administrative solutions through a transparent process to make water delivery decisions and propose options to address water quality and supply objectives in extreme conditions. Through these state agencies, the administration will exercise the maximum administrative discretion and flexibility possible to address the current dry conditions now and into 2014. Especially in drought conditions, adaptive management can have substantial fishery, water quality, and water supply benefits. The identification of such opportunities requires continued improved water forecasting and prompt inter and intra agency coordination and communication. It also requires an effective coordination mechanism involving the Department of Water Resources, the Bureau of Reclamation, the State Water Project and the Central Valley Project contractors, the state and federal fishery agencies, and the State Water Board, at a minimum.

- **Streamline Water Transfers**

State agencies, in collaboration with their federal counterparts, will take all feasible steps to streamline the water transfer processes to address both extreme situations and normal system operations. These include refining the schedule for the water transfers process; improving outreach in support of local water transfer programs; forming work groups to prioritize technical issues and define specific objectives to address real water supply, cumulative impacts, and third party impacts; preparing a technical information guide for those intending to propose water transfer proposals; and, identifying and evaluating measures to simplify the transfer process and reduce the cost of transfers. This action will not focus solely on additional process at the expense of implementing simple measures such as identifying a single agency point of contact, assigning dedicated staff to a multi-agency review team, and regular coordination with transfer applicants to resolve conflicts. These steps will include developing a greatly simplified procedure to allow for "in watershed" short-term transfers that do not utilize state (SWP) or federal (CVP) conveyance facilities. At a minimum these transfers would not be subject to a requisite SWRCB approval, or analysis under CEQA .

~~4.~~3. EXPAND WATER STORAGE CAPACITY

On average, the state receives about 200 million acre-feet of water per year in the form of rain and snow. In reality, the average rarely occurs, as California has the most variable weather conditions in the nation and climate change may increase the variability. To deal with this challenge, storage, whether natural or man-made, surface storage or groundwater storage, ~~is a~~serves as a tool ~~method~~ to capture and hold ~~save~~ water. Such storage can take water when it flows heavily for use at times when it does not and create greater flexibility in the system. Some storage shifts the timing of water released into the rivers and streams over a period of just months while other storage carries water over multiple years, for use later.

Above ground, or surface storage, can be in the form of large on-stream dams and reservoirs, or smaller on-stream and off-stream reservoirs. Groundwater storage consists of both natural recharge on land surfaces and meadows or by ~~f~~replenishing groundwater basins either directly through injection, or by allowing water to percolate into the ground naturally or from constructed spreading basins. Constructing surface storage can be challenging for environmental or financial reasons. Developing groundwater storage can be challenging because many basins are contaminated and this method of storage also requires an ability to measure and withdraw water.

The bottom line is that we need to expand our state's storage capacity, whether natural or man-made, whether surface or groundwater, whether big or small, whether new or expansion of existing facilities. Today, we need more storage and we need to increase the carrying capacity in the watersheds if we are to properly ~~to deal~~ address ~~with~~ the effects of drought and climate change on water supplies for both human and ecosystem needs. Climate change will bring more frequent drought conditions and could reduce by half our largest natural storage system—the Sierra snowpack—as more precipitation falls as rain rather than snow, and as snow melts earlier

and more rapidly. Moreover, we must better manage our groundwater basins to reverse alarming declines in groundwater levels, leading to land subsidence, which is irreversible and can result in ~~once it occurs~~, poorer water quality. Once the land has subsided it results in a permanent loss in the statewide water storage capacity. Lower groundwater levers have ~~,~~ ecosystem impacts such as the reducing the flows in nearby reivers and streams and thereby, affecting aquatic species. ~~, and the permanent loss of capacity to store water as groundwater~~. There is no silver bullet. All options need special consideration.

For over a decade, we have been working on feasibility studies for large surface storage projects that are due to be completed by year's end. These projects face both environmental challenges and financial challenges. But, the biggest obstacle may be finding committed financial partners who will benefit from the projects to share in their cost.

Public water agencies have been reluctant to partner with the federal and state government to build new water storage projects in part because of the uncertainty involved in moving water across the Delta. The new conveyance system proposed in the Bay Delta Conservation Plan would provide more water project operational flexibility, which in turn would eventually eliminate some of that uncertainty and increase the feasibility of additional water storage. Partnerships to build additional water storage presumably would follow.

Demand for water storage goes well beyond water supply, hydroelectric energy production and flood control, the traditional purposes for which California's major reservoirs were built. Today, water storage is also needed to help provide widespread public and environmental benefits, such as recreation, seasonal fish flows, improved water quality, water cool enough to sustain salmon, and increased flexibility to meet multiple demands. The financing of additional water storage in California ~~must~~ should reflect ~~not just specific~~an appropriate balance of local benefits, ~~but also those~~and broader public benefits.

- **Support Funding Partnerships for Storage Projects**

The administration will work with the Legislature to make funding available to share in the cost of storage projects if funding partners step forward. The state will facilitate among willing local partners and stakeholders the development of financeable, multi-benefit storage projects.

- **Update Bulletin 118, California's Groundwater Plan**

The Department of Water Resources, in consultation with the Bureau of Reclamation, U.S. Geological Survey, the State Water Resources Control Board, and other agencies and stakeholders should update Bulletin 118 information using field data, California Statewide Groundwater Elevation Monitoring (CASGEM), groundwater agency reports, satellite imagery, and other best available science, so that this information can be included in the next California Water Plan Update and be available for inclusion in future urban water management plans and agricultural water management plans. The Bulletin 118 update should include a systematic evaluation of major groundwater basins to determine sustainable yield and overdraft status; a projection of California's groundwater resources in 20 years if current surface water/groundwater management trends remain unchanged; anticipated impacts of climate change on surface water and groundwater resources; and recommendations for state, federal, and local actions to improve groundwater management. In addition, ~~–~~the Bulletin 118 update should identify groundwater basins that are in a critical condition of overdraft.

- **Support Distributed Groundwater Storage**

The administration will support a comprehensive approach to local and regional groundwater management by funding distributed groundwater storage projects that are identified in groundwater management plans and removing barriers to implementation.

DWR and local water agencies should coordinate with groundwater management agencies, where applicable, to enhance conjunctive use opportunities and minimize the potential impacts on groundwater recharge that may result from reduced availability of surface water due to regulatory requirements as well as water use efficiency and conservation efforts.

- **Improve Sustainable Groundwater Management**

When well-managed, groundwater has the potential to ~~be a buffer to~~help mitigagte the impacts of climate change on our water system. The administration will work with the Legislature to ensure that local agencies have the incentives, tools, authority, and guidance to develop and enforce local and regional management plans that protect groundwater elevations and quality. The administration will take steps, including sponsoring legislation if necessary; to define local responsibilities and to give local agencies the authority necessary to manage groundwater sustainably and ensure no groundwater basin is in danger of being permanently damaged by over drafting. When a basin is at risk of permanent damage, and, after having been provided the needed authority, local agencies do not make sufficient progress to correct the problem in a timely manner; the state should have carefully-defined authority to protect the basin and its users until an adequate local program is established. The administration will work with the SWRCB to ensure that the continued beneficial use of the application of surface water and reclaimed water for irrigation and passive groundwater recharge is considered as a key factor in maintaining a healthy groundwater basin under the public trust doctrine.

- **Accelerate Clean-up of Contaminated Groundwater and Prevent Future Contamination** Throughout the state, groundwater basins are contaminated by historic manufacturing and farming practices. This water is an important resource in itself for the future, and these basins will be critical storage repositories in the future. The Department of Toxic Substances Control and the State Water Board will develop recommendations to prevent the spread of contamination, accelerate cleanups and protect drinking water.

~~5.~~4. PROVIDE SAFE WATER FOR ALL COMMUNITIES

All Californians have a right to safe, clean, affordable and accessible water adequate for human consumption, cooking, and sanitary purposes. Disadvantaged communities, in particular, often struggle to provide an adequate supply of safe, affordable drinking water. The reasons for this are numerous: changes in drinking water quality standards, pollution, aging infrastructure, lack of funding for basic infrastructure, lack of funding for ongoing operation and maintenance, and unreliable supplies resulting in service interruptions are among the most common. Programs designed to protect the quality of our waters for drinking and other uses are housed in multiple agencies, reducing their effectiveness and ability to meet communities' needs.

- **Consolidate Water Quality Programs**

The administration is pursuing consolidation of the drinking water and surface and groundwater quality programs into a single agency to achieve broader program efficiencies and synergies that will best position the state to respond to existing and future challenges. This initiative will also better restore and protect water quality and public health for disadvantaged communities.

- **Provide Funding Assistance for Vulnerable Communities**

The administration will work with the Legislature to establish a stable, long-term funding source for provision of safe drinking water and secure wastewater systems for disadvantaged communities. The funding will be made available through a framework of statutory authorities for the state, regional organizations, and local ~~county~~ agencies that will assess alternatives for providing safe drinking water and wastewater, including regional consolidation, and to develop, design, implement, operate, and manage these systems for small disadvantaged communities impacted by contaminated drinking water and lack of sanitary wastewater infrastructure.

- **Manage the Supply Status of Community Water Systems**

The state will identify drought vulnerable public water systems and monitor the status of these systems to help prevent or mitigate any anticipated shortfalls in supply and to secure alternative sources of water for the communities when needed. The state will also work with local governments and agencies to identify drought vulnerable areas served by domestic wells and collaborate to prevent or mitigate any anticipated shortfalls. The State needs a funding mechanism to help citizens on private wells, in close proximity to public water systems, to finance the infrastructure to bring the water system services to their homes.

~~6.~~5. IMPROVE FLOOD PROTECTION

California's exposure to flood risk presents an unacceptable threat to public safety, infrastructure, and our economy. More than 7 million people and $580 billion in assets are exposed to flood hazards in the state and the lack of sufficient and stable funding for flood control exacerbates the state's risk. When California floods, public safety and health is endangered, critical infrastructure is damaged, vital services become isolated or interrupted, vast agricultural areas are rendered unproductive, and water supplies are threatened or impacted. The effects of climate change on the state's water runoff patterns will only magnify these challenges. Actions by state, local and regional governments, however, can reduce flood risks and improve the state's preparedness and resiliency when flooding inevitably occurs. Flood projects done in an integrated, regionally-driven way can also achieve multiple benefits.

- **Funding to Reduce Flood Risk and Improve Flood Response**

An estimated $50 billion is needed to reduce flood risk statewide. The administration will focus on the highest risk areas and develop proposals to fund projects through a combination of financing options.

- **Remove Barriers to Local and Regional Funding for Flood Control Projects**

The administration will review changes needed to the 1996 Right to Vote on Taxes Act (Proposition 218) to include certain flood management agencies as exempted public safety utilities to enable these agencies to assess the funds needed for flood planning and the construction, operation, and maintenance of flood control infrastructure.

- **Streamline and Consolidate Permitting**

The administration will convene a task force of federal, state, and local permitting and flood management agencies, to develop a programmatic regulatory permitting process to replace current site-by-site mitigation requirements and expedite permitting of critical flood system improvement projects. The effort to streamline and consolidate will also incorporate regional advanced mitigation as a means to expedite planning.

- **Create a Delta Levee Assessment District**

The administration will sponsor legislation establishing a Delta levee assessment district with authority to collect fees needed to repair and maintain more than a thousand miles of Delta levees, many of them privately constructed before modern engineering standards were in place.

- **Improve Access to Emergency Funds**

The administration will sponsor legislation revising the California Disaster Assistance Act to enhance the Governor's Office of Emergency Services' ability to advance funds for flood response efforts and establish an emergency flood response fund maintained by the Department of Water Resources.

- **Better Coordinate Flood Response Operations**

The Governor's Office of Emergency Services, working in coordination with the Department of Water

Resources, the U.S. Army Corp of Engineers, and others, will develop and implement a common interagency protocol that all jurisdictions and agencies at all levels of government operating in the Delta in an emergency will use to establish joint field incident commands for flood operations and other emergency response functions.

- **Identify State Funding Priorities for Delta Levees**

The Delta Stewardship Council, in consultation with the Department of Water Resources, the Central Valley Flood Protection Board, the Delta Protection Commission, local agencies, and the California Water Commission, should develop funding priorities for state investments in Delta levees by January 1, 2015.
These priorities will be consistent with the provisions of the Delta Reform Act in promoting effective, prioritized strategic state investments in levee operations, maintenance, and improvements in the Delta for both levees that are a part of the State Plan of Flood Control and non-project levees. The priorities should identify guiding principles, constraints, recommended cost share allocations, and strategic considerations to guide Delta flood risk reduction investments.

~~7.~~6. INCREASE OPERATIONAL AND REGULATORY EFFICIENCY

Efficiently operating the State Water Project and Central Valley Project, while complying with the requirements of state and federal endangered species acts and operating consistent with the conditions of water rights, contracts and other entitlements, is a delicate balancing act. Current coordination efforts, while longstanding and intended to cover a broad range of conditions, are not reflective of the entire Delta watershed nor are they effective at integrating all of the activities that other agencies and organizations are undertaking to improve the ecosystem.

- **Prepare for 2014 and Beyond Through Better Technology and Improved Procedures**

The administration will work with our federal and regional counterparts to improve coordination of operations of all major water supply (storage facilities and direct diversions), flood control, hatchery facilities, and habitat restoration projects to improve water supply and fishery conditions. The goals are to improve water project near-term operational flexibility for water year 2014 and build upon those actions in subsequent years. Better technology can result in improved coordination and more accurate data for decision making. Examples of better technology and improved coordination include but are not limited to the following:

- Improve data availability, communication procedures, and analytical methods used to monitor and communicate risks to listed fish species and to water supplies when making regulatory decisions associated with implementation of incidental take provisions in the existing biological opinions.
- Develop a pilot project to test if a new index for Old River and Middle River reverse flows enables compliance with biological opinion requirements.
- Develop and employ new turbidity models to improve real-time turbidity management in the south Delta.
- Analyze through the South Delta Science Collaborative associated operational approaches for minimizing loss of salmon in the area of the Old River barrier and effects of the operations on water supply.
- Develop a Delta smelt life cycle model to help manage operations to avoid entrainment of smelt at the water projects' intakes.
- Implement a 3.5-year study to enhance and modernize Delta smelt monitoring (fish abundance and geographic distribution in the Delta), to improve the ability to protect fish populations while minimizing the impacts of fish protective measures on water project operations.
- Work with federal agencies to improve coordination of hatchery fish releases with hydrologic conditions and water project operations to improve fish survival.
- Improve state and federal interagency coordination and water contractor coordination on real-time forecasting and management associated with meeting water quality control objectives, to optimize

project operations and avoid redirected fishery impacts.

- Fund and revive the National Hydrological Dataset for California to improve high-quality framework geospatial data and the precision and accuracy of mapping and scientific studies.

- **Improve and Clarify Coordination of State Bay Delta Actions**

  The problems affecting the Delta need to be addressed on multiple fronts, including habitat loss, export conveyance, water projects operations, pollution control, and flows. The principal state entities charged to address these issues are the Delta Stewardship Council, Department of Water Resources, Department of Fish and Wildlife, and the State Water Resources Control Board. Several federal agencies exercise regulatory authority related to ~~these issues~~the same issues, including the National Oceanic and Atmospheric Administration (NOAA) Fisheries, U.S. Fish & Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA) and the Army Corps of Engineers. Active and effective coordination between these agencies is essential to avoid duplicative and possibly conflicting application of policies and regulations. Given the existing constraints on California's water system (both natural and regulatory) there is no room for interagency inefficiencies. We must make the most efficient use of our available water resources as is possible. Historically, negotiated programs and planning efforts and settlements have been and will likely be the most effective tools to protect the beneficial uses of water in the Bay-Delta.

  The SWRCB, through the update of the 2006 Water Quality Control Plan (Bay Delta Plan) should encourage coordinated schedules, consistent environmental review, use of common data and models and provide a forum for the application of both flow and non-flow measures consistent with the need to protect beneficial uses and public trust balancing.

  ~~.~~There are also multiple water districts, private parties, and nongovernmental organizations with a profound stake in these issues and the SWRCB should ~~.~~ encourage and facilitate negotiated settlements and programs wherever possible.

  A coordinated approach to managing the Delta is essential to serve the needs of California's residents. All State agencies will commit to using collaborative processes to achieve water supply, water quality and ecosystem goals. This approach embraces enhanced sharing of data, consistent use of peer-reviewed science, coordinated review under CEQA, improved integration of related processes, and encouragement of negotiated resolutions.

  - The Delta Stewardship Council, Department of Water Resources, Department of Fish and Wildlife, and the State Water Resources Control Board will ensure all relevant information is shared and will assist each other, as appropriate, to complete respective efforts to improve Delta conditions.
  - State entities will encourage negotiated agreements among interested parties to implement flow and nonflow actions to meet regulatory standards and support all beneficial uses of water. State staff will participate in these processes when requested.
  - The Delta Stewardship Council's Implementation Committee, which includes leaders from all the affected state entities, and will meet regularly to review progress in coordination.

- **Achieve Ecological Goals through Integrated Regulatory and Voluntary Efforts**

  The San Francisco Bay and Sacramento-San Joaquin River Delta are some of the most studied ecosystems in the nation. Similarly, many scientific and management plans exist concerning the decline of salmon and steelhead in California. A fundamental ecological ~~principle~~ hypothesis is that aquatic species and estuarine ecosystems need enough cold, clean water at the right times of year to ensure

species abundance and health and ecological function. Too often, regulatory processes overlook the value of voluntary programs to achieve ecological goals. Too often, different regulatory processes are not integrated, connected, or even cognizant of each other. Integration across and between all voluntary and regulatory efforts may be necessary to truly achieve basic ecological outcomes.

~~As a goal, the~~The state must continue to consider how to provide water flows necessary to meet current state policy, such as significantly increasing salmon, steelhead, and trout populations while also supporting viable, self-sustaining populations of a broad range of other native aquatic species, and ensure sustainable river and estuary habitat conditions for a healthy, functional Bay Delta ecosystem without redirecting negative consequences upstream in the Delta watershed. The administration, with the involvement of stakeholders, will build on the work in tributaries to the Sacramento and San Joaquin rivers, analyze the many voluntary and regulatory proceedings underway related to flow and non-flow criteria, and make recommendations on how to achieve the salmon and steelhead and ecological ~~flow~~ needs for the state's natural resources through an integrated, multi-pronged approach.

~~8.~~7. IDENTIFY SUSTAINABLE AND INTEGRATED FINANCING OPPORTUNITIES

California has a long history of making sound financial investments in water resources. However, our current investments are not keeping pace with the need. Our infrastructure is aging, levees are in need of repair, communities are without safe water, and our environment, farms, and economy are suffering from unreliable and degraded water supplies. This plan includes actions that will require multiple funding sources. We have access to a variety of funding sources including federal grants and loans, general obligation bonds, revenue bonds, rate payer dollars, local initiatives, user fees, beneficiary fees, local and statewide taxes, private investment, public-private partnerships, and more. A better understanding of the variety and types of funds and financing available for water investment will help us to make the best, most efficient and sustainable uses of the funding available.

- **Develop Water Financing Strategy**

The administration will develop a water financing strategy that leverages various sources of water-related project funding and proposes options for eliminating funding barriers, including barriers to co-funding multi-benefit projects. The strategy will identify all potential funding sources for water-related projects including auction revenue, energy efficiency funds, user and beneficiary fees, polluter fees, local measures, and other sources and will establish principles to guide the use of these funding sources.

- **Remove Barriers to Local and Regional Funding for Water Projects**

The administration will review changes needed to the 1996 Right to Vote on Taxes Act (Proposition 218) to better enable water management agencies to assess the funds needed to protect public health and maintain safe, secure and sustainable water resources for their rate payers.

- **Analyze User and Polluter Fees**

The administration will direct agencies to identify areas where user and/or polluter fees may be appropriate. The agencies will assess the following: Areas where users may not be fully funding the direct or indirect costs or impacts associated with their use, instances where polluters are not able to diminish their pollution and have not adequately accounted for the impacts of that pollution, and opportunities to use fees to incentivize positive behavior. The agencies will provide recommendations on fees, who would pay them, how they would be collected, and how they would be used.

Conclusion

All Californians have a stake in our water future. These actions set us on a path toward reliability, restoration, and resilience in California water. California's impending water crisis requires that we adapt to this "new normal" and recapture California's resource management leadership and our economic and environmental resilience and reliability. There are no silver bullets or single projects that will "fix the problem." We must have a portfolio of actions to comprehensively address the challenges this state faces. Some actions must be taken immediately to address current risks such as the looming drought and inadequate safe drinking water. Additionally, over the next five years we must address fundamental changes in our thinking and our approach to water resource management and be prepared for the changes the future holds.