CENTRAL DELTA WASTER AGENCY AND SOUTH DELTA WATER AGENCY SUPPLEMENTAL COMMENTS TO DELTA CONVEYANCE PROJECT NOP.

CURRENT DWR MODELING IS NOT THE BEST SCIENCE AVAILABLE.

Previous DWR modeling and analysis done for the WaterFix project revealed a number of inadequacies associated with that effort. The modeling for the Delta Conveyance should not repeat those problems. The inadequacies include, (a) averaging model results, (b) failure to analyze actual impacts associated with model outputs, (c) failure to predict how modeling outputs will affect actual water quality and (d) not using up-to-date channel geometry in the models. All of these issues can be avoided. Failure to correct these problems will necessarily mean the eventual EIR/S will not contain the best science available.

AVERAGING OF MODELING RESULTS IN INAPPROPRIATE

In the WaterFix environmental documents as well as the evidence presented by DWR and USBR during the Water Fix hearing before the State Water Resources Control Board, DWR modeled (among other things) a "with project" and a "without project" and then compared the two results. Instead of comparing the specific modeling outputs, DWR averaged monthly outputs for each of the years modeled and then compared similar averaging from the other scenario. DWR's analysis modeled thirteen years, then averaged all the data for each month, and then compared the two scenarios' monthly averaged results. Whether such averaging of model outputs is ever appropriate, it is especially inappropriate when trying to estimate a project's impacts on water quality in the Delta.

Per the testimony given by SDWA's expert witness Tom Burke, PE., at the WaterFix hearings, the averaging of thirteen years of model outputs smooths out the extremes in the outputs such that large and persistent changes in the outputs do not appear. Thus if the model estimates a large decrease in salinity in one month of one year, but also a small decrease or small increase in another year for the same month, the average of those numbers ends up hiding the large increase. [Attached hereto are all documents referenced in these comments.]

DWR's averaged outputs showed small or little changes between the two scenarios. However, Mr. Burke, using DWR's model outputs presented the complete data for each month of each year without using averaged data. The differences between his presentation and that of DWR's was marked. Instead of there being little or no difference between the with and without project scenarios as presented by DWR, there suddenly appeared to be multi month-long time frames of significant changes in salinity under the with project scenario as compared to the without project. This clearly showed that while DWR concluded there were only small or insignificant changes in salinity due to the project, in actual fact, their model outputs showed significant changes in salinity. The averaging of the data hides the real model outputs and prevents the public from seeing the actual (estimated) impacts of the proposed project.

DWR argued that its model (specifically DSM2) should not be used to look at or analyze short periods of time and so the averaging is necessary. That assertion is false for a number of reasons, the first of which leads to the second modeling error.

DWR MODELING ANALYSIS DOES NOT ACTUALLY EXAMINE IMPACTS.

In the WaterFix hearing DWR used its averaged model outputs and compared them to the various water quality standards in the Delta. With regard to salinity changes estimated to occur in the areas where the southern Delta salinity standards apply, DWR concluded that the estimated changes in salinity, being so small, would not cause any violations of the standards. In addition, DWR and USBR claimed to operated their projects such that all Delta standards would be met. Leaving the latter until later herein, the former is irrelevant.

Per the uncontroverted testimony of Terry Prichard and Dr. Michelle Leinfelder-Miles given at the WaterFix hearings, comparing changes in the salinity of the water in the Delta channels is only the first part of an analysis to determine if any such changes cause adverse impacts (and the degree of impacts) to agricultural crops. Although the SWRCB has adopted specific water quality standards to protect southern Delta agricultural beneficial uses (measured by "electro-conductivity or "EC"), those standards are of course not the only or even the best way to measure specific impacts of a proposed project. The SWRCB process to develop standards purportedly looks at what is needed to protect the subject beneficial and not to prevent all harm to that use. In addition, the process takes into account other factors which might result in a less protective standard from being adopted. The water quality standards are not a scientific determination of a threshold below which no damage occurs and above which damage does occur. They are instead are a regulatory mandate to provide some level of protection to beneficial uses. CEQA requires an examination of effects and impacts, not just a comparison of impacts to standards.

Per Mr. Prichard, and Dr. Leinfelder-Miles, the accepted science dealing with how salinity might affect agricultural crops is an examination of average seasonal (or yearly) ***soil salinity***; impacts are not determined by examining averaged changes in the applied water salinity (in this case the Delta channel salinity). The correct analysis was not done by DWR or USBR in their various analyses in the WaterFix documents or in their evidence and testimony presented at the hearings. The accepted science has developed crop specific soil salinity thresholds which if exceeded will impair or result in harm to the plant/crop. The laboratory experiments from which these thresholds are derived look at how a certain amount of applied water of a certain salinity will allow the salts in the soil to adequately leach or if the salts will accumulate to the point where they exceed the threshold (beyond which crop damage occurs). The salinity of the applied water can be used to ***roughly estimate*** if salts accumulate in the soil (to the point where damage to the crop occurs) but only if the actual soil (being farmed) is similar to the conditions in the laboratory. The laboratory typically uses sand for the test while southern Delta soils are a mix of many types, some being massive. The more massive soils do not allow water to pass though very easily and thus any laboratory results based on sandy soils may be irrelevant to the real conditions in the southern Delta.

Thus, when DWR's modeling indicates any particular increase in salinity under the with project scenario, they must then determine how this increase affects the soil salinity in the subject farmland soils or their analysis is incomplete. Because DWR failed to do this last and most significant step, its conclusions are meaningless. Here, DWR needs to determine how modeled changes in channel water salinity might affect farmland soil salinity. A complete scientific analysis would need to determine if a 100 EC increase in applied water salinity will affect the soil salinity of the lands that use that water. Dr. Leinfelder-Miles also presented evidence of a soil salinity study she conducted which showed how certain areas within the southern Delta were not adequately leaching and thus the soil salinity was increasing, even when the applied water salinity did not exceed the standard. If the project causes an increase in applied water salinity which increases soil salinity that impact needs to be identified and quantified. That impact is entirely independent of how a change in Delta water quality compares to a standard.

Mr. Prichard and Dr. Lenifelder-Miles also testified that in addition to the effects of increased soil salinity during the growing season, high salinity in the applied water at a particular time could itself inhibit and/or damage certain seedling crops, even if the seasonal soil salinity was below the threshold. Because of this, each month's modeling data (not averaged data) is important in estimating if crop damage is expected to occur. By using the averaged data, DWR ignored any method of estimating how short term changes in salinity may or may not cause harm.

When DWR concluded that (again for example) a 100 EC increase does not result in a violation of the standard therefore the 100 EC change will not result in any adverse impacts to farmers, that conclusion was demonstratively false. If the 100 EC increase is within the area for which inadequate leaching is occurring and salts are already accumulating in the soil, the 100 EC increase will necessarily be compounding the salt problem and likely causing damage. [Although increased salt in the soil is in and of itself a damage, the yield from any crop in any particular year depends on many factors.] Unless DWR examines how and change in EC actually affects the soil salinity in lands which use the channel water (worsened by their project), they are not using the best available science but are using only part of the science.

DWR'S MODELING DOES NOT IDENTIFY ACTUAL CHANGES IN WATER QUALITY

Previous DWR modeling efforts typically assert that the DSM2 model does not predict actual conditions, rather it is used to compare different scenarios in order to estimate the effects of a proposed project. Although this may be generally true in some cases, it is not true in all cases and it reveals another fault in the environmental analysis being done.

DWR's assertion in the WaterFix analysis was that the with project scenario (using averages of model impacts) did not result in any exceedences of the southern Delta salinity standards. However, if the modeling can only be used in a comparative analysis, and not to estimate actual water quality resulting from the project, then one cannot make any conclusions about the project's effects on the beneficial users of Delta water. DWR's logic is that it cannot predict actual conditions but can only show a change in conditions. No conclusions can be drawn as to the effects of a project unless the change in conditions is somehow applied to the real

world. If for example the model shows that the increase in salinity is only 50 EC, how can one determine if that amount of increase results in an exceedence of the standard or not? A 50 EC increase over an "existing" EC of 100 may not result in an exceedence of the 700 (or 1000) EC standard. However, if the 50 EC increase occurs when the "existing" water quality is 680 EC, then the 50 EC increase will indeed cause an exceedence. Recall, such exceedences are the criteria DWR used in the WaterFIx hearing to make conclusions about harm or damage.

As above, the question is actually not how a change affects the meeting of a standard, rather the question is how a change affects a water user. If the 50 EC increase results in the season's average soil salinity exceeding the threshold for that crop, then it is certainly an adverse impact caused by the proposed project. DWR's logic falls apart unless the model outputs can actually be applied to real circumstances regardless of whether an impact is measured by exceedence of a standard or the effect on soil salinity.

In fact DWR does use the DSM2 model to predict actual water quality. As presented at the WaterFix hearings, DWR performs modeling during times of Joint Point of Diversion ("POD") in order to comply with its permit conditions for that type of operations. Their modeling estimates whether or not the POD will adversely affect water quality or stage. Again, predicting a change without comparing how that change relates to existing water quality or stage would be useless. Because it is supposed to estimate if the POD will cause harm to water quality or stage, DWR also includes in its POD modeling results the actual water quality and stage. Thus, one can look at the modeling which (for example) shows a 100 EC change and then look at the actual EC to estimate how that change relates to actual conditions. This is what DWR must do for the subject CEQA analysis. Modeled outputs must be compared to the actual conditions for the years modeled. In that way the public can see if any increase in salinity is occurring at a time when water quality is already bad and see just how accurate the model is at predicting actual conditions.

It is interesting to note that per those POD modeling results, the DSM2 model sometimes accurately tracks actual water quality but regularly misrepresents actual water quality. Because the model is not always accurately predicting actual water quality, we confirm that only showing modeled differences between two scenarios yields no useful information.

If one cannot match a modeled change in EC to what the actual EC will be, one can never determine if the change is causing impacts. Thus any analysis by DWR which does not match estimated changes in water quality to actual conditions is not an adequate analysis and certainly not the best available science. This leads us to the next problem with DWR modeling.

DWR'S MODEL DOES CONTAIN ACCURATE, UP TO DATE INFORMATION

As described above, the DSM2 model does not always accurately predict actual water quality conditions in the southern Delta channels. SDWA testimony and evidence presented at the WaterFix hearings showed that DSM2 has as its inputs for channel geometry, data which is at least 5 years old and some that is over 20 years old. Since that data was accumulated, siltation has occurred in the southern Delta channels which has significantly altered channel geometry.

SDWA performed channel soundings to determine what the actual channel geometry was in various areas. That new data revealed the inaccuracy of the DWR/DSM2 data.

As an example, near the Undine Road bridge over Middle River, the DSM2 model "thought" the channel had 10 feet of depth at a certain tide when the up-to-data SDWA data showed one foot or less of depth. This difference makes the DSM2 model outputs unreliable.

The model uses data input (e.g. flow, ambient temperature, etc) and then performs calculations to estimate how a certain volume of water moving through a channel will change over time. The calculations then "predict" characteristics of the water such as temperature, water quality, stage, rate of flow, volume, etc. If the channel geometry is (for example) now one-tenth of what the model "thinks" that means less water is actually moving through the channel and thus the calculations are necessarily completely wrong. Less water might mean less salt from one direction (Delta tidal flows go back and forth in the channels) or less dilution from another direction. Less water means less tidal flow, less water getting to certain places, a greater susceptibility to temperature changes, and on and on. Without updated channel geometry, the DSM2 model cannot be considered the best available science. [SDWA has provided DWR its more current channel geometry data and has itself performed additional channel surveys. However, SDWA is informed that an "updated" DSM2 (including updated channel geometry) might be available by 2020, but that even then it would not contain any channel geometry data later than 2015 in it.]

THE PROPOSED PROJECT IGNORES THE LEGAL MANDATES REQUIRING THAT EXPORTS BE LIMITED TO WATER WHICH IS TRULY SURPLUS TO THE PRESENT AND FUTURE NEEDS OF THE DELTA AND OTHER AREAS OF ORIGIN INCLUDING FISH AND WILDLIFE NEEDS

Any analysis of increased or changed exports by DWR or USBR must first begin with a water availability analysis. Prior environmental reviews by the projects simply assume there is water to export and intentionally avoid any water availability analysis. This practice should not continue.

Per various statutes, case law and regulatory mandates, DWR and USBR can only export water that is surplus to other needs. The Weber Foundation Studies conducted in anticipation of the S.P., indicated that the average annual amount of water produced (precipitation) in the Sacramento-San Joaquin watersheds during the 1928-1934 drought was 17,631,000 acre feet. During that same period, "Local Requirements" of the beneficial uses in those watersheds was 25,690,000 acre feet. Thus, on average during such a drought, the watersheds were short 8,059,000 acre feet ***each year***. Although this suggests there is zero water available for exports during droughts, it is of course possible that the inadequate supply comes in spurts which might allow for some exports of "surplus flow" from the Delta. However, that analysis is not the end of the issue.

The Weber Foundation Studies did not include what is now known about the adverse effects of the projects on fisheries or the amounts of water needed to preserve the dwindling fish

populations. Thus the "Local Requirements" aspect of the Weber Foundation Studies needs updating to likely include even more water; further decreasing the amounts if any that could be exported.

Water that the projects may have stored during such droughts may not provide any supply during such droughts. During the last drought, DWR and USBR needed eight Urgency Change petitions (all granted by the SWRCB!) in one year because they had insufficient water in storage to meet their permit and other regulator obligations. Thus any calculation of amounts available for export during droughts should include full compliance with permit terms and regulatory mandates. That stored water is in large part needed to meet those obligations and is thus unavailable for export. When even stored water is insufficient to meet all such obligations, then the projects are obligated to manage whatever supply they do control to meet such standards. For example, current DWR and USBR permits apply and bind not only upstream (of the Delta) reservoirs but also the downstream reservoir San Luis. Thus the "stored" water in San Luis cannot be used unless in-Delta permit conditions are met. This means that water already exported and located in San Luis would need to be released back into the San Joaquin River to protect Delta superior needs including fish and wildlife.

Importantly for in-Delta beneficial users, is the case law which conditions exports on meeting in-Delta needs. In the *Racinelli Decision* (US v. SWRCB 182 Cal. App. 3d. 82 (1986))the court found that The Delta Protection Act (Water Code Sections 12200-12220) "prohibits project exports from the Delta of water necessary to provide water to which Delta users are 'entitled' and water which is needed for salinity control and an adequate supply for Delta users." (at 139.)

This case clearly places three in-Delta needs above exports, precluding exports until all such needs are met. Those three needs are 1) water to which Delta users are entitled, 2) water for salinity control, ***and*** 3) an adequate supply for Delta users. As DWR well knows, in the last drought the SWRCB attempted to curtail numerous in-Delta water users who claim pre-1914 and riparian rights while still allowing exports. Per the *Racinelli* there can be no exports if a full and complete in-Delta supply is not provided. Thus, any analysis of the proposed project must be based on a water availability analysis that conforms to the law.

OTHER LEGAL REQUIREMENTS LIMIT THE AMOUNT OF WATER AVAILABLE FOR EXPORT.

The Delta Reform Act Water Code section 85031(a) provides:

"(a) <u>This division does not diminish, impair, or otherwise affect in any manner whatsoever any area of origin, watershed of origin, county of origin, or any other water rights protections</u>, including, but not limited to, rights to water appropriated prior to December 19, 1914, provided under the law. <u>This division does not limit or otherwise affect the application of</u> Article 1.7 (commencing with

Section 1215) of Chapter 1 of Part 2 of Division 2, Sections 10505, 10505.5, 11128, 11460, 11461, 11462, and 11463, and Sections 12200 to 12220, inclusive." (Emphasis added.)

Water Code Sections 11460 et seq. and 12200 et seq. are specific in defining the limitation on the export of water from the Delta by the S.P. and CVP. Water Code Sections 11460 et seq. were added by Statutes 1943, c. 370, p. 1896 around the time of commencement of the CVP. Water Code Section 12200 et seq. was added by Statutes 1959, c. 1766, p. 1766 around the time of commencement of the State Water Project.

The limitation of the projects to the export of only surplus water and the obligation of the projects to provide salinity control and assure an adequate water supply sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta is clear.

Water Code Sections 12200 through 12205 (as examined in the *Racinelli Decision*) are also specific as to the requirements to provide salinity control for the Delta and provide an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban and recreational development.

'12200. Legislative findings and declaration

The Legislature hereby finds that the water problems of the Sacramento-San Joaquin Delta are unique within the State; the Sacramento and San Joaquin Rivers join at the Sacramento-San Joaquin Delta to discharge their fresh water flows into Suisun, San Pablo and San Francisco bays and thence into the Pacific Ocean; the merging of fresh water with saline bay waters and drainage waters and the withdrawal of fresh water for beneficial uses creates an acute problem of salinity intrusion into the vast network of channels and sloughs of the Delta; the State Water Resources Development system has as one of its objectives the transfer of waters from water-surplus areas in the Sacramento Valley and the north coastal area to water-deficient areas to the south and west of the Sacramento-San Joaquin Delta via the Delta; water surplus to the needs of the areas in which it originates is gathered in the Delta and thereby provides a common source of fresh water supply for water-deficient areas. It is, therefore, hereby declared that a general law cannot be made applicable to said Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good. (*Added by Stats. 1959, c. 1766, p. 4247, '1.)*

'12201. Necessity of maintenance of water supply

The Legislature finds that the maintenance of an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta area as set forth in Section 12220, Chapter

2, of this part, and to provide a common source of fresh water for export to areas of water deficiency is necessary to the peace, health, safety and welfare of the people of the State, except that delivery of such water shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code. (*Added by Stats. 1959, c. 1766, p 4247, '1*.)

'12202. Salinity control and adequate water supply; substitute water supply; Delivery

Among the functions to be provided by the State Water Resources Development System, in coordination with the activities of the United States in providing salinity control for the Delta through operation of the Federal Central Valley Project, shall be the provision of salinity control and an adequate water supply for the users of water in the Sacramento-San Joaquin Delta. If it is determined to be in the public interest to provide a substitute water supply to the users in said Delta in lieu of that which would be provided as a result of salinity control no added financial burden shall be placed upon said Delta water users solely by virtue of such substitution. Delivery of said substitute water supply shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code. (*Added by Stats. 1959, c. 1766, p 4247, '1*.)

'12203. Diversion of waters from channels of delta

It is hereby declared to be the policy of the State that no person, corporation or public or private agency or the State or the United States should divert water from the channels of the Sacramento-San Joaquin Delta to which the users within said Delta are entitled. (*Added by Stats. 1959, c. 1766, p 4249, '1*.)

'12204. Exportation of water from delta

In determining the availability of water for export from the Sacramento-San Joaquin Delta no water shall be exported which is necessary to meet the requirements of Sections 12202 and 12203 of this chapter. (*Added by Stats. 1959, c. 1766, p 4249, '1*.)

'12205. Storage of water; integration of operation and management of release of water

It is the policy of the State that the operation and management of releases from storage into the Sacramento-San Joaquin Delta of water for use outside the area in which such water originates shall be integrated to the maximum extent possible in order to permit the fulfillment of the objectives of this part. (*Added by Stats. 1959, c. 1766, p 4249*

[It must be emphasized that Section 12205 immediately above would preclude certain operations of any isolated facility since the releases for export intended to pass through the isolated facility would not help fulfill the objectives of the Act.]

'Water Code 11460 provides:

> **11460. Prior right to watershed water**
>
> In the construction and operation by the department of any project under the provisions of this part a watershed or area wherein water originates, or an area immediately adjacent thereto which can conveniently be supplied with water therefrom, shall not be deprived by the department directly or indirectly of the prior right to all of the water reasonably required to adequately supply the beneficial needs of the watershed, area, or any of the inhabitants or property owners therein. (*Added by Stats. 1943, c. 370, p. 1896. Amended by Stats. 1957, c. 1932, p. 3410, '296.)@*

The December 1960 DWR Bulletin 76 (Exhibit) which includes a contemporaneous interpretation by DWR of Water code Section 12200 through 12205 provides at page 12:

> "In 1959 the State Legislature directed that water shall not be diverted from the Delta for use elsewhere unless adequate supplies for the Delta <u>are first</u> provided. (Emphasis added.)

Similarly the DWR confirmed its interpretation of law in the contract between the State of California Department of Water Resources and the North Delta Water Agency For the Assurance of a Dependable Water Supply of Suitable Quality dated January 28, 1981, which provides:

> "(d) The construction and operation of the CVP and S.P. at times have changed and will further change the regimen of rivers tributary to the Sacramento-San Joaquin Delta (Delta) and the regimen of the Delta channels from unregulated flow to regulated flow. This regulation at times improves the quality of water in the Delta and at times diminishes the quality from that which would exist in the absence of the CVP and S.P. The regulation at times also alters the elevation of water in some Delta channels."
>
> "(f) The general welfare, as well as the rights and requirements of the water users in the Delta, require that there be maintained in the Delta an adequate supply of good quality water for agricultural, municipal and industrial uses."

> "(g) The law of the State of California requires protection of the areas within which water originates and the watersheds in which water is developed. The Delta is such an area and within such a watershed. Part 4.5 of Division 6 of the California Water Code affords a first priority to provision of salinity control and maintenance of an adequate water supply in the Delta for reasonable and beneficial uses of water and relegates to lesser priority all exports of water from the Delta to other areas for any purpose." (Emphasis added.) (See Exhibit .)

In SWRCB D-1485 at page 9 the SWRCB provided:

> "The Delta Protection Act accords first priority to satisfaction of vested rights and public interest needs for water in the Delta and relegates to lesser priority all exports of water from the Delta to other areas for any purpose."

The export projects must additionally fully mitigate their respective impacts and meet the affirmative obligations to the Delta and other areas of origin including those related to flow. Failure to so do results in a shift of the cost of the project to someone else. The State Water Resources Development Bond Act was intended to preclude such a shift in costs. See also Goodman v. Riverside (1993) 140 Cal.App.3d 900 at 906 for the requirement that the costs of the entire project be paid by the contractors. Water Code Section 11912 requires that the costs necessary for the preservation of fish and wildlife be charged to the contractors. The term "preservation" appears to be broader than mitigation and appears to create an affirmative obligation beyond mitigation.

> Title 34 of Public Law 102-575 referred to as the Central Valley Project Improvement Act in Section 3406(b) (1) authorizes and directs the Secretary of Interior to enact and implement a program which makes all reasonable efforts to ensure by the year 2002 natural production of anadromous fish (including salmon, steelhead, striped bass, sturgeon and American shad) will be sustainable on a long term basis at levels not less than twice the average levels attained during the period of 1967-1991

The Delta Reform Act of 2009 includes provisions intended to provide additional protection for the Delta. Such provisions include Water Code §85054 which provides:

"§85054. Coequal goals

> 'Coequa1.goals' means the two goals of providing a more reliable water supply for California and protecting restoring, and enhancing the Delta ecosystem. The coequal goals shall 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."

Water Code §85021 provides:

"§85021. Reduction of reliance on Delta for future water supply needs

> The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."

The Delta and other areas of origin both upstream and downstream are part of California and also need a more reliable water supply. The proposed project is clearly directed only at the ability of the S.P. and CVP to export water from the Delta. Restoration and protection of Delta water quality and flows including flushing flows are part of a more reliable water supply for California. Non-degradation of water quality and the statutory obligations to provide enhancement of water quality and an adequate supply are also absent from the proposal.

The cumulative impacts of the proposed project together with the predetermined single tunnel will clearly render water supply less reliable in all areas of the Delta downstream of the Sacramento River intakes and those areas along the current routes of Sacramento River flow to the export pumps. The common pool for the interior Delta will be eliminated along with the common interest in protecting the water quality. The single tunnel has no outlets and requirements to protect water quality in dry periods are always circumvented. For areas throughout the watershed, including those along the tributaries upstream of the Delta, curtailment of local water use, and water transfers to increase utilization of the highly expensive tunnel combined with the need for fish flows and high water consumption habitat to mitigate for the construction and operation of the tunnel will greatly add to unreliability.

The Proposed Project ignores the need to reduce reliance on exports of water from the Delta. The hydrology of the Delta watershed is inadequate to support even the past level of exports.

Development within the watersheds of origin and the need to recapture water from S.P. and CVP exports will increase. There is evidence that more water will be needed to mitigate for the S.P. and CVP damage to fish including meeting the CVPIA anadromous fish restoration requirements of 2 times the average natural production for the years 1967 through 1991. Climate

change is also expected to adversely affect water supply. The increasing threat of terrorism, the continuing threat of natural calamities, including earthquakes and the growing need for electricity all gravitate towards less reliance on exports from the Delta and instead concentration on developing local self-sufficiency. The deficit due to the failure to develop North Coast watersheds will not be overcome by efforts at self-sufficiency, however, increased efforts in urban communities can increase the amount of water available for agriculture and the environment.

The limited hydrology was clearly recognized in the planning for the S.P. which was to develop projects on the rivers in the North Coast watersheds sufficient to import to the Delta about 5,000,000 acre feet of water seasonally for transfer to areas of deficiency. (See Exhibit 14 December 1960 Bulletin 76 page 13). Such areas of deficiency were expected to be both north and south of the Delta pumps. The projects in the North Coast watersheds were never constructed and the projects are woefully short of water.

In addition to the lack of precipitation in the Delta watershed to meet local and export needs are the environmental needs. Water is needed for mitigation of project impacts and the affirmative obligations for salinity control and fish restoration.

The original planning for the S.P. and CVP appears to have underestimated the needs to protect fish both as to flow requirements and carryover storage required for temperature control. In 2009 after only two (2) dry years, the S.P. and CVP violated the SWRCB February outflow requirements claiming that meeting the outflow requirements would reduce storage below the point necessary to meet cold water requirements for salmon later in the year. Although the project operators lied and the real reason for the violation was the ongoing pumping of the unregulated flow to help fill San Luis Reservoir, the incident clearly shows the inability of the projects to provide surplus water for export in the 4th, 5th and 6th years of drought.

In May of 2013 the S.P. and CVP again claimed a need to preserve cold water in storage for fish. They requested and were allowed by the SWRCB to reduce outflow so as to exceed the western and interior Delta agricultural water quality objectives to save such cold water in storage. They did not suggest and did not reduce export pumping which would have had the same effect as reducing outflow.

In 2014 the 3rd year of drought, the SWRCB issued curtailment notices to post 1914 water right holders in the areas of origin and reduced exports due to the lack of water.

In the 4th year of drought the SWRCB curtailed post 1914 and some pre-1914 water rights and reduced exports due to lack of water.

Six year droughts can be expected and even longer droughts are possible. The historic occurrence of multi-year droughts was examined in a DWR study of tree rings. Exhibit 13 is Table 3 from such study.

The State Water Project Delivery Reliability Report 2013 shows a long-term (10 year period) average Table A delivery as 2,266,000 acre feet per year; a long-term average (1921-2003) as 2,400,000 acre feet per year; a single dry year (1977) as 453,000 acre feet and a 6-year drought (1987-1992) as 1,055,000 acre feet per year. These figures can be contrasted to the Maximum Possible S.P. Table A Delivery of 4,172,000 acre feet per year. See Exhibit 15 excerpts from S.P. Delivery Reliability Report 2013.

"§ 1502.14 Alternatives including the proposed action.

This Section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (§ 1502.15) and the Environmental Consequences (§ 1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. In this section agencies shall:

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

© Include reasonable alternatives not within the ' jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives." (Emphasis added.)

An alternative which requires that the S.P. and CVP be operated in accordance with current law is a reasonable alternative which must be rigorously and objectively evaluated. The Proposed Project clearly ignores the law establishing the priorities for meeting needs within the Delta and other areas of origin including the needs of fish and wildlife.

The ability of the S.P. and CVP to deliver “full contract amounts” never existed and thus could not be restored or protected. The words “up to” conceivably should cover a range from

zero deliveries to a high of what can be supported with full compliance with State and federal law and hydrologic conditions. The projects have not been able to meet even the D 1641 requirements.

Although obviously not intended by DWR in controlling the preparation of the DEIR, a range of reasonable alternatives must be considered including substantially reduced and at times no exports from the Delta. The upper range is of course limited by law and hydrology. An impartial evaluation is needed to determine the true capability of the export projects to provide surplus water for export while meeting D-1641 over a drought comparable to the 1928/29 through 1933/34 drought, while at the same time meeting listed species requirements, senior water rights, salinity control and providing an adequate supply to serve the needs in the Delta and other areas of origin.

THE CEQA ANALYSIS SHOULD INCLUDE AN EXAMINATION OF SILTATION TRENDS IN THE DELTA.

As referenced above, recent channel surveys and other anecdotal evidence indicate that in the southern Delta channel capacities are decreasing. Large areas of the San Joaquin River, Middle River, Old River, Doughty Cut and Salmon Slough have lost significant channel capacity due to siltation. After each of the most recent high flows years, degradation of channel capacity has increased. This appears to be a trend such that rather than the high flow year's flows flushing siltation farther downstream or out to the Bay, siltation now increases every year. Estimating the degree of degradation will allow needed modeling to predict how internal Delta flows may be affected and thus how the proposed project might exacerbate any problems.

OTHER REASONABLE ALTERNATIVES MUST BE CONSIDERED.

The NOP suggest a very limited set of alternatives. Such limitations are contrary to CEQA and contrary to the public interest. Alternatives that should be considered include an armored pathway through the Delta which allow prompt restoration of legal exports after a catastrophic earthquake event; alternate routes for any tunnel which avoid use of the already insufficient Delta roads, highways and waterways; a decrease in exports with other sources to supplement export needs; the San Joaquin Valley Blueprint suggested under channel diversion points; and the Delta Corridors proposal. All such alternatives should include actions to fully mitigate the CVP and SWP's adverse impacts on the San Joaquin River and the southern and central Delta waters.

Central Delta Water Agency and South Delta Water Agency are also submitting additional comments and documentation for consideration in the preparation of the Delta Conveyance environmental document.