

Questions and Answers
Drought Operations Plan and Operational Forecast
April 9, 2014

1. Why is this Plan needed?

As California approaches the summer of a third consecutive dry year, economic and environmental challenges for our State are mounting. Limited water supplies create a crisis that will require extraordinary management measures on the part of water project operators, water quality and environmental regulators, the hundreds of local water agencies that supply most Californians with water, and State residents themselves.

The latest National Weather Service data continue to show nearly the entire State in severe drought and over two-thirds in extreme drought. According to these same data, more of the State is in exceptional or extreme drought than when the Governor issued his drought proclamation on January 17, 2014. In this extraordinarily dry year, all water users, including agricultural, municipal, and fish and wildlife uses will suffer hardship.

Through this plan, State and Federal agencies are charting a collaborative course for the coming summer and fall of 2014. The Plan outlines proposed actions and a likely range of coordinated operations of the Central Valley Project (CVP) and State Water Project (SWP) from April 1 through November 15, 2014, and is based on the conservative but prudent assumption that conditions will remain dry, and that drought may persist into 2015.

2. Who developed this plan?

This Drought Operations Plan and Operational Forecast (the Plan) is based on collaborative discussions between the U.S. Bureau of Reclamation (Reclamation), California Department of Water Resources (DWR), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), and the State Water Resources Control Board (State Water Board).

3. What are the basic components of the Plan?

Reclamation and DWR's proposed operations plan for 2014 incorporates the following components to support the combined drought operations of the CVP and SWP for the remainder of Water Year 2014:

- Operational forecasts based on the March 1 hydrologic conditions and runoff assumptions (90 percent and 50 percent exceedance) outlined in the Plan (see 4. below for explanation);
- Upstream flow and temperature management actions for Feather River, Sacramento River, Trinity River, Clear Creek, American River, and Stanislaus River. This includes

Sacramento River Temperature Analysis of potential cold-water management objectives, a new Keswick flow schedule, and a commitment to continued actions to reschedule water for the benefit of species;

- A suite of proposed modifications to Delta criteria for April and May, including modified Delta Cross Channel gate operations to protect water quality, an export regime designed to take advantage of natural or abandoned flow in those months, and certain actions to offset adverse effects to out-migrating San Joaquin River steelhead and salmon;
- A contingency plan for placement of emergency drought barriers in the Delta and corresponding modification to Delta water quality objectives;
- A suite of proposed modifications to Delta criteria for June through November 15, including modifications to certain State Water Board D-1641 requirements;
- A Winter-run Chinook contingency plan including modified hatchery operations, rescue and relocation plans and enhanced monitoring to protect this endangered species from projected lethal temperatures in the upper Sacramento River; and
- A preliminary science plan for enhanced monitoring for salmon and smelt that includes both immediate and long-term needs.

4. What are the underlying assumptions of the plan and could they change?

The Plan includes considerations based on two different hydrologic conditions:

- The 90 percent exceedance hydrology assumes inflows from rainfall and snowmelt at levels that are likely to be exceeded with a 90 percent probability. In other words, there is a ten percent or less chance of actual conditions turning out to be this dry or drier.
- The 50 percent exceedance probability is the 50/50 assumption; it is just as likely to be drier or wetter.

The current Plan is based on hydrologic conditions as March 1, except for reservoir inflow and storage, which was updated more recently. Since that time, California has received above average precipitation that has resulted in significant storm runoff into the State's rivers. This increased precipitation will be included in an April hydrology assessment that is currently being compiled. Reclamation and DWR will update the current forecasts considering this April data in the coming weeks.

This plan is a framework for Reclamation and DWR to make water management decisions through the dry months. The agencies intend to continue to refine the implementation of the Plan, in light of these new forecasts, and in collaboration with other agencies, as conditions change in the coming months for the Sierra Nevada snowpack, reservoir storage, and river flow.

5. How are you defining "health and safety needs"?

The Reclamation and DWR recognize that during this extreme drought year, it is essential that the CVP and SWP operate (1) to provide for, at a minimum, essential human health and safety needs for the next 7 months and (2) to retain water supply to provide for such minimum needs in

water year 2015 if the drought continues. Reclamation and DWR consider human health and safety needs to include drinking water, sanitation, and firefighting. This definition does not include other urban water uses such as outdoor landscape irrigation. While most Californian communities have adequate reserve supplies from sources such as ground water, some communities need continued delivery of limited amounts of water through the CVP and SWP systems to meet these basic health and human safety needs.

6. How does the Plan address carryover storage?

“Carryover storage” is the amount of water supply that will be conserved in reservoirs for use into the next rainy season later in 2014, and into 2015. The Drought Operations Plan includes a forecasted amount of water supply that should be available at the end of September to be used for minimum essential human health and safety, salinity control and temperature in 2015. This carryover storage will prove essential to California if the State experiences a fourth dry year.

DWR estimates that the forecasted carryover storage of approximately one million acre-feet (maf) in Lake Oroville by the end of water year 2014 (September 30, 2014) will be sufficient to meet human health and safety needs and to maintain salinity control in the Delta in 2015.

Reclamation estimates that current projected cumulative end of September storages of CVP reservoirs (Shasta, Trinity, and Folsom) will range from about 1.4 maf to 1.9 maf. Reclamation believes these storages are adequate to meet the 2015 water year needs for the CVP.

7. How does this plan assure that salinity control can be maintained in the Delta over the coming dry months and into 2015?

Fresh water from the Delta provides drinking water to millions of Californians throughout the state and provides important irrigation to California’s farms and ranches, so protecting water supplies in the interior Delta from saltwater intrusion is an important part of the Drought Operations Plan. This plan reserves enough water in storage to maintain salinity control through 2015, while also meeting health and human safety needs (see 5. above). Simply put, enough fresh water must flow into the Delta throughout the coming dry months to repel saltwater that pushes inland on ocean-driven tides from the San Francisco Bay. If there is not enough water in upstream reservoirs to repel saltwater, the saltwater will contaminate the Delta channels and the fresh water supplies for urban and agricultural users in Contra Costa, Alameda and San Joaquin counties, as well as the SWP and CVP. Therefore, maintaining enough reservoir storage to control salinity into the fall months is vital for multiple reasons.

8. How does this Plan support endangered fish populations in the Delta?

Protecting endangered fish populations is clearly established as one of the primary purposes of the Plan. This is a priority of the plan since providing adequate water flow that is cool enough in temperature for many fish species is immensely difficult during dry years. Indeed, the current

drought is almost unprecedented and has resulted in minimum reservoir releases and storm runoff.

The plan calls for the conservation of water in upstream reservoirs to create cold pools of water that can be released during the coming warmer months for species needs. The Plan also includes detailed projected operations for upstream tributaries, which are focused in part on protecting fish species that use these rivers.

Operations included in the plan are designed to reduce adverse effects on endangered species and other fish and wildlife considering the unavoidable negative effects of a drought of this magnitude. In some cases, spring outmigration flows have been reduced, for example, to conserve water in upstream storage for other phases of the fish's lifecycle later in the year. In others, the agencies have tried to exercise flexibility to mitigate extraordinarily adverse impacts on water uses for human health and agricultural deliveries in what is a horrendous situation for humans, fish and wildlife. For example, Reclamation is working with Sacramento River Settlement Contractors on options to shift a significant portion of their diversions this year out of the April and May period and into the time frame where Keswick releases are higher to achieve temperature objectives on the upper Sacramento River. This will have benefits for both fish species and agriculture.

9. Does this Plan allow for additional water exports during periods of high storm flows?

Yes. Since late January, Reclamation and DWR have taken several actions using operational flexibility granted to them to increase exports of storm runoff, while remaining within the boundaries of applicable Federal and State environmental laws and regulations. The State Water Board helped to enable many of these actions and all of the water operators' actions were coordinated closely with the Federal and State fish and wildlife regulatory agencies. Specifically, the January order from the executive director of the State Water Board has been amended three times to give water project operators the flexibility to respond to storms, thereby enabling a significant increase in exports over what would have otherwise occurred.

Similarly, under the Federal Endangered Species Act, NMFS has taken six separate actions since January, prior to concurrence on this Plan, to allow for flexible project operations that improve water supply while maintaining protections for fish species.

10. What are the likely amounts of water available from the State and Federal water projects for their contractors?

DWR expects to maintain a zero allocation for its 29 water contractors. Long-time water rights holders along the Sacramento and Feather rivers ("settlement contractors") would receive 50 percent of their allocation, which is the least amount of water that can be delivered to them under their contracts with DWR.

At this time, Reclamation is not changing its earlier announcement that proposed to provide no supplies to junior CVP agricultural water service contractors, while Federal wildlife refuges and senior water rights holders along the Sacramento and San Joaquin rivers would receive 40 percent of their contract totals.

Importantly, updated hydrologic information will continue to inform these water supply decisions, and with addition precipitation since March 1 are likely to improve for water users as well as fish and wildlife. Any changes in water supply allocations will be coordinated through and made within the existing agency protocols and coordination structures and in consideration of the other project operations priorities outlined in this Plan.

11. If the numbers of take allowed in the Biological Opinions are nowhere near being reached, why are we not pumping more water?

Salvage “take” levels, obtained from observed counts of fish at the salvage facilities, are not intended to serve as a management objective and are not representative of the overall take which is occurring to the species (which is outlined in detail in the 40 page table of “take” in the NMFS 2009 Biological Opinion).

In fact, counting fish at the salvage facilities alone is merely the “tip of the iceberg” of the “take” which may be occurring. It does not account for fish that have been lost prior to the point of collection, and it does not account fish that have been drawn into the waters of the central Delta through the Delta Cross Channel Gates or Georgiana Slough and lost to predation, toxics, or other factors before reaching the south Delta. It also does not account for fish that make it to the south Delta, where they are further influenced by the reverse flows moving toward the pumps and are delayed in their migration, increasing their vulnerability to predation, toxics, or other forms of loss. All of these factors can, and do, result in fish mortality in the system before fish arrive at the salvage facilities.

Unlike take associated with salvage facilities, where fish can be directly counted, we cannot specifically enumerate levels of take due to each of these other system processes because we lack an adequate monitoring system in the Delta to track fish migrations and water operations “real time.” These complex operations that seek to balance water and fish would greatly benefit from having a modernized monitoring network in place for situations like this. That is why a preliminary science plan for enhanced monitoring for salmon and smelt, that includes both immediate and long-term needs, is part of this Plan.

12. The Plan proposes installation of barriers in the Delta—what purpose would these barriers serve?

As stated above, preventing salinity intrusion is an important component of the Plan. As of today, Reclamation and DWR's planning assumptions for 2014 include the *possibility* of installing rock barriers temporarily across three Delta waterways to conserve reservoir storage by

physically restricting the movement of saltwater. The three likely barriers would be constructed at Steamboat and Sutter sloughs and West False River.

With the barriers in place, the quantity of water that would have to be released from Shasta, Oroville, and other reservoirs to provide sufficient Delta outflow to repel salt and protect Delta water would be reduced.

A decision whether to install the barriers could be made as late as the end of April, depending on snowpack, precipitation, and runoff. This plan balances the various priorities of protecting upstream storage, exporting water from the Delta for essential human health and safety purposes in the spring and summer, protecting fish and wildlife, and controlling salinity in the Delta.

13. How does this plan address the protection of the cold water pool needed for endangered winter-run Chinook salmon?

A primary concern is the preservation of cold water pool in Shasta Reservoir. Winter-run Chinook salmon in the Sacramento River below Keswick Dam depend on cold water stored in Shasta Reservoir, and its release during the summer and fall, to successfully spawn. Lack of sufficient storage in the reservoir to maintain cold outflow will likely impact the salmon's spawning success.

Therefore, an important goal of this plan is to conserve as much storage as possible at Shasta reservoir to provide for cold water for salmon, and provide carryover storage in the event of a prolonged drought. Reclamation and DWR, working in close collaboration with other State and Federal agencies, are committed to ensuring sufficient carry over storage to provide for 2015 contingencies as well.

In addition, Reclamation is working with Sacramento River Settlement Contractors on options to shift a significant portion of their diversions this year out of the April and May period and into the time frame where Keswick releases are higher to achieve temperature objectives on the upper Sacramento River. The willingness and cooperation of the settlement contractors in this effort would allow a modified diversion pattern and create the benefit of increased Shasta Reservoir storage at the beginning of the temperature control operations and increased availability of water to these senior water rights holders in this critically-dry year.

Reclamation and DWR will continue to work with other Federal and State agencies to minimize this risk as project operations are updated through 2014. The winter-run contingency plan contained in the Plan contains additional detail on augmented modeling, monitoring, hatchery operations and rescues and relocations that are planned in order to save this endangered species.

14. What are the State and Federal agencies doing to facilitate transfers to help ameliorate the worst impacts of water shortages to water users and refuges?

In order to facilitate transfers and exchanges, the State Water Board approved a petition from the DWR and Reclamation to allow the SWP and the CVP to combine their place of use in their water right permits. This action allows water to be transferred between the SWP and the CVP without further regulatory action by the State Water Board. Additionally, DWR and Reclamation, in cooperation with the fishery agencies, will consider transfer requests on an individual basis following the Vernalis Pulse Flow period. The Interagency 2014 Drought Transfers Group will help facilitate the approval of proposed transfers.

15. What can other agencies or individuals do to help in this drought year?

Governor Brown has called on all Californians to voluntarily reduce their water usage by 20 percent. Every drop of water conserved will make a positive difference. Water conservation ideas can be found at SaveOurH2O.org. Federal and state agencies will also continue to encourage individual Californians to do their part to stretch this year's limited supplies.

As Reclamation and DWR refine and implement this Plan, now is the time for all water agencies statewide to be creative in implementing innovative water management measures. Some agencies may have relatively good water supplies and could implement extraordinary one-year transfers or multi-year exchange agreements with other agencies. Reclamation and DWR encourage agencies to jointly investigate and pursue these kinds of opportunities to help move water to regions of critical need in coming months.