From: Deirdre Des Jardins <campaign@mbaysav.org>
Sent: Tuesday, July 29, 2014 11:49 PM
To: BDCP.comments@noaa.gov
Subject: Comments from California Water Research
Attachments: Draft BDCP comments 2.pdf

BDCP1744

Deirdre Des Jardins
California Water Research
145 Beel Dr
Santa Cruz, CA 95060

July 29, 2014 sent via email

Comments on Climate Change Modelling in the Bay Delta Conservation Plan EIR/EIS

Modelling of impacts to hydrology of climate change is inadequate. The EIR/EIS also does not have adequate discussion of sensitivity analyses. As a result, risk to projected water supplies and to the environment is not adequately evaluated.

The climate change modeling in the EIR/EIS omits any discussion of likely flows under drier climate change scenarios. Instead the EIR/EIS uses a "Central Tendency" projection which is essentially a 50% exceedance projection

The EIR/EIS discussion of likely impacts of climate change and associated modelling is not sufficient for the public, for stakeholders, or water agencies to evaluate the water supply benefits or water supply risks of the project. The modelling is also not sufficient for the California Department of Fish and Wildlife or the National Marine Fisheries Service to evaluate the potential impacts of the project on endangered species of fish.

The project proponents have done modelling of likely flows under both a "more warming, more drying" scenario [Q1], and a "more warming, less drying" scenario [Q2]. While this information was used in early sensitivity analysis, it has not been released in the EIR/EIS.

An internal presentation on BDCP modelling shows that runoff in the Sacramento River watershed could decrease significantly due to climate change, as much as 13-17% by mid-century. Assuming proportional reductions in BDCP yield, this would mean a greatly reduced yield.

The EIR/EIS should have included projected project yields, reservoir levels, and river flows under these scenarios.

Also, recent modelling by the USGS shows that Sacramento River flows could be reduced by as much as a third by 2070, under some of the drier climate change scenarios. This would reduce the projected yields of the project even more.

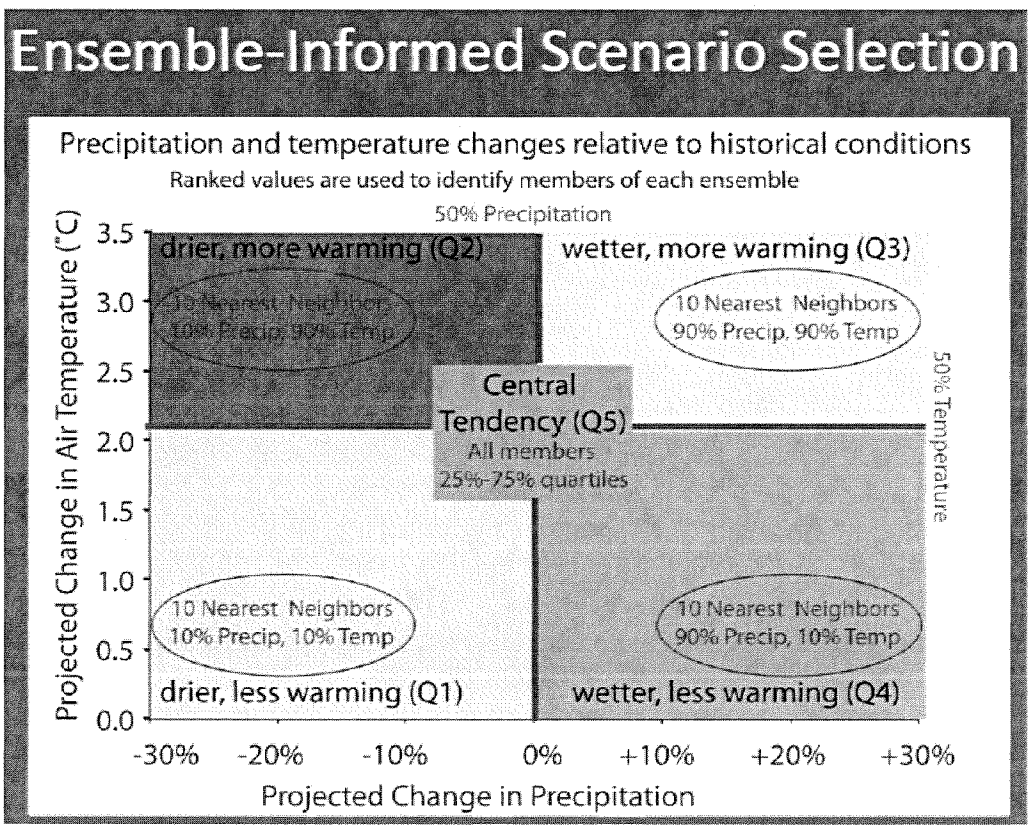
For this reason, the entire climate change modelling appendix in the EIR/EIS is inadequate.

BDCP 1744

BDCP Climate Change Modelling

The "Central Tendency" projection used as input to the BDCP hydrologic models for the Bay Delta Conservation Plan essentially assumes that wetter and drier futures in California are equally likely. By its very structure, the Central Tendency projections are close to current norms of precipitation, since it assumes that wetter and drier futures are equally likely.

BDCP uses the ensemble of 112 climate change model / GHG emissions scenario projections, available from Lawrence Livermore National Lab. The graph below, from an internal presentation by Jamie Anderson on selection of climate change scenarios,[1] illustrates the ensemble scheme.



The 112 projections are broken four different quartiles, based on the mean projected change in temperature and mean projected change in precipitation for the ensemble.

- Drier, less warming [Q1, yellow]
- Drier, more warming [Q2, red]

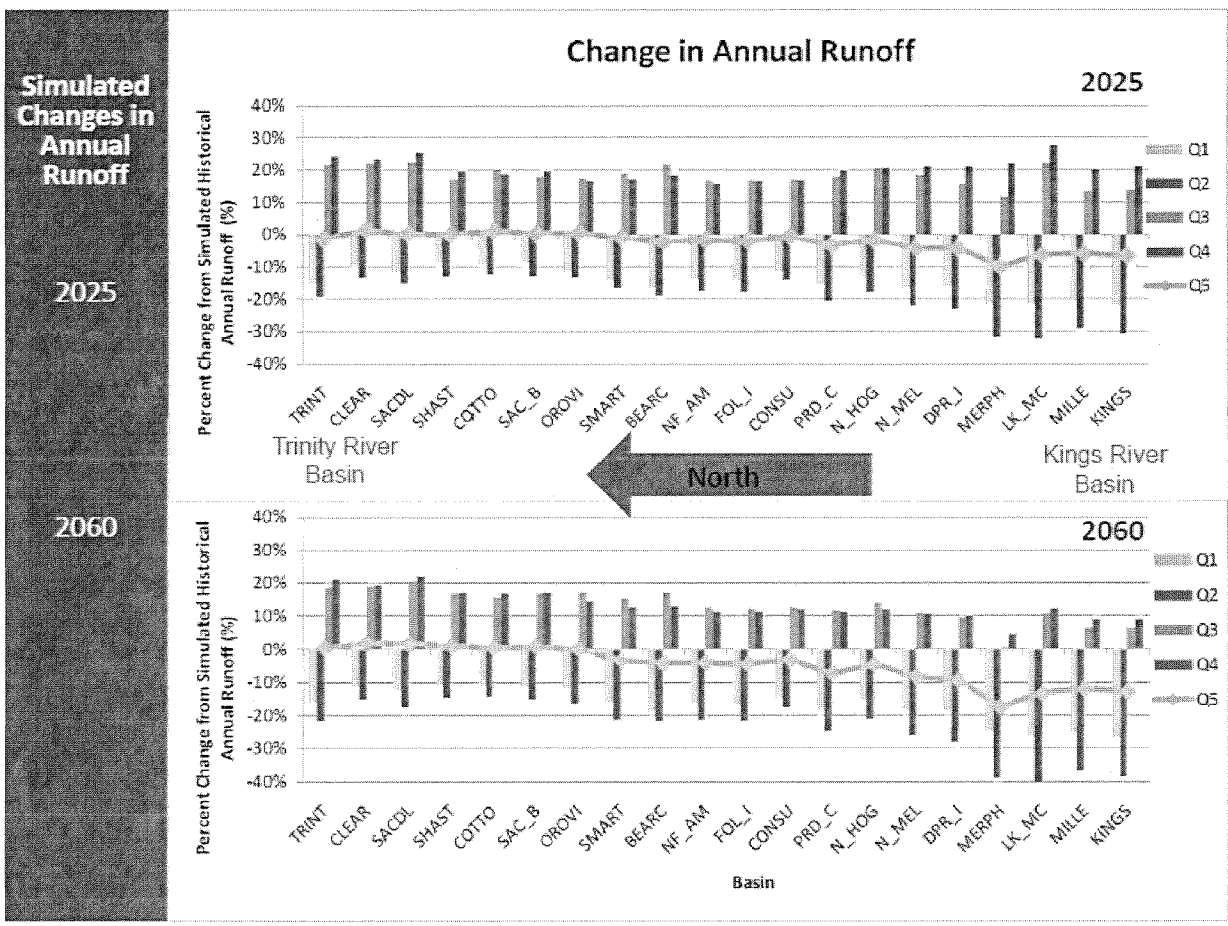
1 Jamie Anderson, presentation on Climate Change Approaches, Department of Water Resources, March 2012. Incorporated by reference. Available at http://www.water.ca.gov/climatechange/docs/CCTAG_climate_change_approaches%20final_3-28-12_Jamie%20Anderson_with%20extra%20slides.pdf

- Wetter, more warming [Q3, light blue]
- Wetter, less warming [Q4, dark blue]

Each quartile was used to produce an ensemble model, after pruning off the 10% driest and 10% wettest models. The output of the ensemble models was not disclosed in the BDCP EIR/EIS.

The graph below, also from the presentation by Anderson, shows different trends in Sacramento River runoff for the different quartiles. The drier, more warming Q2 model predictions include the worst case scenarios. The drier, less warming Q1 model predictions show weaker but still noticeable drying. The predictions of these models are red and yellow, and all show significant reductions in river flows, more by the end of the century.

Although not discussed in BDCP, the Q3 wetter, less warming quartile and Q4 wetter, more warming quartiles generally represent lower GHG emissions scenarios and lower sensitivity climate models, which may be less likely. (See discussion in next section.) Anderson's graph shows the projections of the wetter quartiles in light and dark blue. All the wetter models show increases in streamflow, but less by the end of the century, particularly in the San Joaquin Valley



The predictions of the Central Tendency model, Q5, are shown in green. Q5 is based on the

entire ensemble, after throwing out the driest half of the driest models, the wettest half of the wettest models, the warmest half of the warmest models. Throwing out these models from the ensemble may also throw out information on risk.

As you can see, the Central Tendency model tends to reproduce the historical precipitation patterns in the near term. It is only over the long term, when the severe potential drying under the drier models far outweigh the effects of the wetter models, that the Central Tendency model begins to show some drying.

Conclusion: using the Central Tendency model for BDCP could significantly underestimate the reduction in river flows from the effects of climate change.

Why More Warming is More Likely

Recent research indicates that the climate change models showing a lower level of "climate sensitivity," that is, higher temperature increases for a given level of C02 emissions, may not agree with current observations from satellite data. A recent study by Sherwood, Bony, and Dufresne [2] found that

> ... The mixing inferred from observations appears to be sufficiently strong to imply a climate sensitivity of more than 3 degrees for a doubling of carbon dioxide. This is significantly higher than the currently accepted lower bound of 1.5 degrees, thereby constraining model projections towards relatively severe future warming.

Similar results were found in a 2012 study by Fausilio and Treberth, which compared current observations of May through August relative humidity with model projections.[3]

Why More Warming Means More Drying for Higher GHG Scenarios

These studies show that there is potentially huge risk in assuming that low temperature sensitivity models are valid. Although the BDCP EIR/EIS did not consider the properties of the individual IPCC GHG models in the Lawrence Livermore lab dataset , the California Climate Scenario Assessment team, which did modelling for the California Climate Change Adaptation Strategy, did look at the relationship between increases in temperature over California with increasing GHG emissions and projected reductions in precipitation.

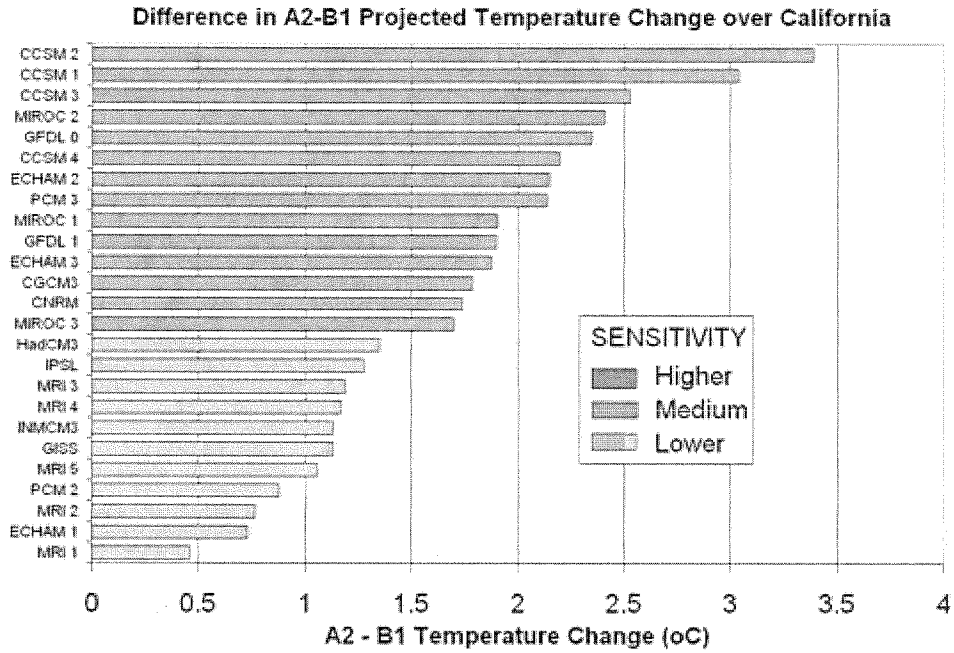
Not too surprisingly, the higher sensitivity models generally predict more drying. The graph below shows the difference in projected temperatures over California of the IPCC climate change models, for two GHG scenarios: A2 (medium high) and B1 (low) greenhouse gas emissions scenarios. The models were ranked on difference between projected temperatures. Blue was lowest sensitivity, green medium, and orange highest.

---

2 S.C. Sherwood, S. Bony, and J. Dufresne, "Spread in model climate sensitivity traced to atmospheric convective mixing", Nature, vol. 505, pp. 37-42, 2014. http://dx.doi.org/10.1038/nature12829. Incorporated by reference.

3 J.T. Fasullo, and K.E. Trenberth, "A Less Cloudy Future: The Role of Subtropical Subsidence in Climate Sensitivity", Science, vol. 338, pp. 792-794, 2012. http://dx.doi.org/10.1126/science.1227465. Incorporated by reference.

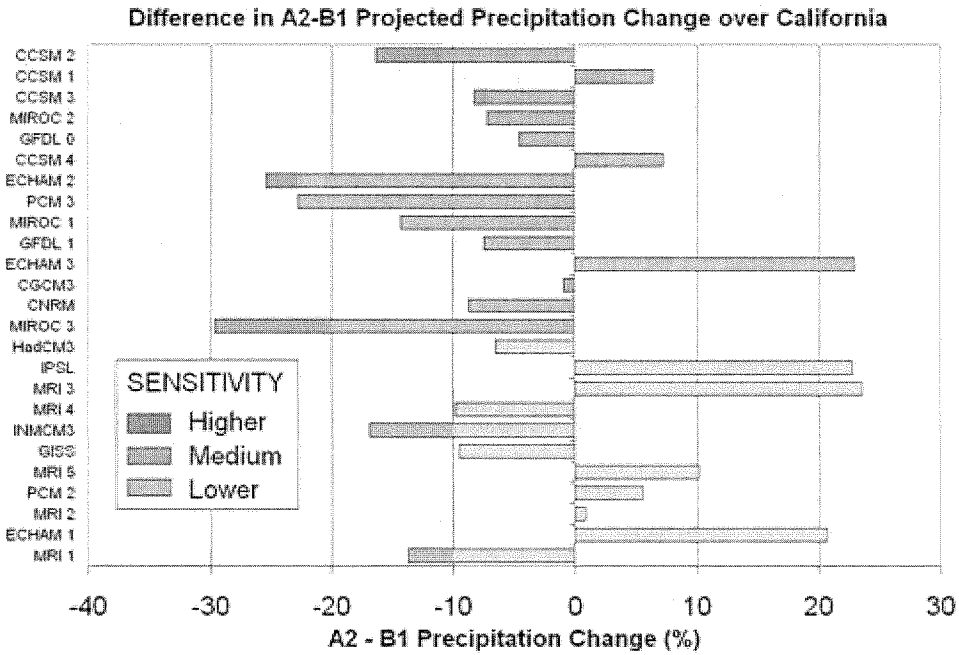
BDCP 1744



The IPCC global climate models which show the highest temperature increases with increased GHG levels also tend to show the largest reductions in precipitation with increased GHG levels. The graph below shows the differences in projected precipitation change over California, between the B2 and A1 scenarios, for 25 models.[4] Of the highest sensitivity models, two thirds showed a marked decrease in precipitation between the A2 and B1 scenarios, and three fourths of the medium sensitivity models.

.

4 California Climate Scenario Asssessment Team, Model Page. Incorporated by reference. Available at http://meteora.ucsd.edu/cap/cccc_model_prelim.html#contents



Source: California Climate Scenario Assessment team, 2005 sensitivity assessment

Why Higher Greenhouse Gas Emissions Scenarios Are More Likely

Unfortunately, the higher GHG emissions scenarios appear to be the most likely, given current trends in global development and the current trajectory of increases in greenhouse gas emissions.

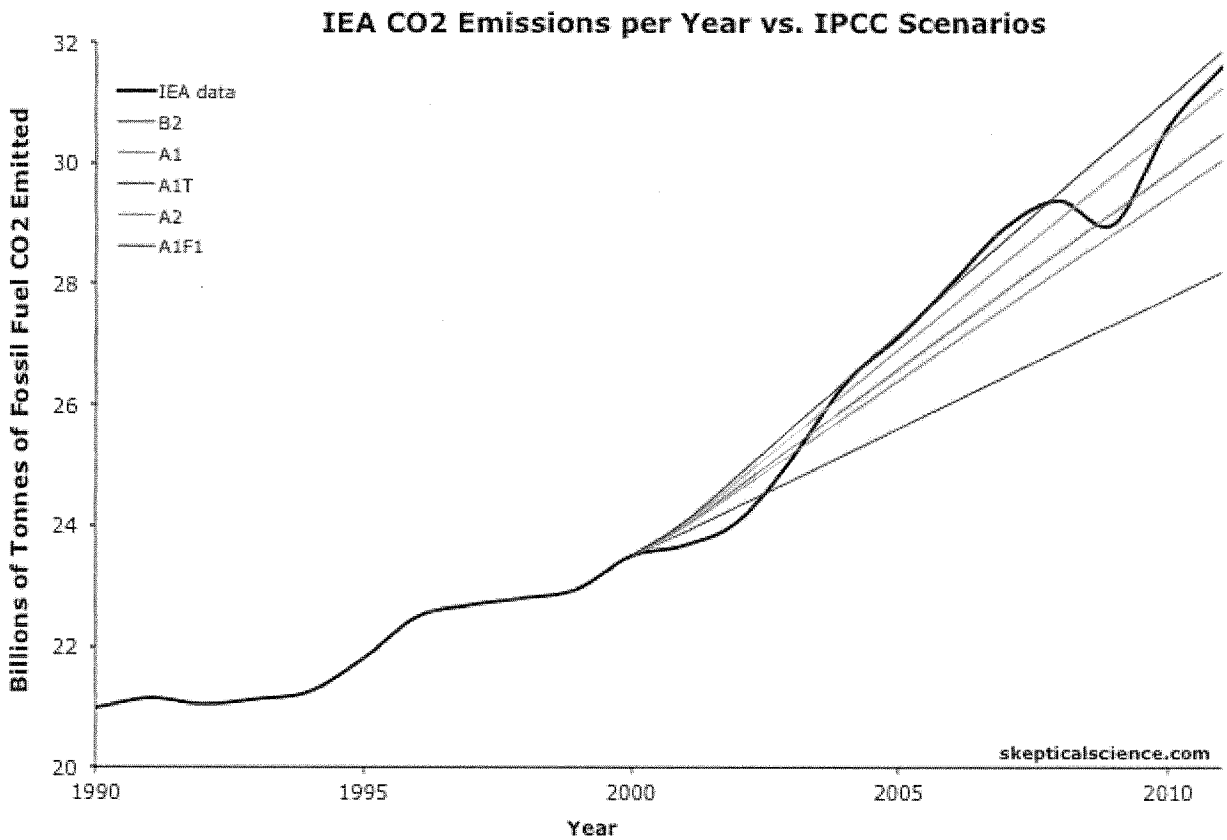
In the discussion for the Cal-Adapt the draft Natural Resources Agency policy on Climate Adaptation states:

> "Of the two options provided by Cal-Adapt, the A2 scenario is the more realistic choice for decision-makers to use for climate adaptation planning. The B1 scenario is optimistic in the high level of international cooperation assumed. This cooperation would necessitate sweeping political and socioeconomic change on a global magnitude that is as yet unprecedented. The roughly two billion-person decline in population over the last half of the century is also reliant on broad assumptions of low mortality and low fertility. Generally, the B1 scenario might be most appropriately viewed as a version of a "best case" or "policy" scenario for emissions, while A2 is more of a status quo scenario incorporating incremental improvements."[5]

At the time the California Climate Change Adaptation Policy guide draft was written, it is clear

5 California Natural Resources Agency, draft California Climate Change Adaptation Policy Guide, April 2012. Incorporated by reference. Available at http://resources.ca.gov/climate_adaptation/docs/APG_-_PUBLIC_DRAFT_4.9.12_small.pdf

that higher greenhouse gas emissions scenarios appeared more likely than lower greenhouse gas emissions scenarios. The graph below shows that world C02 emissions, which had declined during the recession, are back to tracking the higher emissions trajectories, which include A2 (medium high) and A1Fi (highest.)



IEA fossil fuel CO2 emissions estimates vs. IPCC SRES emissions scenarios.

Source: Skeptical Science[6]

This information on the likely trajectory of GHG emissions was clearly available to the Natural Resources Agency when the BDCP EIR/EIS was drafted. However, there is no disclosed analysis of sensitivity to GHG emissions scenarios.

While the BDCP document states that the modelling was agreed to after extensive consultation with representatives from DFW, NMFS and USFWS, fish biologists do not have any particular expertise in climate change modelling, and could not be expected to make authoritative comments on the potential impacts of the modelling choices. The sensitivity analyses used in

6 IEA CO2 Emissions Update 2011 - the Good News and the Bad, Skeptical Science, May 30, 2012. Available at http://www.skepticalscience.com/iea-co2-emissions-update-2011.html. Incorporated by reference.

discussions with NMFS and USFWS should have been disclosed in the EIR/EIS so that a wider range of stakeholders could comment.

The end result of these omissions is to eliminate any real information in the EIR/EIS on the risk of climate change to the projected yields from BDCP, and also to minimize the potential ecological risks of the proposed diversion on the Sacramento River.

A Very Possible Worst Case Scenario under Higher GHG Emissions

The US Geological Survey released a paper in 2012 using the Global Fluid Dynamics Lab (GFDL) climate model with the A2 (medium high) emissions scenario. [7] The study was done by R.T. Hanson and other researchers at USGS in collaboration with Daniel Cayan, who oversaw the modeling for the California Climate Adaptation Strategy.

The GFDL A2 projection is drier projection which was used in the California Climate Adaptation Strategy. On the next page is a graph of predicted river flows in the Central Valley. The USGS models predict a 16-17% reduction in Sacramento River flows from 2020-2030 and 2040-2050, and a 34% reduction by 2080-2090. Similar reductions are predicted for the Tuolumne and Kern Rivers.

7 R.T. Hanson et. al., "A method for physically based model analysis of conjunctive use in response to potential climate changes," Feb 4, 2012. Incorporated by reference. Available at http://ca.water.usgs.gov/projects/cvhm/Hanson_etal_2012_WRR.pdf.

BDCP 1744

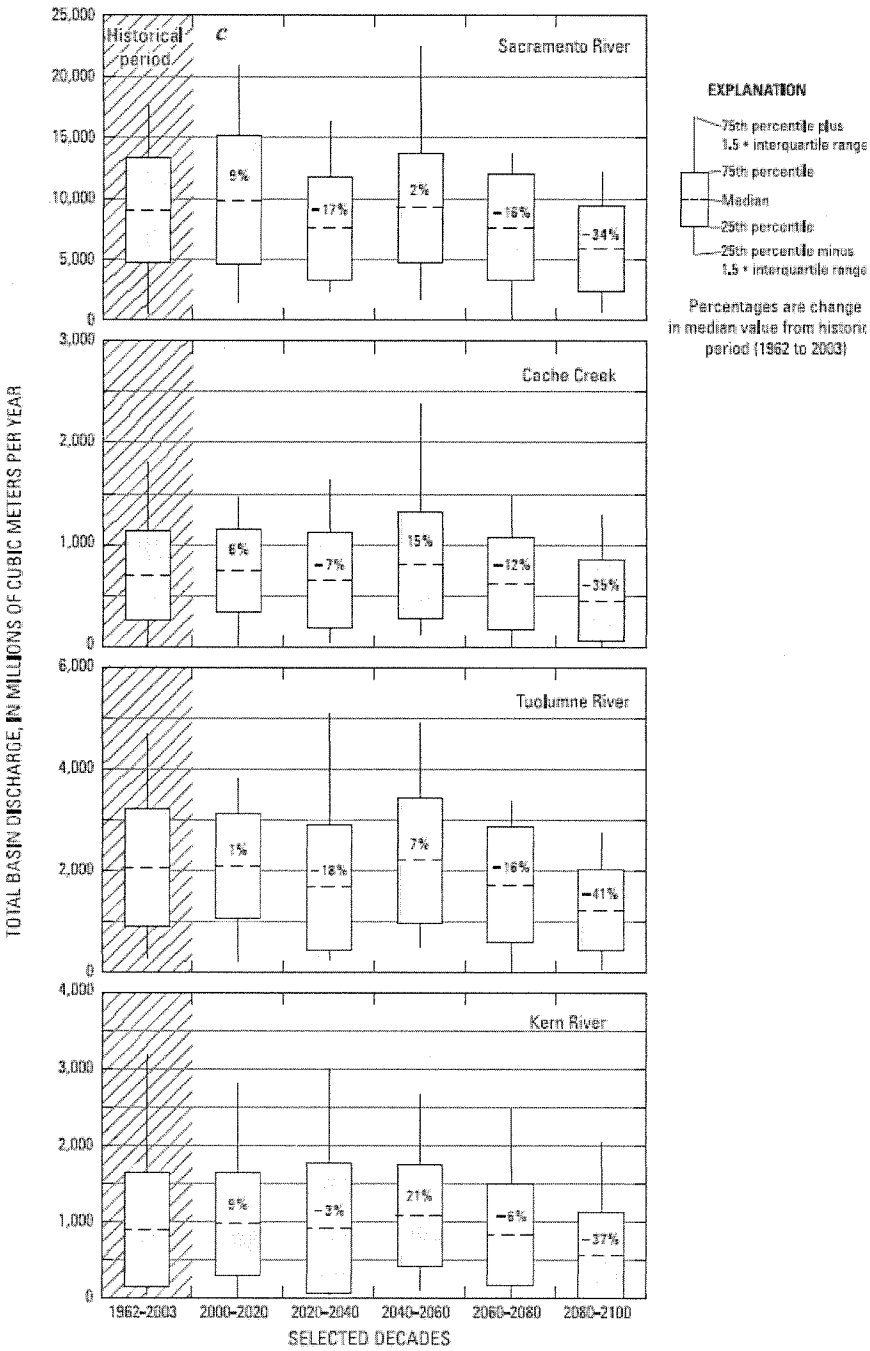


Figure 3. (continued)

The maps below show details of the reduction in river inflows from the USGS modeling. The different basins are color-coded, based on flow. There is a marked reduction in flows in all basins in the Central Valley by the end of the century.

BDCP 1744

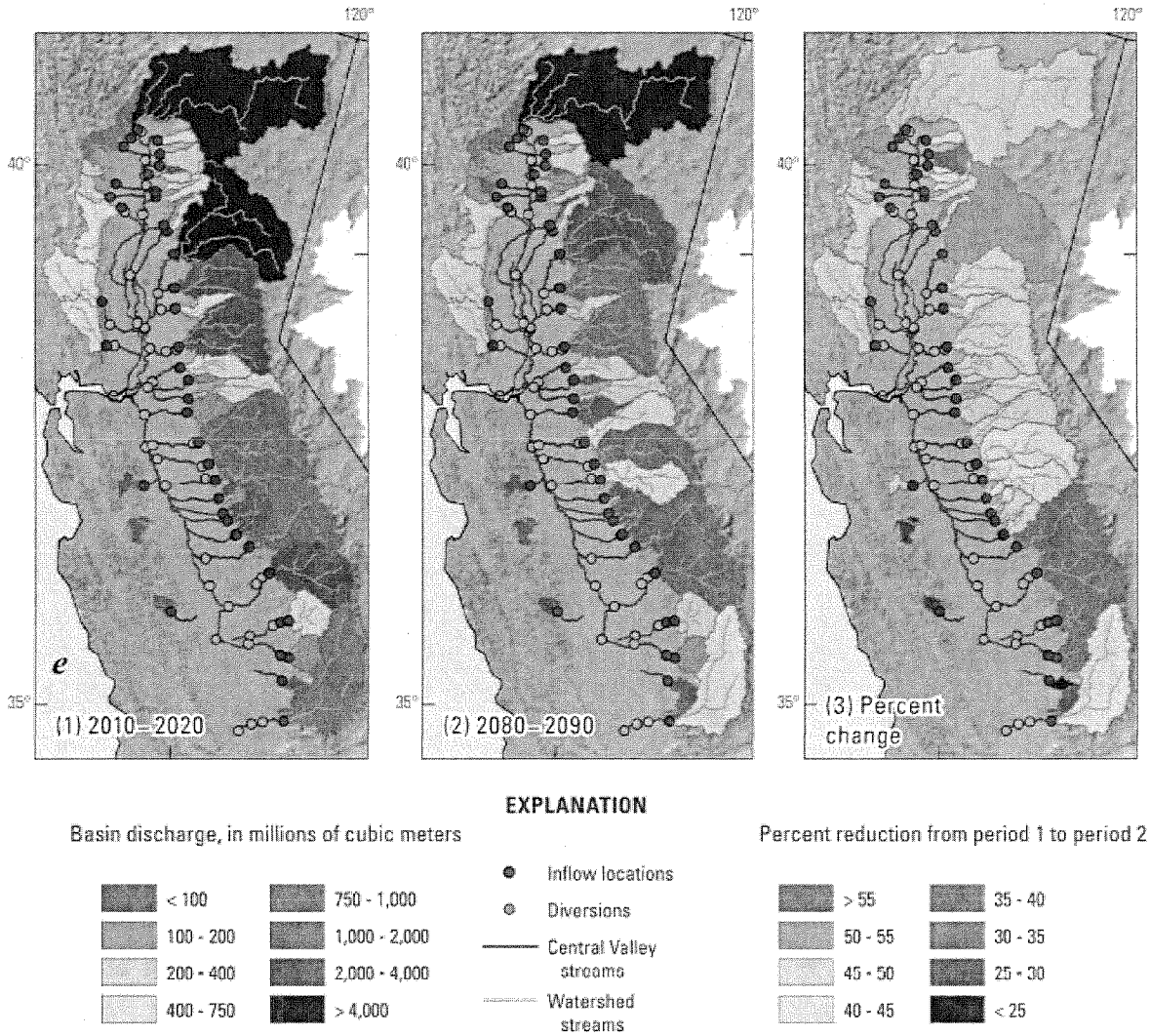


Figure 3. (continued)

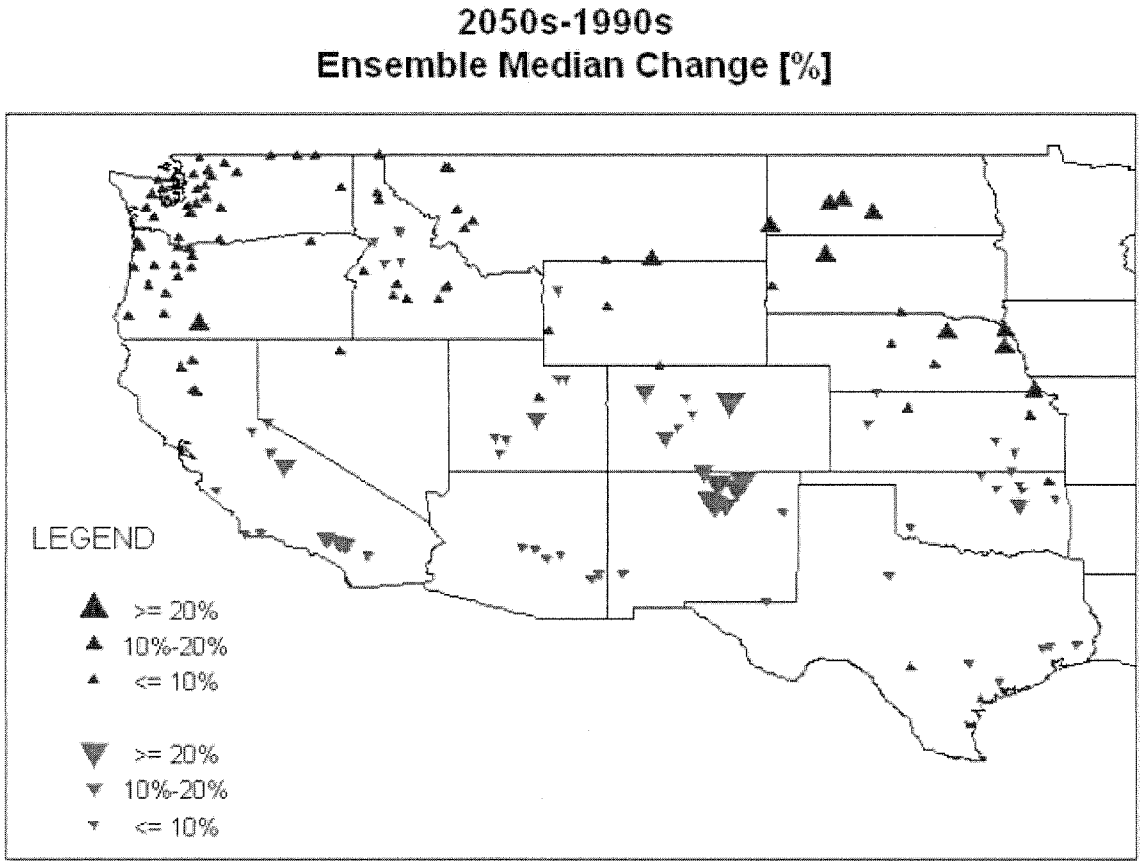
The Central Tendency model for the Bay Delta Conservation Plan may not have even included the GFDL / A2 projection, since the algorithm threw out the driest half of the drier quadrant projections before any further computation. (25% -75% pruning algorithm.)

The algorithm for computing the Central Tendency model is also not adequately described in the BDCP EIR/EIS climate change technical appendix. The model pruning step could have thrown out a large number of high sensitivity, higher greenhouse gas emissions projections which recent may be more likely. The BDCP EIR / EIS climate change modelling technical appendix is inadequate because it contains no information on which models are thrown out under the 25%-75% pruning, and so it is impossible to estimate the effect on the hydrologic modelling.

More on Effects of Model Pruning

The U.S. Bureau of Reclamation for the 2011 Westwide Climate Risk Assessment also used the Lawrence Livermore ensemble of 112 projections for the 2011 Westwide Climate Risk Assessment.[8] The Westwide Climate Risk Assessment also used a median of the entire ensemble. This approach was similar to the BDCP "Central Tendency" model. However, the Bureau modellers used less severe pruning of the model space prior to taking the median. The Bureau models only tossed out the 10% outlying models, rather than the 25% outlying models.

The results show significant projected drying in Southern California and the Central Sierras by mid-century, as well as drying across the Southwest. By the 2070s, the ensemble median projected drying throughout California.

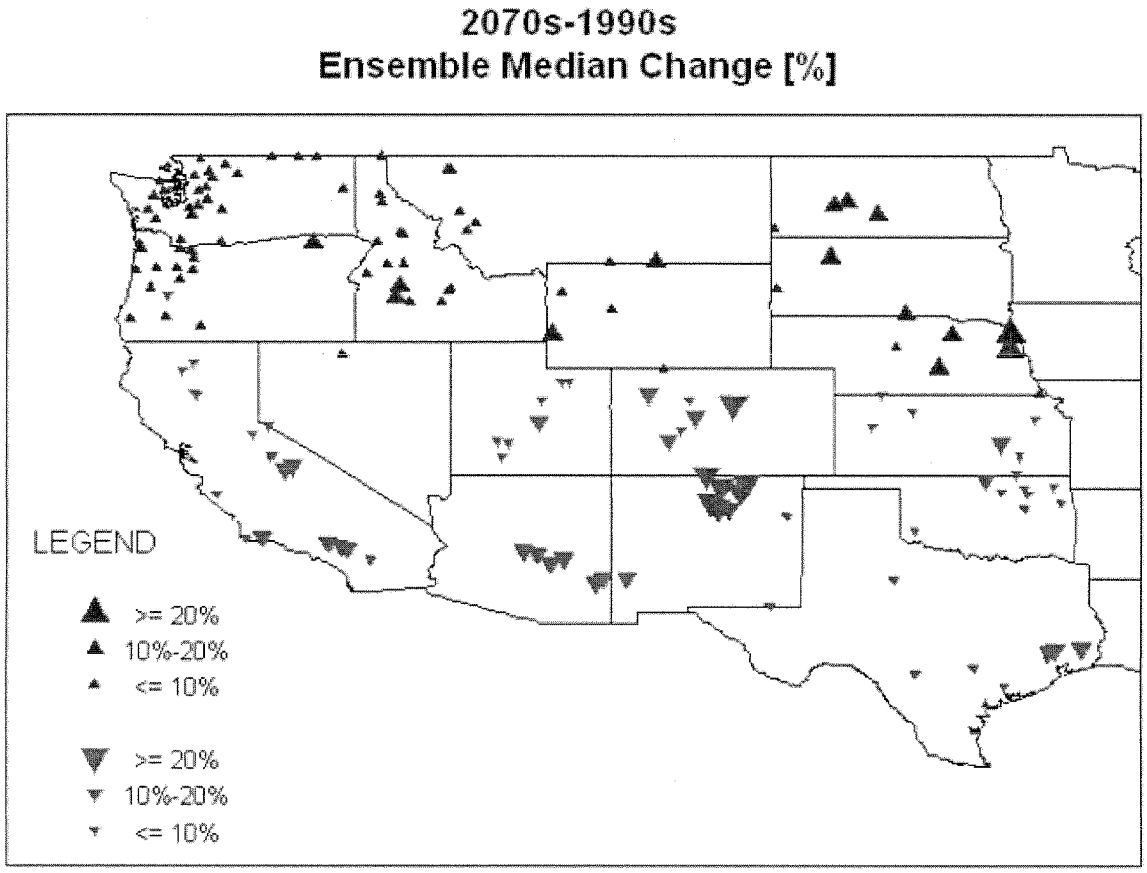


1 Median projected changes in annual precipitation from ensemble of 112 GCM / scenario combinations, mid-century

Source: US Bureau of Reclamation, West-wide Climate Risk Assessment, 2011.

8 West-Wide Climate Risk Assessments: Bias-Corrected and Spatially Downscaled Surface Water Projections, U.S. Department of the Interior Bureau of Reclamation Technical Memorandum No. 86-68210-2011-01, March 2011. Available at http://www.usbr.gov/WaterSMART/docs/west-wide-climate-risk-assessments.pdf

BDCP 1744



2 Median projected changes in annual precipitation from ensemble of 112 GCM / scenario combinations end of century

Source: US Bureau of Reclamation, West-wide Climate Risk Assessment, 2011.

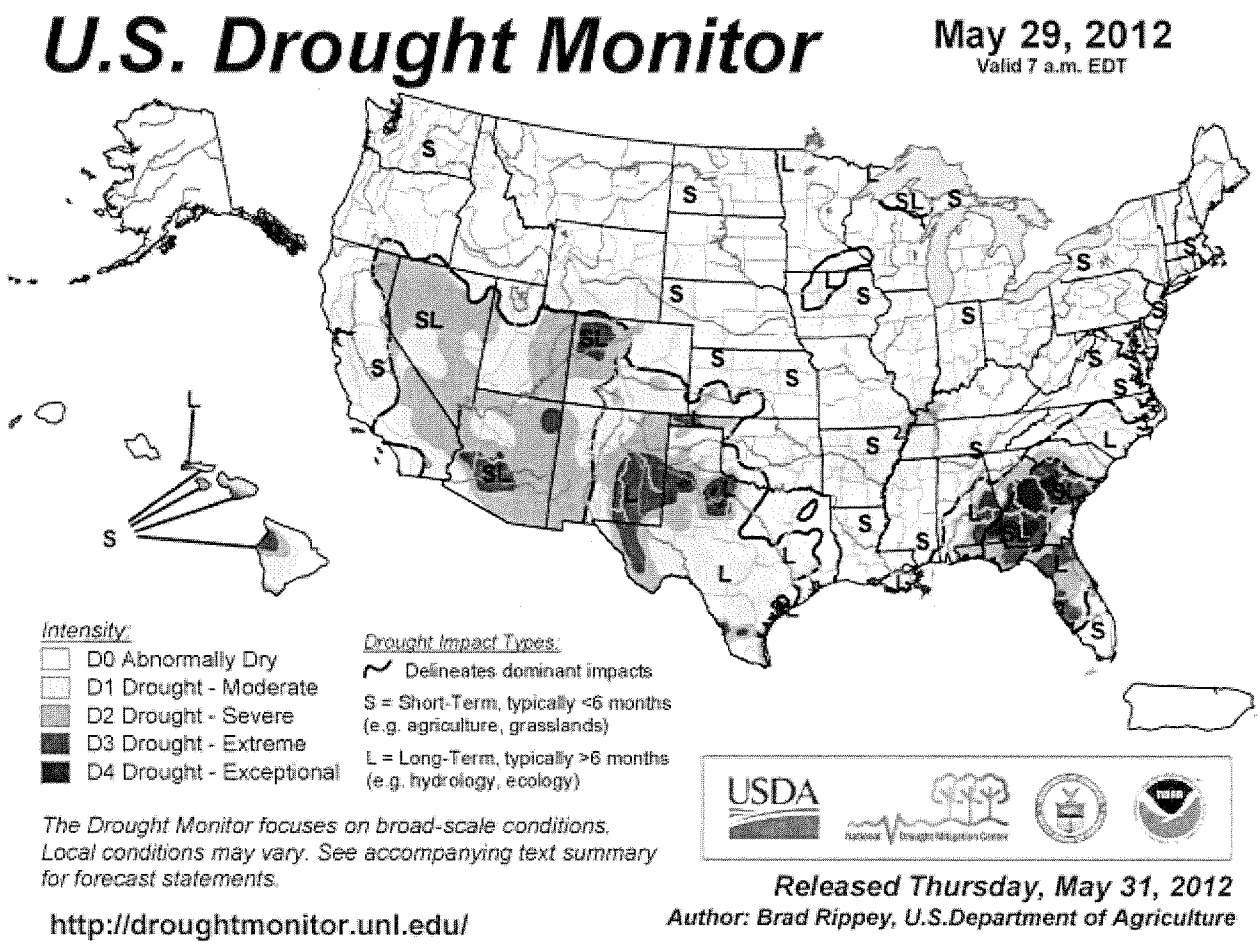
While the BDCP technical appendix includes a table of other modelling approaches, there are no comparisons of actual precipitation projections between the BDCP Central Tendency model and the Bureau model.

The lack of comparison with other modelling means that the BDCP Central Tendency model has little validation. Approval by biologists is not an acceptable validation procedure.

Recent droughts in California and the Southwest

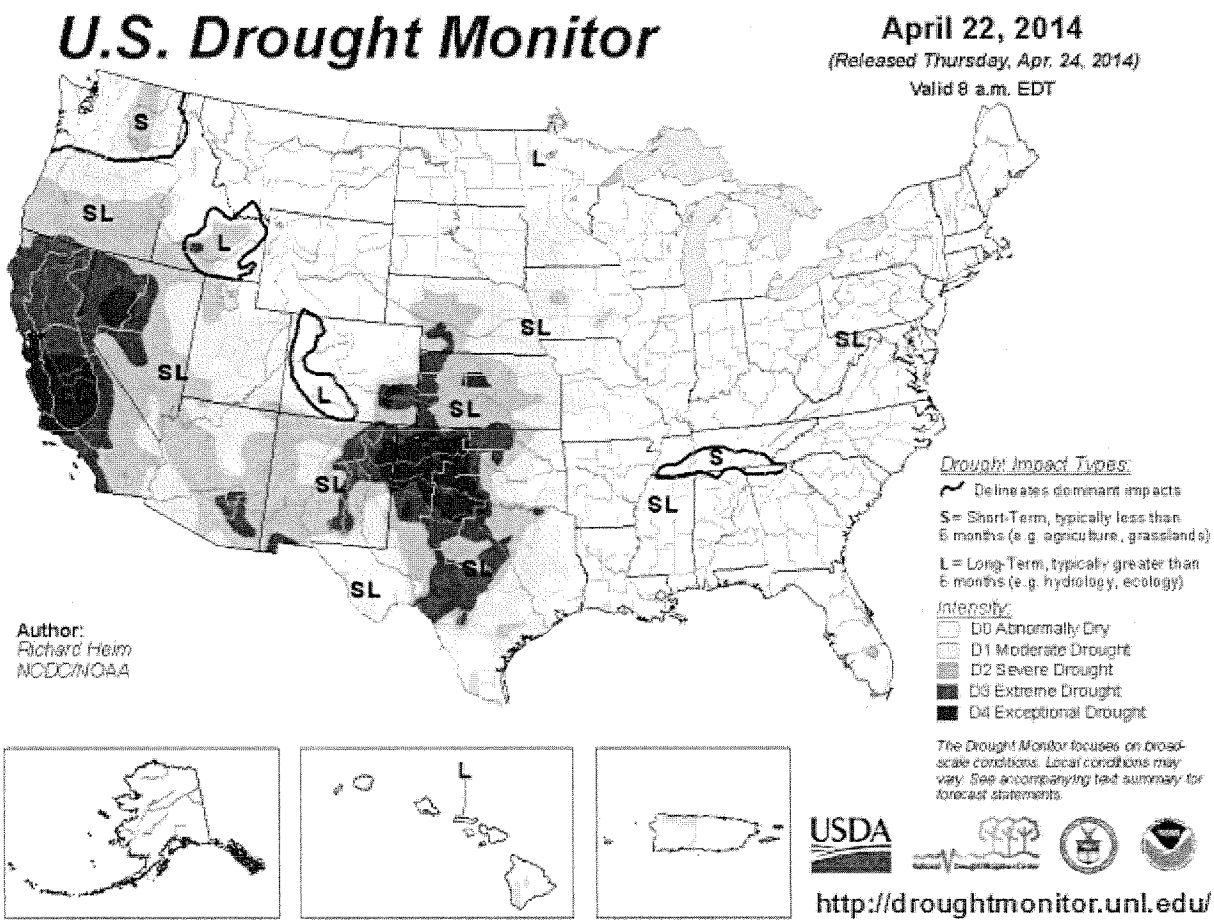
The Bureau maps are striking, when compared with recent droughts in California and the Southwest. The 2013-2014 California water year has been the second driest in recorded history. The California drought followed a record drought in New Mexico in 2012 and in Texas in 2011. The droughts were exceptional

for the combination of record heat and reduced precipitation, and some for unprecedented length.



Source: US Drought Monitor

BDCP 1744



Source: US Drought Monitor

Richard Seager's climate change team published a study in 2007, "Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America."[9] The study by Seager et. al. was consistent with the recent droughts. The authors pointed out that it is not only precipitation changes that affect runoff, but precipitation minus evapotranspiration. Even if precipitation does not change, runoff can decrease due to increased temperatures and increased evapotranspiration. The BDCP EIR/EIS only discusses potential precipitation shifts in California. For this reason, the sensitivity study is inadequate.

Limitations of downscaling method

9 Model Projections of an Imminent Transition to a More Arid Climate in Southwestern North America, Richard Seager, Mingfang Ting, Isaac Held, et. al., Science, Vol 316 no. 5828 p. 1181-1184, May 25, 2007. Available at http://www.sciencemag.org/content/316/5828/1181.short

The problems with the BDCP climate change modelling are not limited to the method of generating forcing under global climate change model / greenhouse gas projections.

BDCP is using a bias-corrected method of downscaling. The statistical downscaling has a tendency to reproduce the same frequency and severity of droughts as in the historical period. In an early draft of a 2006 report, one of the modelers for DWR commented,

> "...Furthermore, the method of downscaling global climate model information for CalSim-II input only captures the general trends of average rainfall and seasonal shifts in runoff. There is no information included about changes in weather variability. In each of the scenarios, the frequency and length of the droughts remained the same. If climate change influences these underlying weather phenomena, then we are missing important information necessary to determine impacts to CVP and SWP operations. "

Two studies sponsored by the California Climate Change Center in conjunction with the 2009 and 2012 California Climate Change Assessments, show that the limitations of bias correction using the historical water sequence could be significant. Both studies, using completely independent models, projected increased frequency and severity of droughts in California, based on projected changes in runoff. The studies are described below.

.

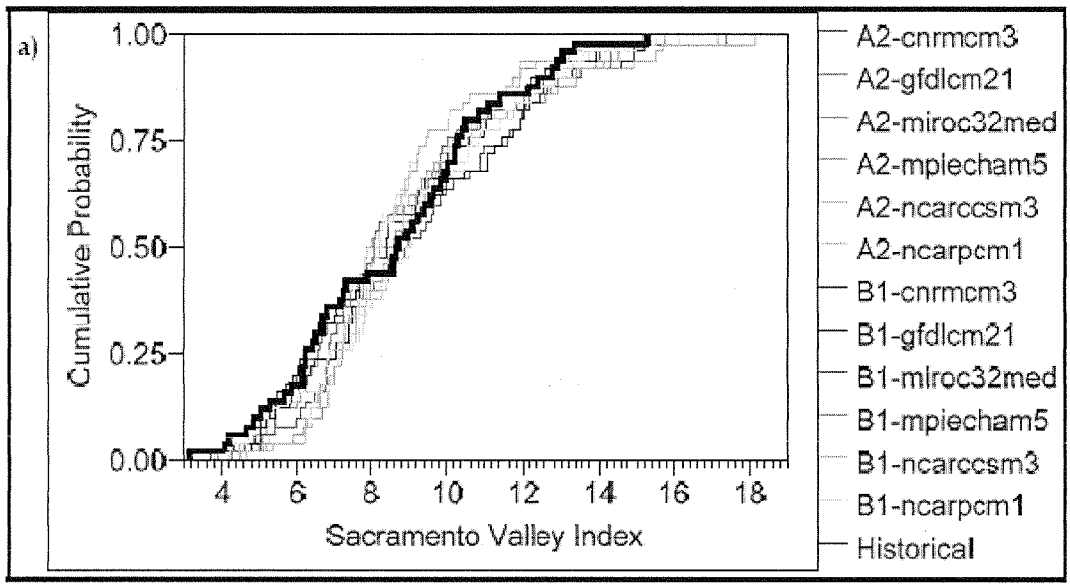
1. Water and Energy Sector Vulnerability to Climate Warming in the Sierra Nevada: Water Year Classification in Non-Stationary Climates, July 31, 2012.

As part of the 3rd California Climate Change Assessment in 2012, the California Climate Change Center released this study by Sarah Null and Josh Viers at UC Davis.

The study used the six global climate models from the second California Climate Assessment, and made projections under the A2 (medium-high) and B1 (low) greenhouse gas emissions scenarios that were used in that assessment. The study also used the same Variable Infiltration Capacity model that DWR used for downscaling in BDCP, with Bias-Corrected Spatial Disaggregation.

The main difference between the non-stationary study and other modeling by the Department of Water Resources, is that the non-stationary study did not correct model outputs to the historical hydrology. Instead, researchers ran the models without climate forcing, and compared the results to the historical hydrology. The graph below shows the cumulative probability of the different models compared with the observed 1951-2000 hydrology.

BDCP 1744



ANOVA and t-tests using a 95 percent confidence level found that results were not significantly different from historic hydrology. The graph and the statistical tests show that the models do a good job of capturing historic hydrology. This was one of the criteria for model selection for by the California Climate Assessment team.[10]

The results of the models under the A2 and B1 scenarios show a marked shift in climate. Most of the models show major increases in dry and critically dry years, and decreases in wet and below-normal years. The histograms on the next page shows the changes in the frequency of water year types for the Sacramento Valley Index.

All of the models show a significant increase in dry and critically dry years by the latter half of the century, with a corresponding decrease in wet and above normal years. Many of the models also show an increase in dry and critically dry years in the first half.

The table below shows water year types, averaged over all six GCM models, for the two scenarios.

10 Climate Change Scenarios And Sea Level Rise Estimates for the California 2009 Climate Change Scenarios Assessment, A Paper From the California Climate Change Center. Cayan et. al. Incorporated by reference.

Table 6. Percentage of Years in Each Water Type by Modeled Time Period and Emissions Scenario (italicized values are percent change from historical period)

	SVI					
	1951-2000 (%)		2001-2050 (%)		2051-2099 (%)	
	A2	B1	A2	B1	A2	B1
Critical	8.7	8.3	11.3 *(2.7)*	6.7 *(-1.7)*	18.4 *(9.7)*	14.0 *(5.6)*
Dry	7.7	10.0	12.0 *(4.3)*	15.7 *(5.7)*	19.4 *(11.7)*	20.1 *(10.1)*
Below Normal	23.3	21.3	23.3 *(0.0)*	17.3 *(-4.0)*	18.7 *(-4.6)*	19.4 *(-1.9)*
Above Normal	21.0	22.7	16.7 *(-4.3)*	20.7 *(-2.0)*	12.9 *(-8.1)*	18.4 *(-4.3)*
Wet	39.3	37.7	36.7 *(-2.7)*	39.7 *(2.0)*	30.6 *(-8.7)*	28.2 *(-9.4)*

The medium-high emissions scenario (A2) projections showed dry and critically dry years in the Sacramento Valley increasing to 23% of all years between 2000 and 2050, and to 38% of all years in the latter half of the century. Under this scenario, the incidence of dry and critically dry years would more than double.

The projections also showed a decrease in wet years.

In the Sacramento Valley, the A2 projections showed wet and above normal years decreased to 53% of all years in 2000-2050, and to 41.5% of years by the latter half of the century.

The lower greenhouse gas emissions scenario (B1) showed similar but less dramatic shifts.

BDCP 1744

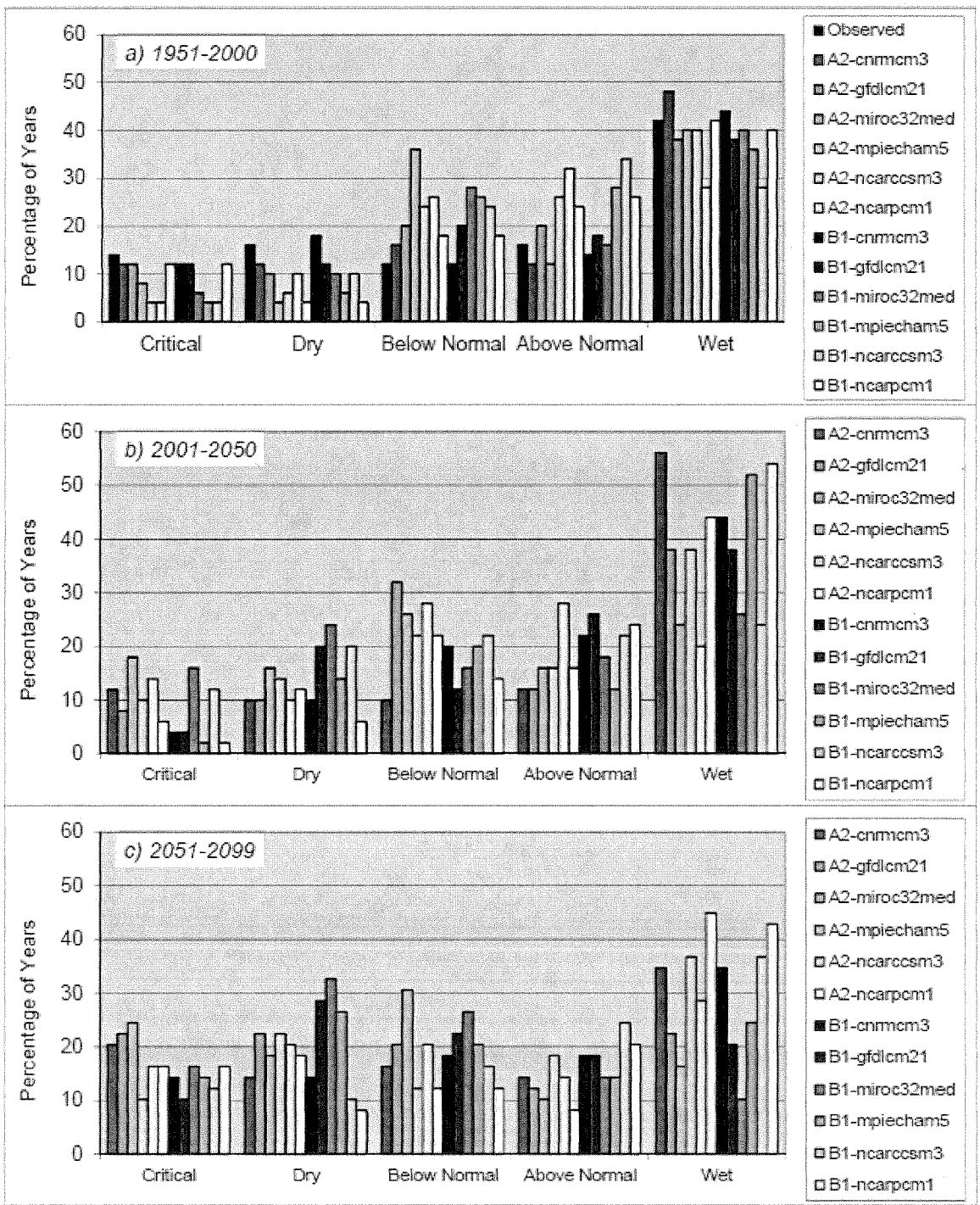
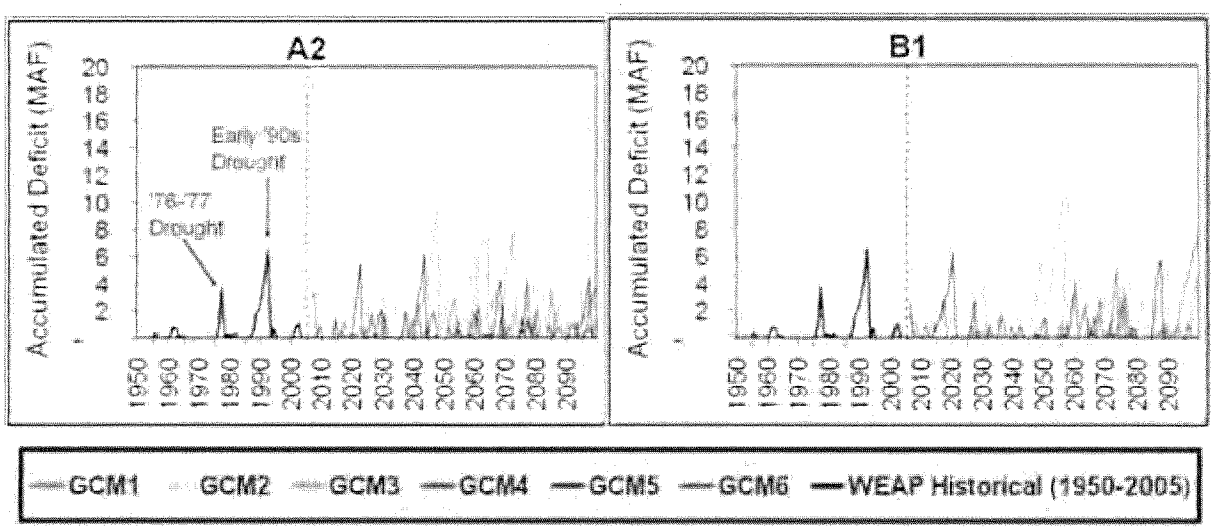


Figure 6. SVI Relative Frequency Histograms for (a) 1951-2000, (b) 2001-2050, and (c) 2051-2099

2. Climate Change Impacts on Water Supply and Agricultural Water Management In California's Western San Joaquin Valley, and Potential Adaptation Strategies, August 2009.[11]

This study, done by Brian Joyce, Vishal Mehta and David Purkey from the U.S. Center for the Stockholm Environmental Institute, Larry Dale from Lawrence Berkeley National Lab, and Michael Hanemann from the California Climate Center, was released as part of the second California Climate Change Assessment in 2009, and used the same set of twelve global climate models / climate change scenarios. The study used an application of the Water Evaluation and Planning (WEAP) system developed for the Sacramento River basin and Sacramento Delta. WEAP is an integrated rainfall / runoff and water resources modeling framework that was developed in Stockholm, and has been used for water resources planning around the world. WEAP has also been used in climate modeling for the 2009 California Water Plan, and is being used in preparing the 2013 California Water Plan.

WEAP has the advantage that it does not rely on perturbation of historical precipitation or runoff patterns for projections. This allows the model to capture major shifts in historical patterns. The study found marked increases in the frequency of droughts, and under the A2 scenario, a mega-drought towards the end of the century. The graph below shows the results for different models.



In sum, two recent studies using two different methods of downscaling showed major changes in

11 Climate Change Impacts on Water Supplies and Agricultural Water Management in the Western San Joaquin Valley and Possible Adaptation Strategies, Brian A. Joyce, Vishal K. Mehta, David R. Purkey, Larry L. Dale, and Michael Hanemann. California Climate Change Center, August 2009. Available at http://www.energy.ca.gov/2009publications/CEC-500-2009-051/CEC-500-2009-051-F.PDF Incorporated by reference.

the structure of droughts in California. Both indicated an increase in the frequency and severity of droughts.

The BDCP EIR/EIS should specifically address the possibility of increases in drought frequency and severity. The BDCP EIR/EIS also needs to include more information on projected reservoir levels, export levels, river flows, and Delta outflows in repeats of the 1929-34 drought, as well as the 1987-92 drought.

Currently projected tables of projected reservoir levels, river flows, and Delta outflows only show exceedances for an individual year.

Early BDCP modelling and problems with reservoirs

In 2010, Francis Chung, head of the DWR climate change modelling team, presented results on modeling for BDCP at the California Water and Environmental Modelling Forum at Asilomar.[12]

Chung showed results from a range of models, including the proposed operations under the "Preferred Project" with a 50% probability of excedance of 5.5 MAF/year SWP and CVP exports. The models showed that there was a significant increase in months with dead storage in North of Delta reservoirs over current conditions. The Table is reproduced below.

Numbers of Dead Storage Months for North-of-Delta Reservoirs from Climate Change

Scenario	Trinity	Shasta	Oroville	Folsom	Total
D1641	3	6	0	6	15
(+) Wanger with CC	9	24	21	25	79
(+) BDCP with CC	12	21	10	39	82
(+) NODOS with CC	15	24	17	42	98
(+) SOD GW Bank with CC	17	27	23	46	113

Chung concluded:

12 Francis Chung, An Assessment of CVP-SWP Performance Under Alternative Delta Regulations, Infrastructure and Climate Change Scenarios Regarding CAlSiM II, California Water and Environmental Modelling Forum, Feb 22, 2010. Incorporated by reference. Available at http://www.cwemf.org/Asilomar/FrancisChungCWEMFPres.pdf

"Results appear to be unsustainable. The relative frequency of dead storage conditions in upstream reservoirs indicate that significantly modified operations will be required with climate changed conditions."

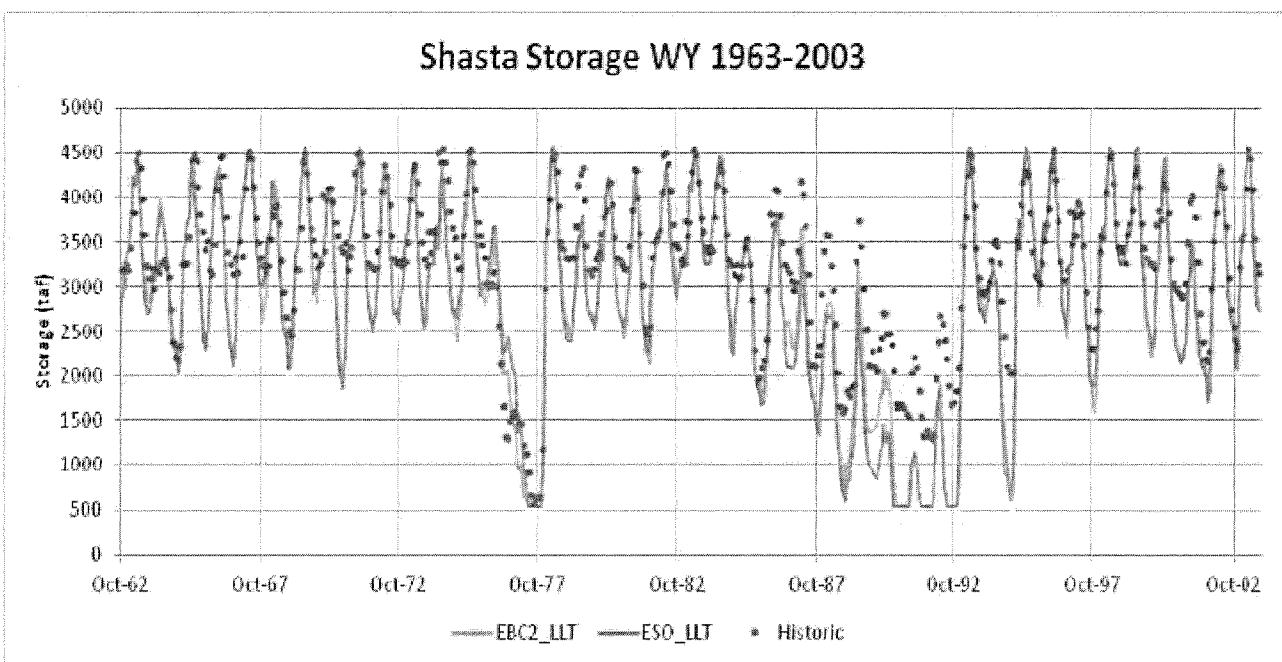
and went on to say

"We recommend that DWR develop a reoperation strategy for the CVP and SWP that includes modified operations scenarios to mitigate the effects of dead storage during climate change conditions prior to release of any studies (either these or BDCP) that include climate change."

This was not done.

Effects on Reservoirs

The proposed reservoir operations under Bay Delta Conservation Plan increase water supply conflicts in prolonged droughts. The reason is that major Sacramento reservoirs are essentially exhausted by the third year of drought.



Graph from BDCP March 2013 Appendix 5.C A., showing water levels in Shasta Reservoir under BDCP Evaluated Starting Operations (ESO), compared with Historic levels (red), Late Long Term (2060)

Brown is Existing Biological Conditions (no tunnel), but with high levels of exports

Simulations show that, by the time there is 18 inches of sea level rise, the proposed operations under the Bay Delta Conservation Plan would drain Shasta and Trinity Reservoirs to minimum pool for many months in a multi-year drought. This would devastate water supplies for Northern California communities, and dry up rivers from Humboldt County south to the Delta, with devastating impacts on fish populations.

The Bay Delta Conservation Plan technical appendix 5.C A does not show sequences of reservoir levels or river levels during multi-year droughts, and so does not adequately disclose potential impacts of the project on the Sacramento Valley.

Reservoir storage constraints and CALSIM code

The BDCP EIR/EIS states that reservoir storage levels under BDCP would not be substantially increased over the No Action alternative. However, the reservoir storage constraints in the CALSIM No Action alternative model appears to have been substantially altered. These alterations must be discussed in the Climate Change technical appendix. The new model also needs to be validated.

In particular, the projected upstream reservoir operations during droughts appear to be inconsistent with actual operations of the reservoirs. The reservoirs were operated conservatively in the 2013-2014 to protect storage, not drained to minimum pool.

Salinity intrusion

Although the Bay Delta Conservation Plan is presented as a solution to sea level rise in the Delta, there are no simulations of the operations of the proposed project under higher levels of sea level rise, nor under conditions of levee failure. Nor do the proposed habitat restoration plans take into account the potential salinity intrusion.

Recent modelling by the Army Corps of Engineers[13] shows the potential extent of salinity intrusion in the Delta under higher sea level rise scenarios. The maps show high levels of salinity going up the Sacramento River as far as Rio Vista (see below).

This salinity intrusion is without increased diversions on the Sacramento River. Such diversions would likely pull salt water up to the vicinity of the proposed tunnel intakes.

In addition, the impacts of salinity intrusion from proposed tunnel diversions and multi-year droughts are inadequately analyzed. Again, the diversions could pull salt water up to the vicinity of the proposed tunnel intakes.

The BDCP EIR/EIS sensitivity analysis does not look at an adequate number of spatial locations to estimate the effects of sea level rise and increased diversions on the Sacramento River.

---

13 Lu, S., P. Craig, C. Wallen, Z. Liu,A. Stoddard, W. McAnnally and E. Maak
Dynamic Solutions modelling for Army Corps of Engineers Presented at 2012 CWEMF Forum. Incorporated by reference.

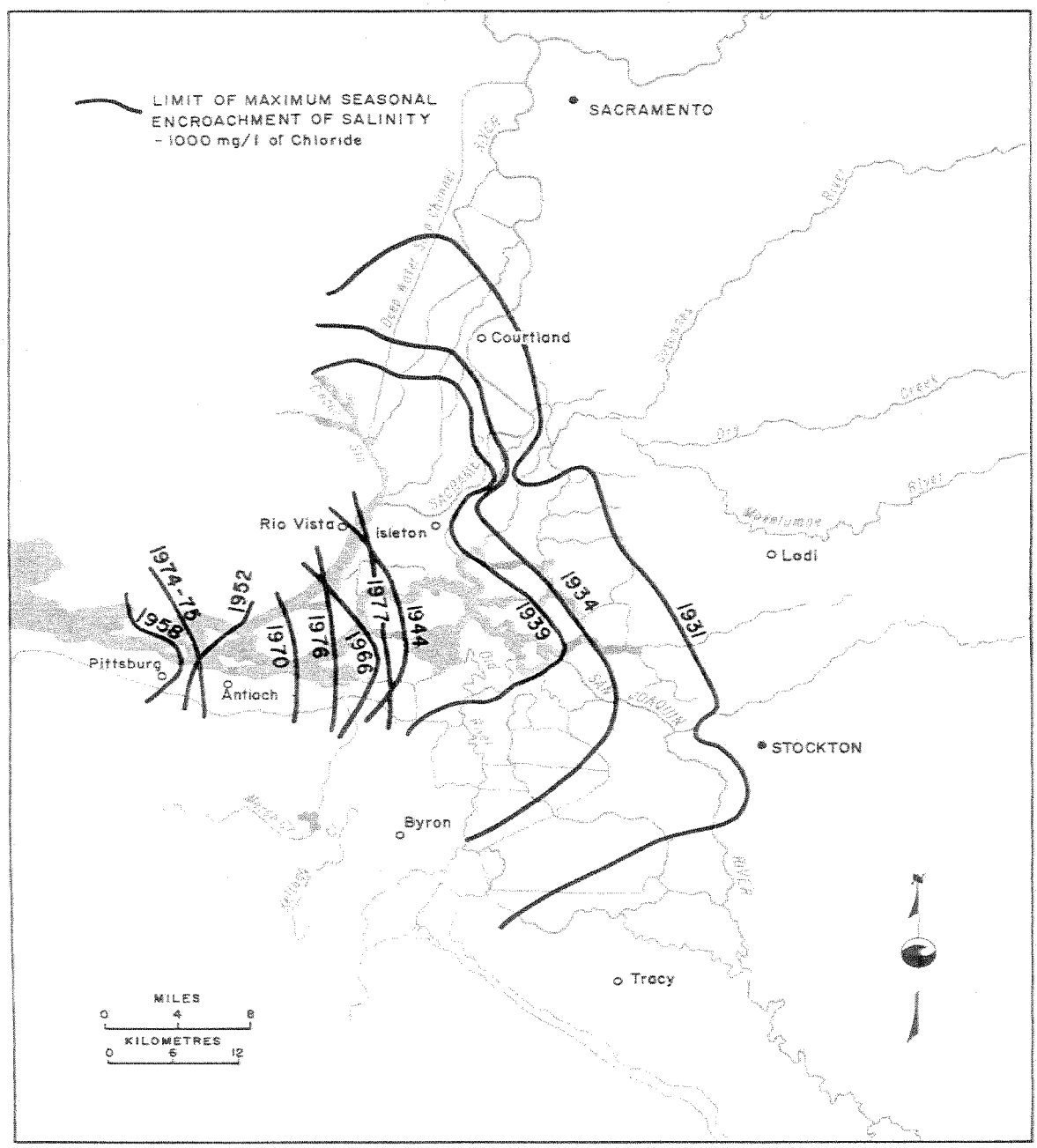
BDCP 1744

Salinity intrusion under high levels of sea level rise (1.68 m), by 2100

From Lu, S., P. Craig, C. Wallen, Z. Liu,A. Stoddard, W. McAnnally and E. Maak
Dynamic Solutions modelling for Army Corps of Engineers
Presented at 2012 CWEMF Forum

BDCP 1744

Figure 16.
SALT-WATER INTRUSION IN THE SACRAMENTO-SAN JOAQUIN DELTA



Salinity intrusion during historical droughts

From The 1976-77 California Drought: A Review, Department of Water Resources, 1978 incorporated by reference

Appendix A

Historical droughts in the Sacramento River basin

Sacramento River Multi-year Droughts since 1906		
Years	Length	% of avg flow
2007-2009	3	62%
2001-2002	2	68%
1987-1992	6	56%
1976-1977	2	37%
1959-1961	3	69%
1947-1950	4	73%
1929-1935	6	60%
1923-1926	4	65%
1918-1920	3	67%
1912-1913	2	68%

Source: California Water Research

Since records started in 1906, there have been two severe, long-term droughts in the Sacramento River basin. The most recent was the six year drought from 1987 to 1992, when the river flow was a little over half of normal.

Some droughts can be significantly longer, or can occur in clusters. The dust bowl era from 1923 to 1934 saw two prolonged droughts back to back, with only one normal and one wet year in between. The twelve year average flow was 26% below normal.

Pre-1906 droughts in the Sacramento Valley

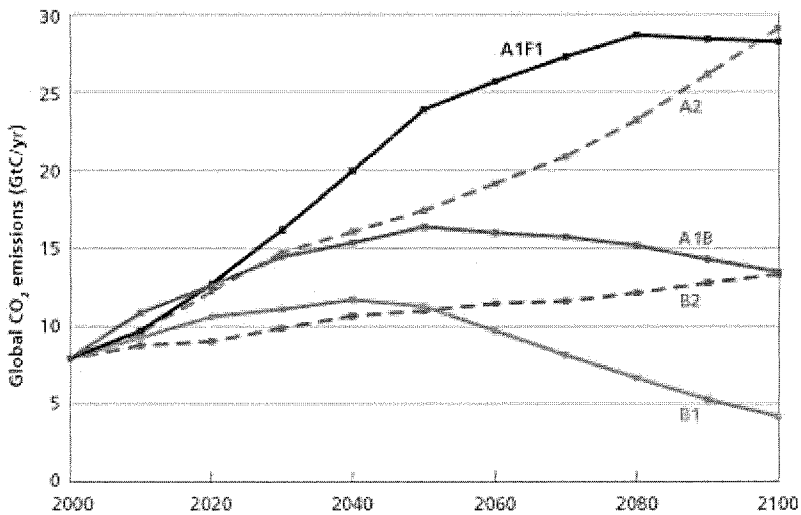
David Meko at the University of Arizona estimated Sacramento River flows from tree ring cores, back to 901 A.D. The reconstructed flows show 23 droughts in the last 1100 years with a six year average flow below 80% of normal. So we would expect about two droughts per century that are six years or longer. The reconstructed flows also show seven mega-droughts that have lasted for 12 years or more in the last 1100 years. So we'd expect one mega-drought of 12 years or longer every 150 years.

Tree ring data from many areas in the Western U.S. show that some centuries have been far drier than average. The Medieval mega-drought was a series of prolonged dry periods between 1100 and 1400. Research has linked the Medieval mega-drought to a warmer climate from increased solar activity.

Appendix B

Climate Change Scenarios and Predicted Hydrology

The graph below shows C02 emissions under the different scenarios from the IPCC Special Report on Emissions Scenarios.



The A2 scenario is a medium-high emissions scenario. It is was one of two emissions scenarios chosen for modelling for California's 2009 Climate Adaptation Strategy, as well as modeling for the 2008 OCAP assessment, and modelling by the Stockholm Environmental Institute in collaboration with researchers at UC Berkeley and the California Climate Change Center.[14] The A2 scenario has continuously increasing population, and regionally oriented economic development.

The A2 scenario has slower growth in C02 emissions than the A1 scenarios. It appears to be less likely than the A1FI scenario under the current economic and political trajectory, but much more likely than the environmentally friendly B1 and B2 scenarios, described below. In California, most global climate models run with the A2 scenarios show frequent droughts in mid-century, and reductions in precipitation, but some show precipitation increase.

The other scenario used in the California Climate Adaption Strategy was the B1 scenario, which has decreasing emissions after mid-century. The B1 scenario assumes rapid changes towards resource efficient technologies, and population declining after 2050. Some of the B1 scenarios show modest drying, others show a modestly wetter climate.

In addition to the A2 and B1 scenarios, two other scenarios are commonly used in climate

14 D.R. Purkey & B. Joyce et. al., Robust analysis of future climate change impacts on water for agriculture and other sectors: a case study in the Sacramento Valley, Climate Change 87 (Suppl. 1) S109-S122 Incorporated by reference. Available at http://meteora.ucsd.edu/cap/pdffiles/Purkey_sacvalley_jan2008.pdf.

modeling, and were included in the Lawrence Livermore ensemble of models used in BDCP.

The A1Fi scenario is the scenario with the highest growth in emissions. While it was not included in the California Climate Adaptation Strategy modelling, it has been used by researchers in modelling impacts on water supply in California because it is closest to the growth in GHG emissions from 2000-2007. The A1Fi scenario assumes rapid economic growth, with an emphasis on fossil fuels. A1Fi was used in modelling by David Purkey of the Stockholm Environmental Institute, cited above. [15]

Modelling using A1FI shows strong warming and drying. The Stockhom Environmental Insitute models used by David Purkey showed frequent droughts in mid-century, on the order of the 91-92 drought, as well as marked reductions in precipitation.

The B2 scenario was not included in the California Climate Change modelling. It assumes local economic growth and slowly increasing population, but has been used in ensemble modeling by the Department of Water Resources. The B2 model is not in agreement with current population growth.

15 Ibid.

From: James Hobbs <hobbsja@gmail.com>
Sent: Tuesday, July 29, 2014 11:41 PM
To: BDCP.Comments@noaa.gov
Subject: Comment Letter from Dr. James Hobbs
Attachments: Dr. Hobbs BDCP Comment Letter.docx

To Ryan Wulff

Please find attached a letter that I have crafted to address issues in the BDCP draft plan that I feel need to be considered before moving forward with the conservation plan. These comments summarize the opinions of many of my colleagues, but the letter represents my opinions only and does not represent the position of the University of California, Davis.

If you have any responses to my letter please feel free to contact me personally.

Thank you for your hard work and dedication to this very important endeavor.

Sincerely

Jim.

--
James A. Hobbs PhD
Researcher Scientist
Interdisciplinary Center for Inductively Coupled Plasma Mass Spectrometry
1 Shields Ave
Davis Ca. 95616
707-480-0188

Mailing address:
University of California, Davis
ICP-MS lab (Attn: Joel Commisso)
Plant Science Dept., Mail Stop 1
PES Building, Room 1210
Davis, CA 95616 USA

Better science through fishing

BDCP 1745

July 29, 2014

To Ryan Wulff, NMFS
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814:

My name is Dr. James Hobbs. I am an assistant research scientist at the University of California, Davis in the department of Wildlife, Fish and Conservation Biology. I have worked in the San Francisco Bay-Delta for the last 15 years, and having been a graduate student of Dr. Peter Moyle, a part of a long history of conservation biologists studying native fishes in the delta. I have published several peer reviewed professional research articles addressing life history and conservation issues with Delta Smelt and Longfin Smelt, and continue to work with these species as well as the Sacramento Splittail and Spring Run Chinook Salmon. I serve on several Interagency Ecological Program project work teams, including the Estuary Ecology Team, the Resident Fishes Team and the new Tidal Marsh Restoration Team, and the South Bay Salt Pond Restoration Adaptive Management Team. I have been a leader in the San Francisco Bay-Delta research community, a former president of the California-Nevada Chapter of the American Fisheries Society and most importantly a citizen of California, deeply concerned for the health of the delta and estuary, and the native species it supports. The comments in this letter represent my opinions and are in line with the opinions of many of my colleagues. I am the sole author of this letter and the opinions do not represent the University of California, Davis.

The BDCP is an extremely important ecosystem restoration and water supply initiative. The BDCP is intended "to protect dozens of species of fish and wildlife, while permitting the reliable operation of California's two biggest water delivery projects[1]," which store and deliver water in the Central Valley and the Sacramento-San Joaquin Delta. The BDCP proposes major new water supply infrastructure and operations with a suite of multi-faceted activities or "conservation measures" including extensive habitat restoration in the Delta.

I concur with the sentiment of the 2011 National Academy of Sciences (NAS) review of the draft BDCP, which noted the BDCP is a "conservation plan of great importance, scope, and difficulty." The BDCP has potential to help California meaningfully manage conflicting resource goals. However, it also has ecological risks that may require intensive adaptive management outcomes. The BDCP proponents and the advising fish and wildlife agencies have a crucial and daunting task to find an economically and ecologically meaningful balance between competing water and land uses in the Delta and contributing watershed, as described in Section 1.7 of the draft EIR/S.

The preferred alternative, Alternative 4, is described in detail in the BDCP Habitat Conservation Plan documentation and is evaluated in the EIR/S against eight other alternatives.

---

[1] http://baydeltaconservationplan.com/Home.aspx

In the interest of time, my comments focus on three key themes:

1. Develop a fully vetted adaptive management plan with a commitment to scientific investigations and strong leadership to implement the changes to the plan based on scientific data.
2. Ensure that BDCP has sufficient measures to adequately evaluate conservation and adaptive management actions to conserve and restore species.
3. Investment in the infrastructure to conduct scientific monitoring of tidal marsh restoration.

1. Adaptive Management.

Adaptive management of an ecosystem or components of an ecosystem implies the systematic manipulation of that system and monitoring of its response(s) to determine whether the manipulations are meeting, or can meet, the stated goals or objectives (Walters and Hilborn 1978). If experimental manipulations fail, then another one is designed within the framework of the conceptual model and the process is restarted. If the initial conceptual model is found to be invalid, then the conceptual model is updated and new management strategies are implemented which are consistent with the newer information.

There has been a long history of significant investments in scientific studies in the Bay-Delta and its watershed. This stems from California's large economy and comparatively high interest in environmental quality. There is also no question that water resources in California are closely managed now and will continue to be into the future (*e.g.,* Lund *et al.* 2007). I believe that a commitment to science based adaptive management is a requisite component of Bay-Delta conservation.

I highly recommend that the final environmental documentation have a fully developed adaptive management plan, with a strong commitment to scientific investigations to support the adaptive management plan, that can fully support the conservation of covered species, recreational and commercial fisheries, and establishes a leadership that can evaluate scientific results and implement difficult decisions based on hard data.

2. Adequate Measures of Fish Population Responses to Adaptive Management Decisions

I recommend development of definable, measurable and relevant metrics of fish population attributes to guide adaptive management of freshwater flow/exports and tidal marsh restoration efforts. The metrics should measure key vital rates and be linked to management actions.

Example questions for a "proof of concept" adaptive management plan should include:

- How much change in survival of each salmonid stock can each of the 22 proposed conservation measures make?
- How much change in the survival of each salmonid stock can the different Conservation Measure 1 operational scenarios evaluated in the EIR/S make?
- What monitoring design and decision rules will enable the plan's implementers to optimize the balance between water supply and salmon survival?

- Who will turn the scientific data into synthetic, management-relevant information to feed into monitoring design and ultimately compel the enforcement of the decision rules?

Questions such as these together with clear objective and defined metrics are vital to an effective plan to protect and restore fish species.

3. Effectiveness of Tidal Marsh Restoration

I support the proposed restoration of semblances of the historical habitats in the Plan Area and is confident that in most cases, these habitats would contribute to fishery production. However, uncertainties remain regarding the degree to which tidal marsh restoration can serve as an adaptive management tool to support covered species and the estuarine food web, and generally protect the public resources of the estuary in the face of freshwater exports. Moreover, for tidal marsh restoration to be effective, a significant investment in adaptive management is required, including the targeted studies and monitoring necessary to reduce uncertainty and evaluate performance. Current scientific monitoring (*e.g.*, fish monitoring in open water habitats, bays-channels and sloughs) is not well equipped to monitor and evaluate restored tidal marsh habitats. The BDCP should establish a plan, with long term financial commitment to develop a new scientific monitoring program to evaluate tidal marsh restoration (*e.g.,* ensure that monitoring of habitat and vegetation are appropriate for spawning and rearing of native fishes).

I appreciate the opportunity to provide review, comments, and perspectives on BDCP. Please feel free to contact me with any questions or any additional information. Finally, thank you for your commitment to restoring the health of Bay-Delta.

Sincerely,

Dr. James A. Hobbs
Assistant Research Scientist
Wildlife, Fish and Conservation Biology
University of California, Davis.

Lund, J., Hanak, E., Fleenor, W., Howitt, R., Mount, J., & Moyle, P. (2007). *Envisioning futures for the Sacramento-San Joaquin delta.* San Francisco: Public Policy Institute of California.

Walters, C. J., & Hilborn, R. (1978). Ecological optimization and adaptive management. *Annual review of Ecology and Systematics* 9:157-188.

From: Emily Pappalardo <empappa@gmail.com>
Sent: Tuesday, July 29, 2014 11:01 PM
To: bdcp.comments@noaa.gov
Subject: BDCP EIR/EIS comments Emily Pappalardo
Attachments: BDCP EIR-EIS comments EMILY PAPPALARDO.pdf

BDCP 1746

July 22, 2014

National Marine Fisheries Service
Ryan Wulff
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814

Subject: DRAFT BDCP and BDCP EIR/EIS comments

Upon review of the Draft BDCP and the Draft BDCP EIR/EIS, I have determined that the analysis of environmental impacts of the Bay Delta Conservation Plan is incomplete.

Overview

The BDCP EIR/EIS provides a general overview and general impacts of the BDCP on the Delta. The lack of specific information regarding the location and secured funding sources for the Conservation Measures (CM) besides CM 1, led to the conclusion that all of the adverse impacts had not been assessed. As a Habitat Conservation Plan (HCP) and a Natural Community Conservation Plan (NCCP), the BDCP does not fully resolve the issues of a degraded Delta environment. CM 1 will have significant adverse impacts on the Delta environmentally and economically. It requires the implementation of the rest of the CMs along with the suggested mitigation measures to achieve the co-equal goals. This is also contingent upon if the other Conservation Measures actually achieve their intended function.

Funding for the CMs beyond CM 1 is expected to come largely from the water bond on the 2014 statewide ballot (p. 8-64). This bond measure has the potential of not passing, negating a substantial amount of funding for the remaining 21 Conservation Measures. The project is not funded co-equally and overall, is not co-equal. It is clear water supply reliability trumps ecosystem restoration when only considering secured funding sources. If CM 1 is the only conservation measure implemented the BDCP cannot be considered an HCP or NCCP because it does nothing to conserve any natural communities in the Delta.

When reviewing the document, implementation and location of Conservation Measures 2-22 are explained in superficially. Specifically, the CMs that propose habitat restoration, CM 2-11, and those that have physical components to guard against other stressors, CM 16 to 18, and 21 do not have specific locations within the Delta. Multiple areas in the BDCP EIR/EIS state that locations for these activities have not been selected and thus the effects are unknown. This is unacceptable for an EIR/EIS. These CMs will remove a considerable amount land within the Delta that is not currently managed for the proposed habitat, change in land use will have significant impacts on the Delta legacy towns and the Delta as a place.

The following are some possible adverse specific impacts not included within the chapters of the BDCP EIR/EIS. This review focused on the impacts of Alternative 4 as it has been described as the preferred alternative. This review considers impacts to the legacy communities, flood risk, Steamboat Resort, and boating recreation along Steamboat Slough and Sacramento River.

Draft BDCP EIR/EIS

Chapter 6: Surface Water

The impacts of CM 1 on surface water downstream of the intake facilities will be significant and adverse. There is no discussion of the expected drop in water level from the operation of the intake facilities. One can infer that there could be a 3-foot drop if 6000 cfs is removed. However this discusses impacts of increased water going through the Fremont Weir in the BDCP Appendix 5C (p. 5C.5.4-6). A drop in the water level of the Sacramento River will result in associated water level drops in connected sloughs. There must be some kind of modeling to estimate the drops to determine associated negative impacts and mitigation. Due to the lack of scouring flood flows in the last decade many of sloughs have been affected by sedimentation. A further decrease in water level could impact recreation by reducing the navigability of channels or leaving recreational docks high and dry.

Steamboat Resort, a private boat marina, located on Steamboat Slough about 5 miles downstream of the southernmost intake has experienced a loss of depth due to sedimentation. The decrease in water level would exacerbate this problem and could leave the dock on dry ground. At this point the resort could no longer operate and would be forced to close. This resort, once a restaurant, has been a popular destination for boaters for decades. This would be a significant impact to recreation in this part of the Delta and is inconsistent with the policies in place to support recreation set forth in the BDCP.

Certain Conservation Measures require land to be permanently flooded, or in the case of CM 2, releasing more water over the Fremont Weir. This water will further reduce the amount of surface water available in the Delta. There is no discussion on the cumulative impacts of the implementation of the Conservation Measures that are implemented by diverting water and the operation of the intake facilities. The cumulative operation will require a significant amount of water and would have adverse irreversible impacts to all that irrigate or recreate on the water running through the Delta. Cumulative impacts on water level must be reviewed and assessed for all channels within the Delta.

Figures 6-14 and 6-15 show the expected decrease in downstream from existing conditions when Alternative 4 intakes are operable. In wet years the decrease in flow would be about 40% less than existing conditions. Wet years provide high velocity flows that scour sediment that has accrued in Delta channels during years of low flow. A 40% reduction in these flows will significantly reduce the scouring benefits of these wet year flows. This will reduce the carrying capacity of the Delta channels and increase flood risk downstream of the intake facilities. This adverse impact or suggested mitigation is not considered in any part of the document.

Chapter 15: Recreation

This chapter mentions the impact of reduced amount of boating recreation by the intake facilities, however it does not discuss the adverse impacts of barge traffic on recreation. Past levee improvement projects resulted in a significant amount of barge traffic along waterway. It is assumed this will apply to construction of the intake facilities and other Conservation Measures.

The increased amount of barges that will be traversing the waterways will increase congestion have an adverse impact on boater safety and recreational opportunities.

According to operational criteria for Alternative 4, bypass flows will be a minimum of 5000 cfs. This threshold can occur when the flow in the Sacramento River is anywhere between 11,500 cfs and 5,000 cfs. The Sacramento typically runs at 12,000 cfs near the intakes during summer months, to take the river to a minimum of 5,000 cfs would significantly reduce the flow and may make the river and associated channels too shallow or narrow for recreation. This will adversly impact recreation significantly.

Chapter 16: Socioeconomic

Much of the impacts that would be social in nature from the impacts of the BDCP are disregarded because they are not considered by CEQA. However, these social impacts could become physical impacts. A nine year construction period and the removal of residences for the construction of intake facilities, will involve the removal of permanent removal of people from the Delta. Local businesses depend on people within the Delta to survive. The more people that are forced to leave the Delta or leave the Delta due to the noise, aesthetic, or inconveniences of the tunnels, the more businesses and the Legacy towns suffer. The temporary increase of people in the Delta for the construction of the BDCP will not offset the long term negative impact the tunnels will have on the Delta economy.

Chapter 19: Transportation

In the north Delta, there are a few access routes from Interstate 5. These roads provide access for all that work, recreate, and live in the Delta. Construction activities will add a significant amount of construction related traffic on roads such as Hood-Franklin, Twin Cities and Walnut Grove-Thornton. This will increase the travel time for those who work or live in the Delta and may deter others from coming to the Delta for recreation due to a lack of accessibility. This impact will be significant and costly for those who depend on this access for business. Considering the estimated amount of construction time of nine years, this will be significant and adverse. Mitigation measure Trans 1-C discusses enhancing the capacity of these congested roadway segments but that requires the take of more private property, add significant cost and there is no discussion of funding. Any expansion would be infeasible on Highway 160 because it would require widening the levees. Thus, these roads would remain extremely congested and would have unavoidable adverse impacts on all businesses within the Delta, especially agriculture.

Considering the comments above, I urge National Marine Fisheries, Fish and Wildlife Services, and California Department of Fish and Wildlife to deny a take-permit for the BDCP. It will have significant and irreversible adverse impacts on the Delta species and communities. There is only one Sacramento-San Joaquin Delta, please save it from certain demise.

Sincerely,

Emily Pappalardo

From: Brad Pappalardo <bradpappa@gmail.com>
Sent: Tuesday, July 29, 2014 10:33 PM
To: BDCP.Comments@noaa.gov
Subject: Comments to BDCP EIR/EIS
Attachments: BDCP Comments 7-29-14.rtf

Attached please find my Comments to the BDCP Draft EIR/EIS report.

Brad Pappalardo

--

BDCP 1747

LAW OFFICE OF BRADFORD D. PAPPALARDO
State Bar No. 62353
12540B Grand Island Road, Walnut Grove, CA 95690
916.775-2100 • 916.775-4431 (fax)

July 29, 2014

BDCP Draft EIR/EIS

COMMENTS:

General Comments: First the Bay Delta Conservation Plan is a misnomer. It is really the Bay Delta Justification for the Tunnels Plan and how they can compensate for the horrendous damage to the environment the tunnels will cause. Fundamentally, the premise is fatally flawed. This State does not have a transportation of water problem; it has a shortage of water problem caused in large part by its own agencies. California is an arid state; however, with proper management and storage during the few wet years we do have, we would not have the drastic drought conditions we now face.

It is my understanding that the Department of Water Resources, with questionable authority, contracted out water rights that they cannot now fulfill. The contracts themselves caused farming in equally questionable areas which now do not have the water to water the crops they should not have planted in the first place. The solution is to take water from farmers with priority water rights and who are located in the best farm land in the State to give it to poor farmland in a desert. The truth is more insidious. The State (and its citizens) who will be paying for a water diversion that they do not control or benefit by; instead it is given to certain water districts for their own benefit to manage and sell the water they will control.

Chapter 15 Recreation. Unless indicated otherwise, all comments will be directed to the Chapters by page number.

15.3 Environmental Consequences. (15-58.)

15.3.1.1 Assessment Methods. Are vague, unintelligible and refer you to other sections as opposed to explaining the specifics about how they relate to this Chapter, Recreation. The section discusses questionable scenarios (sea level rise and climate change) for which there is no reliable scientific data. The same can be said about **15.3.2 Determination of Effects.** (15-62.)

15.3.3 Effects of Mitigation are equally vague and send us to other sections for additional discussion. The statement says overall construction is expected to last up to 9 years, which is on the low end of other predictions at the meetings could be more likely

in the neighborhood of 15 years. Implementation would be ongoing for a term of 50 years which would outlive the BDCP authors. (15-63.)

The section addresses subjects that are of little relevance to the real socioeconomic problems of completely devastating the enjoyment of their homes or the destruction of their businesses; for example it "is not anticipated to result in an increased demand or adverse effects on existing neighborhood and regional parks." That is a fair statement since no one will be visiting those parks. It makes a ludicrous conclusory statement that "noise traffic modeling indicates that increased noise levels from construction truck hauling and worker commutes would not result in substantial increases in local noise levels." (15-64.) The statement is absurd and again they refer us to a chapter elsewhere.

15.3.3.1 No Action Alternative. Again this section is unintelligible and discusses matters that have nothing to do with the area of impact and the matters of most concern to the effected residents. (15-64,65) They again bring up this nonsense about rising sea levels and climate change of which they claim that in any event, "is not possible to specifically define the exact extent of the changes due to future no conditions"; exactly, so why did they bring it up? (15-66.)

Catastrophic Seismic Risks. (15-67.) This section suggests that the Delta is within a highly active seismic area and that there is the potential for significant damage. That "earthquake damage could result in...failure of existing levees...with a substantial number of these structures exhibiting moderate to high failure probabilities." (15-67.) They do not give one example of a levee failure due to an earthquake because there hasn't been one. The matter is pure scare tactics without any actual incident in the 150 years of the levees and it is nothing more than the irrelevant padding of information or lack thereof. (15-67.) They interestingly talk about the danger of an influx of seawater which is more likely to occur with the tunnels sucking water out of the Delta than from an illusory earthquake. Finally, they conclude that the "effects on recreation would either be only short term disruptions...or the programs would result in net beneficial effects on recreation opportunities"? The above sections said next to nothing about the true nature of the risks to recreation, gave no particular information or facts to support their conclusions or for us to assess the potential mitigation issues.

We are then required to go deep into the Recreation section for any meaningful discussion of the true problems even if misreported. BDCP is addressing Alternative 4, which appears to be the least invasive of the alternative scenarios (15-253).

In the **Summary** (15-260), BDCP opens with the only true statement in the report. "Construction of Alternative 4 intakes and water conveyance facilities would result in disruption to recreational opportunities"; to put it mildly. (15-260.) That "construction may occur year-round and last from 1 to 8 years...and in-river construction would be primarily limited to June 1 through October 31 each year, which would result in a long-term reduction of recreational opportunities or experiences." (15-261.) Of course that is the

major portion of the recreation season. While they talk about commitments by DWR, the promise to enhance "interest in the site construction by constructing viewing areas...which may attract people who may use the recreation facilities" it is laughable. (15-262.) As is the creation of bicycle and foot access to the Delta. (15-262.)

They discuss as a mitigation measure the preparation of site-specific traffic management plans that would address potential public access routes (15-262) and that DWR would provide and publicize alternative modes of access. The truth is that there are no alternative modes of access. There are minimal roads into and around the Delta and with the construction traffic, the ability for the residents to travel in and out of the area would be a nightmare which would persist for 9 to 15 years. The people who have boats at the local marinas will leave long before the construction is done and the resorts and marinas will long be out of business by the time they come back. The businesses in the towns of Clarksburg, Hood, Courtland, and Walnut Grove will go bankrupt and they will become ghost towns.

We are familiar with large trucks in the area during the various harvests. The roads are narrow and dangerous during those seasons with long waits getting over bridges. Most of the roads are narrow levee roads and the cost to widen them as proposed would be extremely costly. Is that in the budget? Part of your mitigation costs? Are you going to build new highways? Is that budgeted? You add in the 24 hours a day trucking and the people wanting to enjoy their trip to the Delta and their boat will be gone. You cannot avoid the traffic problem and the result will be people doing their boating elsewhere. Have you included in your mitigation costs, waiting for the Marinas to go out of business before you realize the damage you have done.

What about the people who live here, Are they expected to wait 10 years before the nightmare ends. What about the towns of Hood and Walnut Grove who literally will lose their minds from the constant pounding of the pilings? It is in effect a condemnation of their homes and property. Have you a mitigation fund for them? You live in a fantasy land to think that will not happen and you can mitigate for them. The fact that you have been threatening to do these very tunnels has already diminished the value of their homes. The noise and traffic congestion problems are insurmountable and very, very real. As you propose (15-262), you cannot address construction noise effects through mitigation measures and a noise abatement plan. You cannot address the traffic issues, even at an exorbitant cost; because that would at a minimum be necessary.

I am on the DECMAC advisory committee. No one is making improvements to their homes, no one is doing anything. No one wants to open a business here. You have already irreparably harmed this community. Who is paying for that? The tunnels are a bad idea. It does not address the real problem; a lack of water. The Bay Delta Conservation Plan will conserve nothing. Do not worry about restoration, there will be nothing to restore. However, the lawsuits and damages will be devastating and unyielding.

I am not telling you anything you do not already know. You went through 58 pages describing how important the Delta is to the State and its people. You have listed the reasons and background for the mandates for the State and local governments concerning protecting the Delta and how important Recreation is to its health and the enjoyment of all. I have addressed those issues below which your report seems to have ignored or at least have failed to truly address.

15.1.1.1 Recreational Activities and Opportunities. By the reports own admission, the Delta is one of the favorite destination places for California boaters (behind the Colorado River (?)) and "nearly half of the registered boats in the state" are located there. (15-1.) Thus, the interruption and/or impact to recreation, in particular boating and fishing, would be a major environmental consideration.

While the study focuses on breaking down the various water activities between small boats and large boats (15-3), they miss the common denominator between all the activities and is most pertinent to the subject at hand and that is the people just enjoy being on the water. The constant pounding of pilings and construction traffic for 10 to 15 years in the subject area will drive away all boating and fishing and the area will never recover. The mitigation costs will be significant because the damage will be total for surrounding resorts and landowners.

Recreation Participation Trends and Projections. This section appears to stress a slowing growth of recreation into the next decade (2010-2020) based on declines in the past decade (2000-2010) without even mentioning the worst recession since the great depression and the spiraling gas prices caused by the government's negative treatment of energy resources. (15.23.)

15.1.1.2 Description of Existing Conditions in the Upstream of the Delta Region. (15-24 et seq) Mentions that the "CVP was reauthorized in 1992 through CVPIA...added mitigation protection of fish and wildlife as a project purpose. Further, the CVPIA specified that dams and reservoirs of the CVP should now be used 'first, for river regulation, improvement of navigation; and flood control; second, for...fish and wildlife enhancement. '" Obviously, "improvement of navigation" positively effects boating and recreation and is an already stated priority, even higher that fish and wildlife enhancement. Later suggestions want to impede the navigability of Steamboat, Sutter and Georgiana Sloughs. (15-24.)

15.2.2.1 Delta Protection Act and Delta Protection Commission and Resource Management Plan. The BDCP notes that the Delta Protection Act of 1992 (Act) established the DPC "to plan for and guide the conservation and enhancement of the Delta's natural resources while sustaining agriculture and meeting increased

recreational demand." That "Section 29702 indicates that the basic goals of the state for the Delta include the protection, maintenance, and, where possible, the enhancement and restoration of the overall quality of the Delta environment, including but not limited to, agriculture, wildlife habitat, and *recreational activities*." (15-24, emphasis added.)

It further notes that "Section 29705 indicates that the Delta's wildlife and wildlife habitats are *valuable, unique and irreplaceable resources of critical statewide significance and should be preserved and protected for the enjoyment of current and future generations*." (15-24, emphasis added.) The construction of the tunnels as currently proposed will have nothing but a negative impact on the Delta and must be viewed in lieu of the most *critical* of criteria.re is nothing positive that can be shown."

Furthermore, "Section 29712 acknowledges that the Delta's waterways and marina's offer recreational opportunities of statewide and local significance are a source of economic benefit to the region..." (15-35.) It is from these high standards and critical nature that the recommendations of the BDCP must be held.

The needs for the enhancement of recreation cannot be given a superficial treatment by BDCP. It is also noted that Chapter 5 of the Act requires DPC (and by extension the BDCP) to adopt a "comprehensive long-term resource Management Plan that includes the following recreation and access policies." (15-35.) Among the items listed was expansion of public recreation (Policy P-1); encourage expansion of privately owned, water oriented recreation (Policy P-2); that any new (public or private) recreational or access facilities are prioritized (Policy P-3); provide publicly funded amenities adjacent to private facilities (Policy P-5); and promote and encourage Delta-wide communication, coordination, and collaboration on boating and waterway-related programs including removal of debris and abandoned vessels, invasive species control, maintenance of existing anchorage, mooring, and berthing areas (Policy P-10). (15-35.) Recreation and the enjoyment of the public of this is "irreplaceable resource" must be "preserved and protected" by the BDCP, as well, in its analysis. (15-34, 35.)

15.2.2.3 California Department of Parks and Recreation Plans. The BDCP also notes that the Department of Parks and Recreation was mandated to develop recommendations to expand state recreation areas in the region. (15-36.)

15.2.2.5 California Department of Boating and Waterways Regulations and Programs. The CDBW also supports providing boaters with adequate facilities on the water for public entities and providing private marina owners with the ability to apply for construction loans for loans for improvements, such as berthing, restrooms, vessel pump outs, boat launching, parking facilities, and dry boat storage. There is also The Aquatic Weed Control Program for control of water hyacinth, Brazilian waterweed (Egeria densa), and South American spongeplant in the Delta, which are highly invasive species and widespread in the Delta and have substantial impacts on recreation. There is also an Abandoned Watercraft Abatement Fund. (15-41, 42.)

15.2.3 Regional and Local Plans, Policies, and Regulations. This section lists the city and county plans for the development and maintenance of recreational lands and facilities for the use of the public and as part of their economic development. All of

them recognize the need to enhance and protect recreational facilities and the importance of recreation, the unique nature of the land, its scenic features, the historical and cultural sites and the need to preserve them for their respective communities and for the people in the State, and the nation in general. (15-44 to 15-58.)

From: Jack Lindblad <jplindblad@gmail.com>
Sent: Tuesday, July 29, 2014 10:29 PM
To: bdcp.comments
Subject: Re: Public Comment BDCP NHNENC.LetterHead (jplindblad@gmail.com)
Attachments: PublicCommentBDCPNHNENC.LetterHead.pdf

And here's the pdf.

Check out our campaign videos here.
And our social media hub here.

Jack Lindblad

mobile 818 785-2724
jplindblad@gmail.com

Like #LindbladForCityCouncil on facebook | Follow me on twittter

On Tue, Jul 29, 2014 at 10:21 PM, Jack Lindblad (via Google Docs) <jplindblad@gmail.com> wrote:

I've shared an item with you.

Attached my public comment as a pdf and link.

Deadline is met for emailing the comment before midnight tonight.

Some of my links are hyperlinked and as such, are only accessible in the pdf, not on the printout. Some links show the URL and others are hyperlinked content.

This Public Comment is optimally read from the pdf to access the depth of reference and citation otherwise lost in the paper copy.

Jack Lindblad

mobile 818 785-2724
jplindblad@gmail.com

Public Comment BDCP NHNENC.LetterHead

BDCP 1748

NORTH HOLLYWOOD NORTHEAST NEIGHBORHOOD COUNCIL
P. O. Box 16478
North Hollywood, CA 91615-6478

Meets the THIRD THURSDAY NIGHT
January through November
@ 7:00 PM
LA Fire Station 89 Meeting Rm (in back)
7063 Laurel Canyon Blvd
North Hollywood, CA 91605

Email: NoHoNorthEastNC@gmail.com
Website: www.nhnenc.org
Message Phone: (818) 627-8505

July 29, 2014

Bay Delta Conservation Plan (BDCP) EIR/EIS Public Comment
Ryan Wulff, Acting Delta Policy and Restoration Branch Chief,
National Marine Fisheries Services
BDCP.Comments@noaa.gov

Greetings from all of us in the Southland!

At the July 2014 Board meeting, our North Hollywood NE Neighborhood Council, one of 95 certified Neighborhood Councils in the Los Angeles City family, voted in favor of endorsing this Public Comment offering constructive alternatives to the Bay Delta Conservation Plan in its present form.

California Water Wars in the 500-Year Drought: Bay Delta Conservation Plan in the Crossfire

High level public policy comments

Notes: Content added by this Public Comment is contained in brackets [].
Hash tags, #, refer to an aggregation of other postings and articles so tagged as topics found in social media.

#DeltaSmelt are tiny fish in the vast and crucial #SanJoaquinDelta near Sacramento, but it's impact on California water issues is far larger. Smelt is critical to salmon in the Delta, a vast network of wetlands fed by greatly diminished snowmelt from the Sierra every spring. #BayDelta is a major water source for California. But a sharp drop in smelt populations led to court decisions protecting it, affecting Delta pumps that support the state's complicated water system, and threatening state agricultural areas that depend on water from the Delta. Now, the 500-year drought is challenging the very practice of agriculture as we have known it.

#BayDeltaConservationPlan proposes to adjust the pumps and pipes taking water from the Delta, diverting up to 25% of Sacramento River's wet season flow via 40 foot diameter tunnels 35 miles south intending to provide the State with emergency water supply during any catastrophe's aftermath, while

protecting wetlands, wildlife and restoring more water resources to our agricultural regions. The Plan wouldn't send additional water to Los Angeles, but they would likely affect the overall water balance in the state.

From the State's perspective, the Bay Delta Conservation project is: "to resolve decades of conflict between water demand and wildlife habitat in the estuary at the heart of the state."

But the Plan is no stranger to controversy. Farmers object to preferential benefits given to almond and pistachio growers. Other environmentalists claim that the proposed water pumping will not only fail to protect the smelt, but rather increase environmental damage in the Delta by allowing ever-rising seawater to flow north into the drier Bay and tunnel more water out of Northern California. The project cost and the additional cost to finance the bonds are a point of major friction. Critics point to extras increasing the estimated budget that has been presented so far, stating the final cost could be approaching three times higher. And while it has many funding sources, including some support from the federal government, the project will depend on state water bond and debt service, along with and contributions from local utilities, hiking water rates across the state.

Despite the ongoing arguments for and against, the Plan continues through the regulatory process. California's Department of Water Resources extended public review comments until July 29, 2014 for the Plan and Environmental Impact Report (EIR). Over the course of the extended 228-day review period, California is not the same, from the ravages of worsening and permanent drought. Premise and policy supporting BDCP regulations have been moved by our Climate calamity. Mitigation of permanent drought has given way to Adaptation and Relocation as means of government policy and standard to address exigent of continued habitation in California. Relying on obsolete policy to address and solve problems is courting more human suffering and ecologic loss. This Public Comment will describe the degraded economic and ecologic conditions, offering proven yet creative alternatives to #BDCP centralized proposals, while maintaining adherence to the BDCP principled objectives.

> [Taking exception to viability of Bay Delta Conservation Plan, or as it has become known as the "Twin Tunnels" project, using public money is intolerable for what amounts] to [dewatering] the Sacramento-San Joaquin Delta for the benefit of a few water contractors and agribusinesses.
>
> These tunnels would sharply reduce water flow throughout the delta and harm thousands of sensitive aquatic species, including chinook salmon, steelhead trout, smelt, and green and white sturgeon. The tunnels would also wipe out food sources and habitat for migratory birds and other wildlife that depend on a functioning delta ecosystem to survive.

The project's heads justify this killing by proposing future habitat restoration even as they readily admit uncertainty about where and how to make such a plan work. Further, the $25-$60 billion tunnels will rely on taxpayers to fund most of this restoration. Water is a public trust resource, and taxpayers shouldn't have to shoulder the burden of this project while water contractors turn a profit from exporting the delta's water.

California's water crisis is best solved by adopting a combination of water conservation, efficiency, reuse and desalination strategies for both cities and farms. The state and nation should invest in [] proven [and innovative] strategies, instead of wasting tax dollars and sacrificing our [vanishing] natural resources. [The BDCP permit process must not proceed, in order to protect our delta estuary with local watershed projects.]

http://action.biologicaldiversity.org/o/2167/p/dia/action3/common/public/?action_KEY=16104

The BDCP also proposes to restore or protect approximately 145,000 acres of Delta habitat. Many believe that the BDCP is a wolf in sheep's clothing. The Delta's environmental decline occurred as federal and state pumps in the south Delta diverted up to 60% of the estuary's fresh water inflow. BDCP critics question the logic of trying to restore an ecosystem degraded by fresh water diversions by building new infrastructure capable of diverting even more fresh water. And despite millions of dollars of public funds proposed to "restore" Delta habitat, restoration will not be successful unless and until we restore fresh water flows into the Delta, particularly from the San Joaquin River system, to meet the needs of Delta fish and wildlife and the habitat that sustains them.

...

The 45 mile-long twin Delta tunnels and their fresh water intakes, forebays, tunnel debris disposal sites, and additional facilities will eat up at least 5,700 acres of Delta farmland and wildlife habitat. Some of the facilities and debris disposal sites will be located on Brannan Island State Park and on conservation land purchased with public funds to provide habitat for the threatened sandhill crane. The diversion intakes, access roads, lights and other urban intrusions associated with these facilities, will be directly adjacent to the Stone Lakes National Wildlife Refuge and Delta Meadows State Park.

http://www.friendsoftheriver.org/site/PageServer?pagename=DeltaCanal

The BDCP project Environmental Impact Report has yet to be released in complete form. In addition, the State has failed to produce a cost-benefit analysis. All independent analyses indicate that Southern California ratepayers will be left to pay a disproportionate share for the project,

with Westlands Water District and Kern County water agency receiving the majority of the benefits. Southern California will not receive any additional/new water from the project.

RestoreTheDelta.org

The financially unsustainable and untenability of the Bay Delta Conservation Plan serves to remind one we in the East San Fernando Valley have one of the largest aquifer in California that requires immediate Superfund cleanup to dovetail with LADWP's Groundwater Replenishment project, LA County DPW, National Park Service, Army Corp of Engineers Sediment Management and LADWP projects: Big Tujunga and Pacoima reservoirs and Debris Basin cleanouts, and LADWP's Tujunga Spreading Ground project to remediate the potential to wean Los Angeles off unaffordable and vanishing water from the Bay Delta, the Sierra, Lakes Mead and Powell, and the Colorado River.

We are on our own and must properly assess the survivability of our urban settlement in this bit of Mediterranean Climate in terms of Local watershed management to provide most of our water resources.

[We] promote a smaller and greener water bond [for each of California's 58 counties] that prioritizes regional water self-sufficiency and a 'reduce, reuse, recycle and restore' approach; challenge the massive 'twin tunnels' that maintain our over reliance on environmentally devastating water transfers rather than taking a more holistic approach to water; continue leading the CEQA Works coalition and fight to ensure that California's environmental 'bill of rights' stays strong and vibrant.

Flawed Twin Tunnel Documents Released

After seven years, $240 million, and numerous delays, the State hasfinally released an expensive paperweight: 34,000 pages of the public draft Bay Delta Conservation Plan (BDCP) and associated environmental documents. This draft of the BDCP still stubbornly pushes to build two massive, multi-billion dollar, environmentally destructive tunnels over more sustainable water solutions. Despite their nine-foot thickness when printed, the BDCP documents continue to lack analysis and answers to key questions, including financing and operations of the twin tunnels. []

In order to press forward with BDCP, the water contractors are being asked to risk another $1.2 billion (yes, *billion*) of their ratepayers' money – just in additional planning costs. This expensive gamble moves to a whole new level if the tunnels are built. An independent economist recently

released a report detailing the 11 Financial Red Flags of BDCP, which include debt service costs, questions of financial liability, overestimated benefits, and drying up money for local projects.

It's time to stop squandering money and paper on the tunnels, and start exploring viable alternatives.

Planning and Conservation League
http://org2.salsalabs.com/o/5056/t/0/blastContent.jsp?email_blast_KEY=1275235

Though separate from the Bay Delta Conversation Plan, budgetary overlaps seem evident in a water bond being floated to California's November ballot, as advocated by a consortium of California's water authorities, the Association of California Water Agencies (ACWA). Is it just possible some self-interest might be at play?

AB 2686 by Assembly Member Henry Perea (D-Fresno) and SB 1250 by Sen. Ben Hueso (D-San Diego) closely reflect ACWA's proposal for a modified water bond.

ACWA supports the current version of the water bond set to be on the November 2014 ballot. However, ACWA's Board of Directors has recognized that modifications to reduce the size and remove earmarks from the $11.14 billion bond will improve its chance of passage.

The Association is working with legislators and stakeholders to build support for a water bond that can be approved by the necessary two-thirds vote in both houses, signed by the Governor and then approved by California voters in November 2014.

ACWA believes any bond that advances must meet the following criteria:

Include $3 billion, continuously appropriated, for additional water storage (both above and below ground);

- Provide adequate funding for Delta restoration;
- Eliminate "earmarks" that allocate funds for specific projects without a competitive process;
- Provide substantial funding for:
- Local resources development projects, including Integrated Regional Water Management programs
- Groundwater cleanup
- Safe drinking water for disadvantaged communities
- Watershed protection

In addition, ACWA is advocating that the bond's total funding remain below $10 billion to aid its passage this year.

Op. cit. http://www.acwa.com/spotlight/2014-water-bond

The government's official estimate for the BDCP price tag is nearly $25 billion. Critics point out that this estimate does not include interest and other hidden costs, which could balloon the overall price tag to more than $64 billion. The construction of the tunnels and diversions would cost more than $14.5 billion, with another $4.8 billion in operation, maintenance, and administration expenses over the 50-year life of the plan. Federal and state water contractors are responsible for these costs. If the contractors incur this debt, you can be sure that they will push for diverting as much water as possible from the Delta to recover their costs. The federal and state taxpayers will be responsible for much of the BDCP's habitat restoration costs. Most of the state's share of Delta restoration costs is built into the $11 billion water bond on the November 2014 ballot.

Ibid. http://www.friendsoftheriver.org/site/PageServer?pagename=DeltaCanal

Governor Brown's supporting a water bond on the November ballot coupled to the Department of Water Resources and State water agency lobbyists pushing the Bay Delta Conservation plan is history repeating itself insanely so from 2010's and 2012's eerily similar political posturing putting legislative responsibility onto the People, abusing the Initiative process, to solve ecological problems with strictly economic means, chasing after California's twin eco collapse "ambulance". Eco means house, not opportunism for unsustainable economic activity. Agriculture lies about it's draw on water and Big agriculture must evolve itself to permaculture, aquaculture – using a fraction of the current real or conjured statistic water demand.

We have millions of gallons of water in our watersheds, especially here in the San Fernando Groundwater Basin and the Tujunga Pacoima watershed which is in my district. To the maximum extent possible we need to require LADWP, Counties and State clean up and detoxify groundwater via primary and tertiary treatments. With Aquifer remediation and infusion (treated water replenishment) on a massive scale, the City of Los Angeles would be provided with 10% of its overall water supply. There is not enough groundwater to provide for the 18 million folks in Southern California, let alone Los Angeles County.

Desalination in San Diego County took 4 years from inception, construction to delivery. Desalination is appropriate for regions like San Diego where no natural groundwater basins exist. Los Angeles County needs to see its network of groundwater basins fully revitalized for potable

water consumption. Desalination is costlier than groundwater cleanup and its salt byproduct threatens marine life while profiteering at ratepayer expense.

Conservation through greater appliance efficiency, fixing leaky pipes, composting toilets, must significantly reduce water demand.

This drought disaster, contrived from generational legacies of Mulholland's stolen water web of corruption, deceit, exorbitant unjust enrichment, to this day's out-of-control boss rule, was avoidable had there been forward planning on watershed remediation and conservation.

To answer the Drought calamity, immediate Federal aid and local/county/state matching funds are required to de-toxify almost 200 Superfund and Brownfield cleanup projects in California, with an end goal of potable use of watersheds within 3 years. Ecosystems, farmers and urban consumers are helped.

How Will California's Agriculture and Urban Centers Survive Ever-Worsening 500-Year Drought?

- The UNCTAD report identified key indicators for the transformation needed in agriculture:
- Increasing soil carbon content and better integration between crop and livestock production, and increased incorporation of agroforestry and wild vegetation
- Reduction in greenhouse gas emissions of livestock production
- Reduction of GHGs through sustainable peatland, forest and grassland management
- Optimization of organic and inorganic fertilizer use, including through closed nutrient cycles in agriculture
- Reduction of waste throughout the food chains
- Changing dietary patterns toward climate-friendly food consumption
- Reform of the international trade regime for food and agriculture

http://www.iatp.org/blog/201309/new-un-report-calls-for-transformation-in-agriculture

http://truththeory.com/2014/03/12/new-un-report-small-scale-organic-is-the-only-way-to-feed-the-world/

The weakening of agricultural, financial and trade rules has contributed significantly to increased volatility and corporate concentration in agricultural markets. This increased volatility is harmful to long-term investments to protect the environment and build climate resilience in agriculture. Public investment and regulation is needed to ensure stable food supplies and fair prices, and to facilitate a shift to sustainable agricultural practices.

http://www.iatp.org/documents/from-dumping-to-volatility-the-lessons-of-trade-liberalization-for-agriculture

> The world needs a paradigm shift in agricultural development: from a "green revolution" to an "ecological intensification" approach.

http://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf

> *Agriculture & food system contribute 50% of ghg emissions*

> The costs of negative externalities of brown agriculture will also continue to increase, initially neutralizing and eventually exceeding any economic and developmental gains.

http://permaculturenews.org/2013/09/18/paradigm-shift-urgently-needed-in-agriculture-un-agencies-call-for-an-end-to-industrial-agriculture-food-system/

> The United Nations climate chief has urged global financial institutions to triple their investments in clean energy to reach the $1 trillion a year mark that would help avert a climate catastrophe.

http://www.theguardian.com/environment/2014/jan/14/un-climate-chief-tripling-clean-energy-investment-christiana-figueres

> Figueres called on big firms that manage trillions of dollars of investments to dump fossil fuel stocks in favor of greener alternatives, arguing that such a shift would help the firms' clients as well as the climate.
>
> "The pensions, life insurances and nest eggs of billions of ordinary people depend on the long-term security and stability of institutional investment funds," she said. "Climate change increasingly poses one of the biggest long-term threats to those investments and the wealth of the global economy."

http://grist.org/news/u-n-climate-chief-calls-for-fossil-fuel-divestment/

Extreme Weather from today's Extinction Level runaway greenhouse gas emissions will not stop for hundreds of years even after carbon emissions dropped to zero. Yet divestiture from burning million year old garbage and abiotic oil is immediately required to give the slimmest chance humanity survives as a species.

Water conservation, remediation, recycling and smaller amounts are implicit in the IATPO excerpt from UNCTAD Trade and Environment Review 2013. Now to bring you back two years to show the cognitive dissonance between current exigent borne of permanent drought and statist government initiatives unresponsive to current and foreseeable conditions:

Gov Proposes Huge Underground Tunnels to Move Water North to South in California

That's not the tune he is singing in mid 2014.

> Governor Brown combined his shelved water action plan with new relief aid and Senate President pro-Tem Steinberg's water efficiency legislation to become a rewrapped Emergency Drought Bill yielding support from across the aisle, farming interests and environmental concerns.

Poof! Behold Brown's Emergency Drought Bill!

> Permaculture, drip irrigation, phasing out water intensive crops like cotton for hemp, in situ brackish water desalination, groundwater cleanup, aquifer replenishment, reservoir storage, rainwater cisterns…
>
> Some, not all of this is in Brown's package.

http://lindbladpolicyinitiatives.wordpress.com/2014/03/25/our-campaigns-railing-against-browns-warmed-over-not-appropriate-twin-tunnel-proposal-helped-in-the-larger-effort-to-see-it-removed-from-the-table/

Judging from the water rate payer's response statewide of the Governor's declaration of a voluntary 20% consumption cut and Los Angeles County's unchanged rate, folks do not understand the dire implications of maintaining present water consumption. So much for good cop. Now bad cop will ratchet the the fine and penalty until the rate-payer gets it. At least for ratepayers who have not left the "Golden-crisp State." Still 200 billion gallons of California's groundwater is under threat by the Oil sector in their fracking greed and climate emergency denial.

One acre-foot equals 325,851 gallons (the amount of water two to four families use in one year).

That means Big Oil is stealing water from 2,455,110 human beings for a year. Fracking, once stopped, provides water for California's future.

To the extent 200 billion gallons of potable remains in the ground free from being fracked, prudent groundwater use and conservation obviates any so contrived need for Twin Tunnels. In this view, the BDCP enables fracking, and that is wrong.

Today's exigent of permanent drought and eco-eco collapse seems to have brought off the dusty shelf the boondoggle of a huge 35 year abandoned, itself a myth, but remaining behemoth Plan. We need to address the situation on an accountable local watershed level.

http://www.ppic.org/main/publication_show.asp?i=1087

Following Public Comment refers to the Plan EIR Chapter 5 Water Supply flawed, skewed premises:

> If the basis for the discussion is water consumptively used by only agricultural and M&I users, then agriculture's share would be estimated in the range of 80 percent of the total (24.66 MAF / (24.66 MAF + 6.51 MAF). However, if the percentage is based on dedicated water, which includes environmental uses, then agriculture's share is more in the range of 40 percent (24.66 MAF / 61.24 MAF).

http://www.californiawater.org/cwi/docs/CIT_AWU_REPORT_v2.pdf

"agriculture claiming 80% of state's developed water" appears to be not accurate and even alarmist:

> *'In the long run, what's sorely needed in California is a reprioritizing of water use. Currently, agriculture claims 80% of the state's developed water. And 55% of exported delta water goes to two irrigation districts in the southern San Joaquin Valley.'*

http://www.latimes.com/local/la-me-cap-drought-20140224,0,7451531,full.column

Quoted below from Jeffrey Mount has the marks of authoritative analysis of California water usage, not what Skelton cites in the above reference:

Which sector, urban, farming, environmental, uses what proportion of the our state water supply?

> Jeffrey Mount, UC Davis Professor of Geology
>
> *Whereas agriculture used to consume 80% of the state's water supply, today 46% of captured and stored water goes to environmental purposes, such as rebuilding wetlands. Meanwhile 43% goes*

to farming and 11% to municipal uses.
The Economist, October 2009

BDCP 1748

This excerpt is from an article that focused on the never-ending skirmishes over how to divide the water of California and simultaneously meet the objectives of water supply and ecosystem health in the Delta. The statement, which appears to be attributed to Tom Birmingham of Westlands Water District, is both a mangling of the facts and an apples-to-oranges comparison.

Interpreted literally, it implies that agricultural water use has been reduced from 80% to 43% with a transfer of agriculture's use of water to the environment. Reading the news over the past few years, it might have seemed like such a thing happened. It hasn't, of course.

If this were the case, we would have seen a dramatic decline in agricultural water use since the implementation of environmental laws. We have seen a decline, but it is nothing close to what is implied.

This statement requires some disentangling to separate the facts from the factoids (near-facts which are artfully spun). The roots of confusion lie with the change in how the California Department of Water Resources (DWR) reports water use. Historically, DWR only counted water that was applied for economic uses. Under this scheme roughly 80% of water went to agriculture with the remaining 20% going to urban uses.

Under the new reporting system, gross water use includes both the applied water for urban and agricultural use, as well as that set aside for flow requirements to meet habitat and water quality needs. This is the source of the second part of the above statement. A more accurate figure is roughly 40% agriculture, 10% urban and 50% environment.

Sounds like the environment is taking all the water after all, even with the new accounting system. But this is a larger total volume of water than in the old accounting system, since environmental water is now added in to the mix. This accounting method is both flawed and misleading.

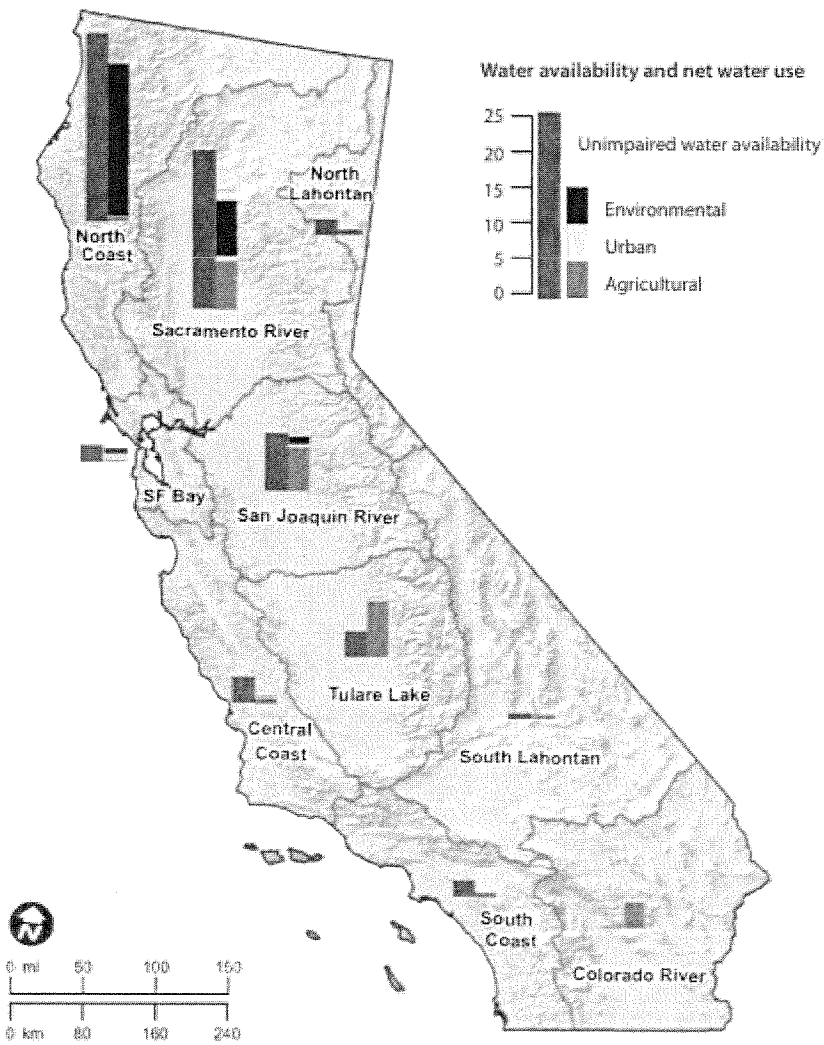
The method used by DWR sums up all of the instream flows required by regulations. The large environmental number is dominated by flows in rivers designated as Wild and Scenic. Most of the volume that flows down Wild and Scenic Rivers is in the North Coast and includes flood flows, where there is no practical way to recover it for either agricultural or urban use (see blog "water to the sea isn't wasted").

When you examine water use within the interconnected network of California that feeds farms and cities, use is roughly 52% agricultural, 14% urban and 33% environmental. While a big difference, even this overstates the environmental take.

When you account based on net water use—meaning water that is lost to evapotranspiration or salt sinks and not returned to rivers or groundwater for alternative uses—this translates to 62% agricultural, 16% urban and 22% environmental. And some of that environmental water is used to keep water quality high enough for drinking.

Op. cit. http://californiawaterblog.com/2011/05/05/water%E2%80%94who-uses-how-much/

Figure 2.1
Net water use far exceeds local supplies in the southern half of the state



SOURCE: California Department of Water Resources (2009).

NOTES: The map shows annual average values for 1998–2005 in millions of acre-feet. For regional data on water availability and net use, see Tables 2.1 and 2.2.

Broad statewide or system wide numbers also mask important local and regional variability in how water is used. As illustrated in the map, above, based on DWR data, in the North Coast region most water is designated as environmental flow, and it lacks many connections to the statewide water supply system. In the Tulare Basin, almost all water use is agricultural. In the South Coast,

water use is overwhelming urban. Regions are often fairly specialized in their water use. Real people and real fish live their lives locally, not statewide.

http://californiawaterblog.com/2011/05/05/water%E2%80%94who-uses-how-much/

> Statewide, average water use is roughly 50% environmental, 40% agricultural, and 10% urban. However, the percentage of water use by sector varies dramatically across regions and between wet and dry years. Some of the water used by each of these sectors returns to rivers and groundwater basins, and can be used again.

http://www.ppic.org/main/publication_show.asp?i=1108

The twin tunnel diversion plan may be premised on an overestimate of water given to the environmental sector, when in fact, it's not 46%, but less than one-half, 22%. Diverting water flow from benefiting Delta wetlands in the Plan may be understated by 400%.

The argument that the environmental sector is being favored in the Plan is false. Just the opposite, it's made to suffer and wither.

Whether it's a case of stealing water by the use mix statistic, Big Oil fracking, or geoengineering, water cannot be cut from whole cloth as the purveyors and Big Agriculture benefactors of the present BDCP are pushing: an obsolete, outdated boondoggle that does not address the aggravating 500-year drought with ever increasing record-shattering temperatures, just alone over the 228 day EIR review period and out to the long term. Even the long term climate disaster scenario in the BDCP was tamped down. The real scenario borne of certainty, not corporate political posturing, is horrific and cannot be addressed or solved by big centralized politically inspired and unaccountable expenditures only lining Wall Street bond holder pockets and Big Agriculture.

> Geo-engineering weather modification through cloud seeding, a Pacific Gas and Electric Company practice for 60 years, to tease out rain and snow for a burgeoning population, has not been justified as having contributed to increasing water resources. Like a dog chasing its tail. Evidence is growing that as our climate wet gets wetter and and dry gets drier, geo engineering cloud seeding, unproven to making a net increase in water, may be worsening already increasing Extreme Weather. Though California hurricanes are not unheard of, the real threat exists of an Ark Event (that's the size of ten Mississippi rivers deluging over a two week period). Like the 1857 event making an inland sea in Central California, reducing agriculture then by 2/3, today's 500 year drought looms heavy to comparably destroy California's economy already in tatters, from whatever cataclysm. Extreme Hurricane, Ark Event, Permanent Drought. Or maybe pick two or three of them.

California's reliance on cloud seeding to produce rain and snow is stealing water

This link takes the reader to a constellation of commentary groups specific to 28 referenced articles about deteriorating conditions in California's water resources since the BDCP was written, with the clear indication agriculture and and urban settlement may end as we have come to know them. Pockets of permaculture in desirous watersheds may allow limited human settlement based on frugality, not wasteful Big Everything-driven consumerism.

Bond-floated #BayDeltaConservationPlan pair of 40 foot diameter tunnels likely to balloon to $69 billion with debt service designed to answer existing agriculture demands, drinking water quality for 25 million user/ratepayers, and delivery of water during and post catastrophic events like earthquakes. Though no new water supplies are for Los Angeles, water bills will skyrocket to pay off the water bond to over $30 month per ratepayer. Apart from the unbearable financial burden, a similar water conveyance plan was rejected by voters originally conceived 32 years ago by Brown, whose era then did not face a 500 year drought, rising ocean levels, and resource scarcity from the present Climate Emergency. Three unacceptable outcomes from the plan in it's present form:

1) Given Sacramento River water diversions to the twin tunnels, salt water intrusion aggravated by rising sea levels will inundate and destroy Delta wetlands, in turn threatens local potable water supply, salmon and smelt, and the role of wetlands as a carbon sink to lower greenhouse gases.

2) Drastically reduced Sierra snow melt, surging water and atmospheric temperatures point to much lower water flow in the 'high-outflow option', estimates 'based upon assumptions for the year 2060'. The twin tunnels, in our Climate Emergency future of no snow melt may see next to no use at all, with no 'wet' season.

3) No incentives are provided to wean Los Angeles off long-distance water, in fact, a greater dependency is proposed.

> Barbara Vlamis of Chico, executive director of AquAlliance, said: "We join this lawsuit because we are the heart of the area of origin for the Sacramento River watershed. The Tuscan Aquifer in Butte, Glenn and Tehama counties is the groundwater foundation that supports the streams and rivers that are vital for farms, fish, and communities throughout California. The Delta Plan's goal to expand groundwater storage north of the Delta is a fool's errand. The state of California has failed to protect its groundwater, and has acknowledged serious overdraft in 11 basins. The only reason we don't know of more overdraft conditions is because the state Department of Water Resources hasn't studied this since 1980! If water transfers increase in scope and duration,

particularly when groundwater is substituted for surface water, it will escalate the losses already underway in the Sacramento River watershed's creeks and rivers and will jeopardize what remains of the hydrologic system that supports the majority of California's economy, the Central Valley's fish and flyway, and the largest estuary in North America: the Sacramento/San Joaquin Bay Delta."

California doesn't need to build these massive twin tunnels, [new or expanded dams] and diversions to meet its water supply needs. A truly sustainable water plan for the state would focus on increased water conservation and efficiency, treating and recycling waste water, cleaning up polluted groundwater, capturing and treating storm water, and reducing irrigation of drainage-impaired lands in the southern Central Valley. The environmental, social, and monetary cost of these sustainable solutions is much less than what is proposed by the BDCP.

[] Water conservation, recycling and reclamation, and environmentally beneficial groundwater management can easily meet our needs at a fraction of the cost. The Delta ecosystem has been damaged by the construction and operation of upstream dams and by the pumping of fresh water from the Delta for export south. It is a fundamental reality that we cannot restore the Delta by building more dams upstream, as well as a canal that will facilitate continued or expanded exports. Most of the state is not as dependent on Delta water exports as claimed by the Governor and other elected officials. Statewide, Delta exports via the state and federal water projects make up less than 12% of the state's developed water supply. Even southern California cities receive only about 20% of their water from the Delta. [The same 20% wedge Los Angeles City failed to conserve by not heeding the Governor's voluntary measures.]Local surface storage projects, groundwater, and reuse/recycling provide most of the consumptive water supplies in California. No one is demanding that all Delta exports end.

Ibid. http://www.friendsoftheriver.org/site/PageServer?pagename=DeltaCanal

Here's more reason to adopt much less expensive local watershed management rather than a more expensive centralized solution the Plan presents:

Echoing the sustainable alternate Plan of local watershed management, UC Davis scientists Richard Howitt and Jay Lund, who co-authored a report outlining California's drought expected to cost the state an estimated $2.2 billion of total economic losses in 2014, losing more than 17,000 jobs, from valuable crops fallowed.

"Without replenishing groundwater in wet years, water tables fall and both reduce regional pumping capacity and increase pumping energy costs," it said.

"It's critical that Californians develop an ethic of water preservation," said Karen Ross, secretary of the California Department of Food and Agriculture, stressing the need for more water storage and for capturing water run off during storms.

Op. Cit.
http://www.scientificamerican.com/article/california-drought-expected-to-cost-state-2-2-billion-in-losses/

Reducing flows from the Sacramento River will also allow saltwater from San Francisco Bay to intrude eastward through the Delta. Increased salinity in Delta water will have profound and negative impacts on Delta agriculture and further degrade critical habitat for such imperiled species as salmon, steelhead and Delta smelt.

Twin Tunnels advocates claim adverse impacts on fish will be mitigated by restoring 100,000 acres of habitat in the Delta. These projects, they maintain, would result in seasonally inundated floodplains, subtidal and intertidal freshwater and brackish wetlands, and shallow-water channel margin habitat. They are intended to increase food production for native food webs and fish. But in the absence of additional fresh water, scientists are skeptical that these habitat projects will work as advertised by the BDCP. The State Water Resources Control Board has already stated that habitat restoration and increased flows are both necessary to the recovery of the Delta's fish populations.

Op. cit. https://www.c-win.org/c-wins-campaign-against-peripheral-tunnels.html

Reference: http://bigstory.ap.org/article/calif-water-politics-complicate-browns-decisions

Survivability through seismic events is touted as a benefit in tunneling subterranean peripheral canals with design performance.

Reference:
http://mavensnotebook.com/2014/06/30/seismic-design-performance-considerations-for-the-bay-delta-conservation-plans-twin-tunnels/

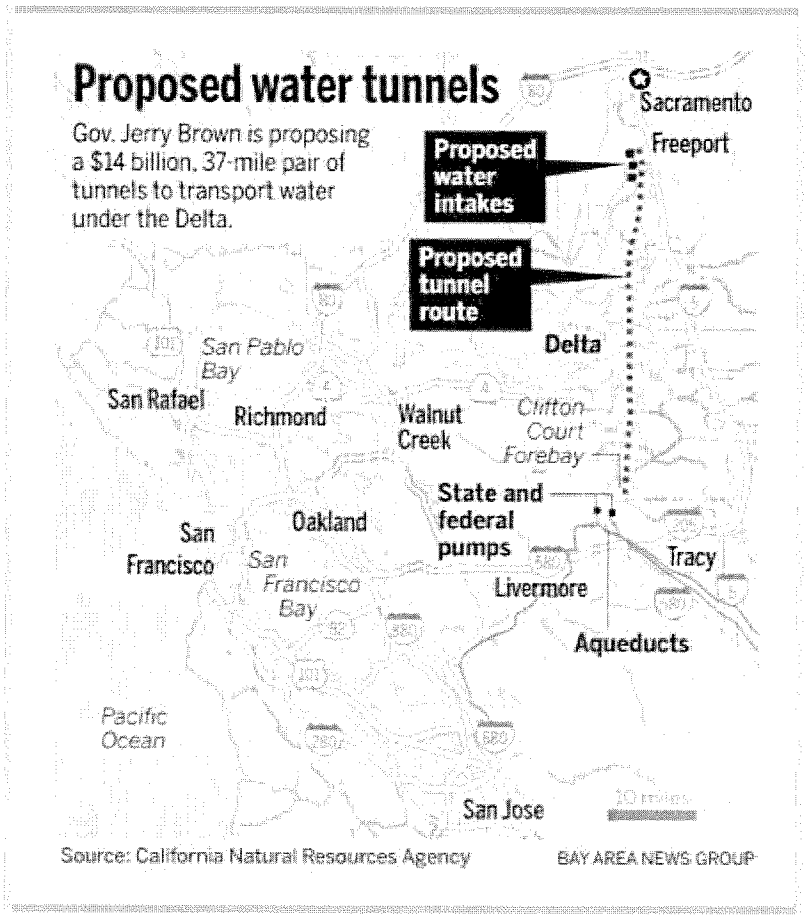
But the very geoengineering Plan that diverts wet season river flow from wetlands causing ground subsidence, already at a furious rate from groundwater pumping from the loss of snowmelt reliance otherwise producing streamflow water, acts to increase earthquake frequency and magnitude. Cui bono? It's poor risk management adding to higher cost of, and loss of: infrastructure, property and life. Investors win. Main Street loses.

http://sfpublicpress.org/news/2014-05/groundwater-depletion-is-destabilizing-the-san-andreas-fault-and-increasing-earthquake-risk

But, again, fracking does not stop at contaminating aquifers with carcinogens, increasing ground subsidence and removing 200 billion gallons of potable water from millions of thirsty people, fracking causes earthquake swarms.

http://sfist.com/2012/03/01/is_fracking_in_california_going_to.php

So, the tax and water rate payer gets slammed by the present form of BDCP in its reckless abandon ignoring prudent risk management, no, not mitigating risk, but increasing the risk of earthquakes two different ways.



[Two years ago, on July 25, 2012, prior to the declaration early in 2014 of a 500-year drought,] Governor Jerry Brown and Secretary of the Interior Ken Salazar [] announced details of an expensive plan to ensure the future of Southern California's water supply (specifically, the supply shipped from Northern California). The most expensive part of the new plan would build the long-debated "peripheral canal," described by the San Jose Mercury News: "two huge, side-by-side

underground tunnels, each 33 feet in diameter." The tunnels would "carry fresh water 37 miles from the state's largest river, the Sacramento, under the delta to giant federal and state pumps at Tracy ... There it would flow into canals run by the State Water Project and the Central Valley Project, which deliver Delta water to 25 million Californians, from the Bay Area to San Diego, and to irrigate 3 million acres of farmland." The price for the plan? A whopping $23.7 billion. If you're an Angeleno and you're wondering why a tunnel built in Northern California is such a big deal, here's what you need to know: the Los Angeles Department of Water and Power buys more than half of its water from the Metropolitan Water District. The Bay Delta, where the canal will be built, is where MWD gets its water (in addition to the Colorado River).

The peripheral canal has been a hot button political item since a 1982 ballot initiative that would have allowed the concept failed to win the approval of voters. More recent efforts to solve the ongoing ecological and health crisis that is the Bay Delta produced the 2010 Bay Delta Conservation Plan. [] The announcement essentially makes way for the state to revise the BDCP.

http://la.curbed.com/archives/2012/07/gov_proposes_huge_underground_tunnels_to_water_north_to_south_in_california.php

At the core of the project is a pair of water tunnels, 35 miles long and 40 feet in diameter. They would divert a portion of the Sacramento River's flow at three new intakes, proposed in Sacramento County between Freeport and Courtland. The tunnels alone are projected to cost $15 billion, which would be funded by the water agencies that benefit.

Another $10 billion would go into habitat-restoration projects, funded largely by taxpayers, including 100,000 acres of habitat restoration to benefit 57 imperiled species, including Delta smelt, chinook salmon, sandhill cranes and Swainson's hawks.

Water agencies that stand to benefit from the plan have already allocated $240 million to get the project to this point, most of which has been spent. The Bee reported Saturday that another $1.2 billion will be needed to complete the planning before construction can start. This money has already been accounted for in the $15 billion cost of the tunnels.

Altogether, it is the most ambitious and expensive water-development and habitat project ever proposed in California. And it's clear from the documents released Monday that many details of how it will work still have to be resolved.

For instance, one vital question – how much water the new tunnels will divert – is being deferred for a much later decision. The state proposes a "decision tree" process that postpones the

decision to an uncertain date before construction of the tunnels is complete, after additional scientific analysis and regulatory review.

Instead, it offers two options that illustrate likely extremes: a high-outflow scenario and a low-outflow scenario. The former assumes wildlife officials order more unrestricted flow through the Delta to benefit wildlife, and allow less water to be diverted into the new tunnels. The latter assumes less natural flow and more diversions.

At issue in that choice is the still-disputed question of how much free water flow is needed to sustain endangered species like Delta smelt and juvenile salmon, which evolved in a Delta very different from today's highly altered environment.

State and federal wildlife agencies have indicated they will approve only the plan with the high-outflow scenario. But the plan calls for that decision to be reviewed before the tunnels become operational – in 2027, at the earliest – if research demonstrates outflow can be reduced without harming the estuary. To some extent, this outcome depends upon whether the initial phases of habitat restoration are successful in breeding more fish.

Sizable diversions

Environmental and fishing groups maintain more natural outflow is necessary to sustain and improve the Delta's fish species, and they've been critical of the proposal to delay a decision.

"I say twin 40-foot tunnels, big enough to dry up the Sacramento River at most times of the year, can't be good for salmon no matter what," said John McManus, executive director of the Golden Gate Salmon Association.

The project does not propose diverting the entire flow of the river. It will be capable of diverting water at 9,000 cubic feet per second, a maximum capacity that would be reached only during wet seasons, according to the plan. There are other conditions in which the project would divert less but still a sizable share of the Sacramento River's flow.

Some of the most significant changes would occur in sections of the river near Walnut Grove, an area downstream of the proposed tunnel intakes. Computer modeling estimations buried deep in Appendix 5 of the draft plan show the effect. River flows would be reduced at least 10 percent in nearly every month of the year compared to flows that would occur without the tunnels in place. In summer months, river flows would drop between 20 and 25 percent. The estimates are made based upon assumptions for the year 2060.

> To water diverters, convincing regulators to set aside the high-outflow scenario may be crucial to the project's financial success. At a recent meeting of the Westlands Water District, a major Delta water consumer in the San Joaquin Valley, officials were told there are slim benefits under the high-outflow option, which commits more water to outflows for habitat purposes, and less for diverters like Westlands. In short, the cost of the tunnels may not justify the limited water benefits.

Ibid. http://www.sacbee.com/2013/12/09/5986905/delta-water-tunnel-plan-presents.html

Following Public Comment addresses BDCP EIR Chapter 29 Climate Change forecasting dated and understated conditions, drought severity, temperature spiking and adaptability.

How dry is it?
http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA

http://mavensnotebook.com/2013/11/15/precipitation-watch-maybe-something-next-week-plus-an-overview-of-californias-dry-spell/

> Given the context of this highly anomalous and extremely persistent atmospheric ridging over the northeastern Pacific Ocean, it's very interesting to note that there has also been a region of strongly positive sea surface temperature anomalies in same the general vicinity for the past 10-11 months [prior to November 14, 2013]. Causality is always tricky to assign in cases such as this one, since it's entirely possible that the ridging itself has led to warm surface water though decreased oceanic mixing by wind and unusually high air temperatures. On the other hand, ocean-atmosphere coupling is very well recognized in this region on longer timescales (such as the multi-decade periodicity of the Pacific Decadal Oscillation, or PDO), so it seems likely that the anomalous ridging that has led to to California's extremely dry weather and the North Pacific warm pool are physically linked in one way or another.

http://www.weatherwest.com/archives/954

> All 58 California counties have now been designated by the federal government as primary natural disaster areas due to the drought. A state-level Drought Emergency has been declared, and state authorities have recently taken unprecedented measures to cope with dwindling water supplies. National and international media attention has become increasingly focused on this ongoing extreme climate event in Californiaas economic damages to date surpass $2 billion, and continues to rise rapidly. Increasingly broad swathes of farmland are being fallowed in the Central Valley (especially the San Joaquin Valley), and entities with access to remaining water are auctioning off

their rights for over ten times the long-term average rate. Groundwater pumping has increased exponentially over the past 12 months, and there are growing concerns that this virtually unregulated draining of California's underground aquifers could have major major consequences within the next couple of years.

http://www.weatherwest.com/archives/1658

Over the longer term, climate projections suggest that this risk will continue or increase. According to the draft National Climate Assessment, the US Southwest—which includes California and five other states—can expect less precipitation, hotter temperatures, and drier soils in the future, meaning that by 2060, there could be as much as a 35-percent increase in water demand. Along with that comes a 25- to 50-percent increased risk of water shortages.

http://www.motherjones.com/blue-marble/2014/01/california-drought-scary-facts-snowpack

Most predictions say the warming of the planet will continue and likely will accelerate. Oceans will likely continue to rise as well, but predicting the amount is an inexact science. A recent study says we can expect the oceans to rise between 2.5 and 6.5 feet (0.8 and 2 meters) by 2100, enough to swamp many of the cities along the U.S. East Coast. More dire estimates, including a complete meltdown of the Greenland ice sheet, push sea level rise to 23 feet (7 meters), enough to submerge London.

http://ocean.nationalgeographic.com/ocean/critical-issues-sea-level-rise/

NASA scientists say so, glaciologists say so, researchers who've spent their entire careers studying the slow and increasingly inevitable melt of our planet's permanent ice stores say so. They say so in two new studies debuting this week; one in *Science* and one in *Geophysical Research Letters.* They are all saying we should begin getting comfortable with sea levels that lap up 10 feet higher on our shores.

http://motherboard.vice.com/en_uk/read/10-feet-of-global-sea-level-rise-now-inevitable

...larger climate uncertainty mathematically compels greater urgency to address global warming. This conclusion runs in direct opposition to the claims of climate contrarians, who often argue against taking action to address climate change because they believe there is too much uncertainty to determine the optimal path forward. This argument exhibits a failure to grasp the concepts of basic risk management...

http://www.theguardian.com/environment/climate-consensus-97-per-cent/2014/apr/04/climate-change-uncertainty-stronger-tackling-case

> ...[P]eople who don't understand how the climate or modeling work have used the surface warming slowdown to incorrectly argue that climate models aren't reliable and that global warming is nothing to worry about. This new study shows once again that climate models are indeed reliable, and if we don't soon act to slow down human-caused global warming and the risks it poses, we're likely headed for a very bleak future.

http://www.theguardian.com/environment/climate-consensus-97-per-cent/2014/jul/21/realistic-climate-models-accurately-predicted-global-warming

Goes to the axiom: Garbage in: garbage out. Continuing with our high level policy driven Public Comment, BDCP regulation-driven responses justifying the exorbitant costs refers to non-applicable and outdated policy, in our state of 500-year drought where clean slate approach is called for, one of locally based adaptation to ever worsening but no longer scientifically predictable as to severity of consequences, as we are all on the exponential curve divorcing ourselves of linear predictedness of conditions which might otherwise linger for habitation in California and the world.

Dr. Alex Hall downloaded IPCC world climatic algorithms for Los Angeles County to allow a glimpse of our climate out to 2060 and his expertise was not tapped for the BDCP. His work needs to be expanded for California as it pertains to this Plan.

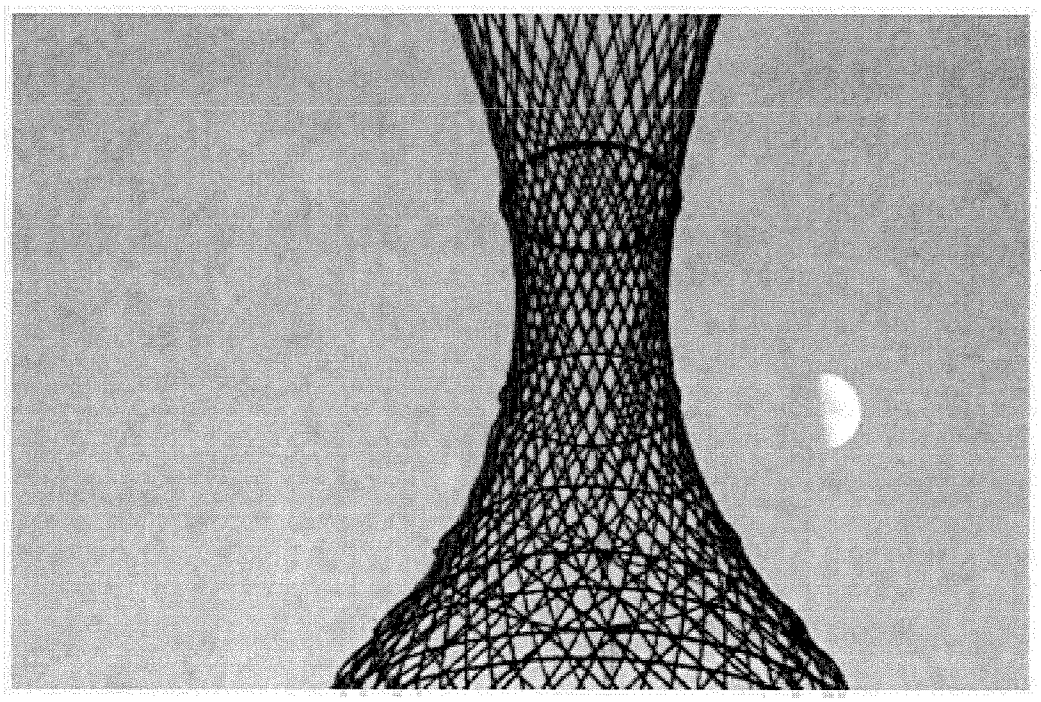
> Dr. Hall, of the UCLA Department of Atmospheric and Oceanic Sciences, and his team projected temperature profiles for the period 2041-2060 (30 to 50 years from now) for two greenhouse gas emissions scenarios: first, GHG concentration of approximately 1200 ppm CO2 equivalent (which
>
> is projected to be the highest estimate among current policy options); and second, GHG concentration of approximately 460 ppm CO2 equivalent (framed in the study as at the lowest estimate within the current range of policy options).

http://legal-planet.org/2012/06/22/ucla-and-city-of-los-angeles-publish-first-ever-detailed-long-term-climate-forecast-for-a-citys-neighborhoods/

Unforgiving, ever worsening conditions and outside formerly certain predictedness, here is Dr. Hall's entire study.

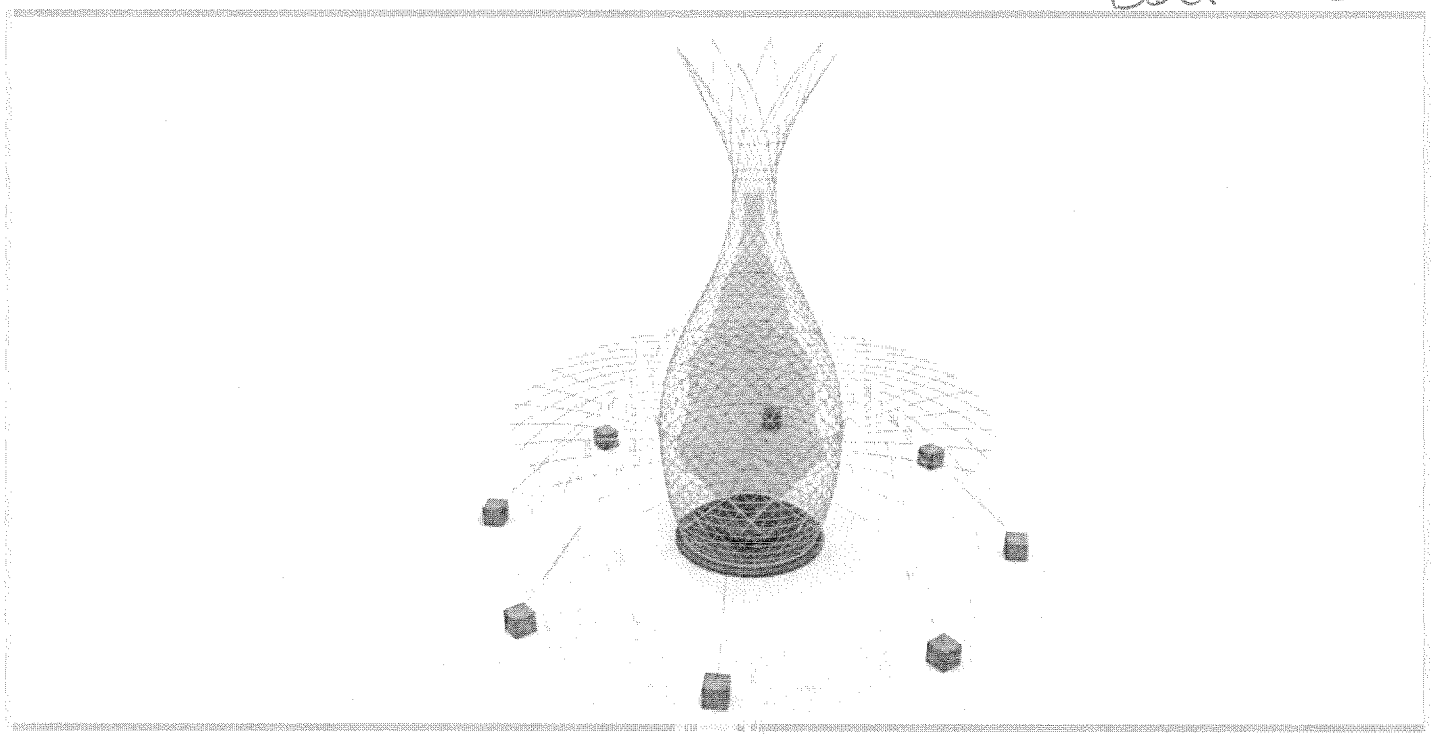
Ethiopia's resourcefulness to become water-sustainably resilient for habitation in today's Extreme Climate Emergency shows California's water wars to be on the wrong path. Water out of thin air works in Ethiopia but in relatively water-rich California, water appears to be politically cut out of whole cloth.

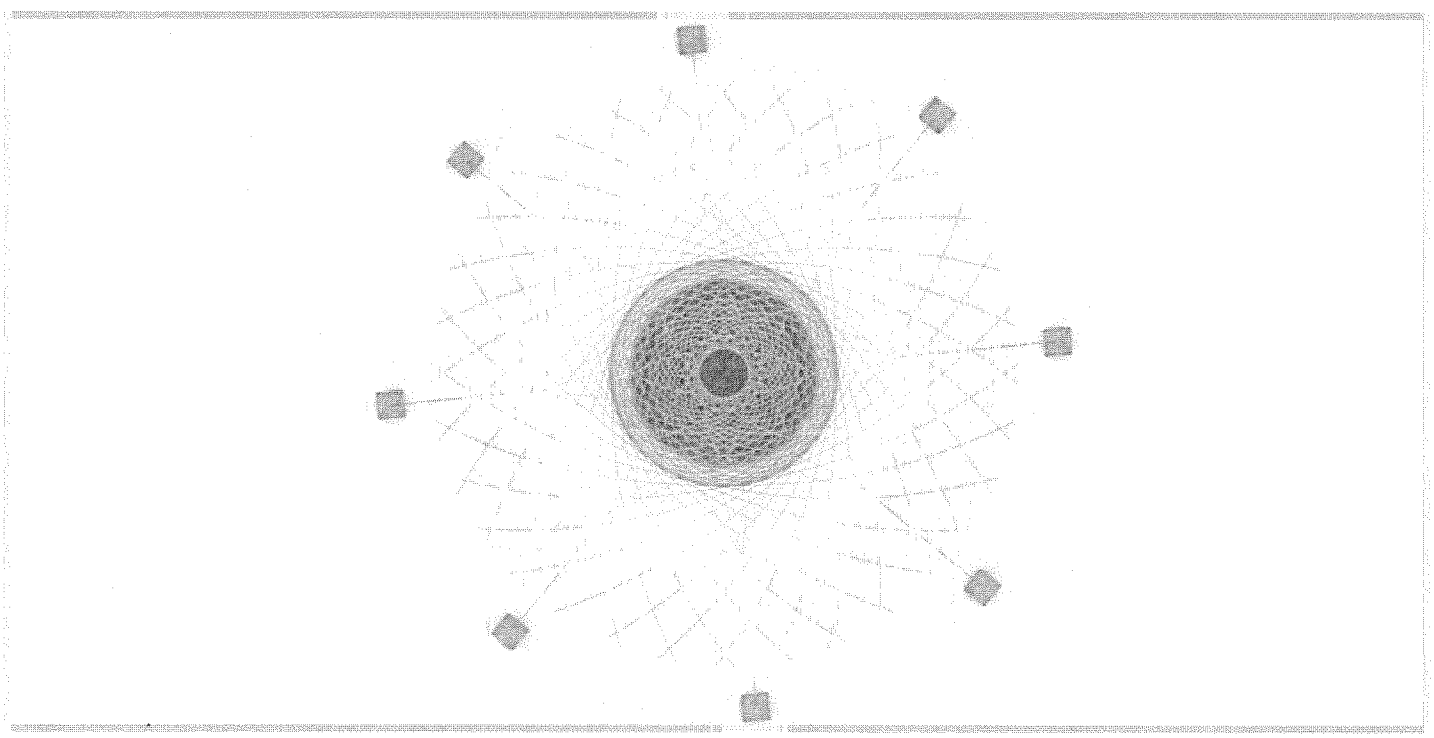
> A new development by VittoriLab might offer a solution – The Warka Water Towers were inspired by the Warka tree, native to Ethiopia and commonly used as a central community gathering space. The tower, developed by architecture and vision is a vertical system that harvests portable, clean water right from the air through condensation.



vittori-lab.com

> When examining the Warka Water Towers project drawings, the foundations of sacred geometry as the golden ratio, spiral and flower life can be seen -





http://www.architectureandvision.com

Op. cit.

http://www.utaot.com/2014/04/07/ethiopia-a-new-development-of-towers-that-harvest-clean-water-from-thin-air/

More Alternatives to the present BDCP Plan: locally-based Permaculture, Edible forests (seeSeattle's citation), aquaculture, hydroponics (see NBC recent report citations on groundwater pumping shrinking aquifers and profound land subsidence, severe 2014 drought in California, and its affect on agriculture, food prices and water supply), to lower water demand: replacing water-intensive crops like almonds, pistachios and cotton with hemp. You know when mainstream media sounds alarms on this fad called Big Agriculture, it's already a lost cause.

California's cities have new policy tool to support "urban agriculture"

> **Water profiteering, irresponsible use, and lack of foresight bringing Texas farmers to their knees**
>
> Instead of using the water responsibly, some landowners have envisioned lucrative business opportunities through the years. Billionaire oil tycoon T. Boone Pickens, who owns 211,000 acres near the Texas-Oklahoma border, sold his water rights for $103 million to the strapped cities of Lubbock and Amarillo.

NBC News declares 'billions could starve' as America's water aquifers run dry

http://www.naturalnews.com/046074_Ogallala_aquifer_water_supply_mass_famine.html

So as California's water and persistence in agriculture disappears in permanent drought wracking the world's 8th largest economy, don't look for relief in the US mid-section for water or food growing. Meat consumption is becoming moot.

> A new study, just out from the Proceedings of the National Academy of Sciences, reaffirms that meat production has an outsized impact on climate change, and that beef is the worst offender. It suggests that, if we want to reduce our greenhouse gas emissions, it would be more effective to give up red meat than to stop driving cars. This means that, "from an environmental standpoint, paleo's 'Let them eat steak' approach is a disaster," Kolbert wrote.

http://grist.org/food/millions-alive-today-would-have-to-die-before-the-paleo-diet-could-take-over/

Cost accountability, full disclosure, and transparency of a behemoth 25 to 69 billion dollar project is not attainable, but thoroughly achievable by holding the mission of the Bay Delta Conservation Plan to maintain the largest estuary in North America, as a state-wide performance standard and vision to meet by breaking down the behemoth Plan to 58 local county-wide, watershed based action plans for water

treatment, recycling, conversation, remediation, aquifer recharge, groundwater management, desalination of brackish not sea water. Local economic-based ecological-based job growth results.

- *Aquaculture* and Soilless Farming | Alternative Farming ...
- afsic.nal.usda.gov/**aquaculture**...
- United States National Agricultural Library
- *Aquaculture*, *hydroponics*, aquaponics, aeroponics, and even vertical farming are emerging production technologies that do not use soil as a medium.

The main difference between aquaponics and hydroponics, besides the absence of fish, is that in hydroponics, the water eventually becomes toxic and must be disposed of properly. During the growing phase, while the hydroponic system has relatively clean water, both technologies (aquaponics and hydroponics) cycle water very efficiently. In fact, both technologies have been shown to utilize vastly less water than the amount required in traditional in-ground agriculture; estimates range from 5-10% of the water required to grow an equivalent amount of produce in soil, outdoors. In hydroponics, however, the nutrient solutions eventually become so out of balance that they become unusable and the growers must discard them.

http://portablefarms.com/2011/aquaponics-vs-aquaculture/

For any hope of continuing habitation in California, we need a resilient state-wide Plan to adapt to the inexorable 500 year drought, a Plan with locally based accountability, transparency and full disclosure of means and methods to reach ecological remediation of our estuary at a small fraction of the behemoth Plan to be affordable by water rate payers and taxpayers.

Prepared and Submitted on behalf of North Hollywood Northeast Neighborhood Council by:

Jack Lindblad

Jack Lindblad, Author
Bachelor of Arts in Environmental Design
Master of Architecture
Architect and Urban Planner
Board Member, North Hollywood NE Neighborhood Council
Past Board Member and Land Use Member, Panorama City Neighborhood Council
Past Board Member and Community Improvement Chair, Arleta Neighborhood Council
2008 and 2010 Candidate for State Assembly District 39, November General Election
2012 Candidate for State Assembly District 39, June Top Two Election
2014 Candidate for California Senate District 18, June Top Two Election

From: Mack Casterman <conservation@ebcnps.org>
Sent: Tuesday, July 29, 2014 9:33 PM
To: bdcp.comments@noaa.gov
Subject: California Native Plant Society East Bay Chapter Comments for BDCP
Attachments: EBCNPS comments for BDCP July 2014.pdf

Dear Mr. Wulff,

Attached, please find comments from the California Native Plant Society's East Bay Chapter for the Bay Delta Conservation Plan and its accompanying EIR.

Sincerely,
Mack Casterman

--
Mack Casterman
Conservation Analyst

California Native Plant Society, East Bay Chapter
510-734-0335
www.ebcnps.org
http://ebcnps.wordpress.com

"dedicated to the conservation of native flora"

BDCP 1749

CALIFORNIA
NATIVE PLANT SOCIETY

East Bay Chapter, www.ebcnps.org
PO Box 5597, Elmwood Station, Berkeley, CA 94705

July 29, 2014

Submitted via email to:

Ryan Wulff
National Marine Fisheries Service
BDCP.comments@noaa.gov

Re: Bay Delta Conservation Plan Comments from California Native Plant Society

Dear Mr. Wulff,

The California Native Plant Society's East Bay Chapter is writing to comment on the draft Bay Delta Conservation Plan (BDCP) and its accompanying Draft Environmental Impact Report.

The California Native Plant Society is a statewide non-profit organization that works to protect California's native plant heritage and preserve it for future generations. The Society's mission is to increase the understanding and appreciation of California's native plants and to preserve them in their natural habitat. We promote native plant appreciation, research, education, and conservation through our 5 statewide programs and 34 regional chapters in California. The East Bay Chapter (EBCNPS) covers Alameda and Contra Costa Counties and represents some 1000 members.

General Considerations

- The goal of the plan for Covered Plant Species should be for the *recovery* of the target species, not just for the "conservation and management" of the species.

- The plan should prioritize conservation of edge populations that can contribute to the recovery of species not entirely within the Plan Area

- Some plants require disturbance to persist (e.g., spear scale - *Atriplex joaquiniana*); success criteria need to incorporate disturbance as a natural ecosystem process for these types of plants.

Incomplete Consideration of Growth Inducing Impacts of Plan

EBCNPS is concerned that the preferred alternative will have unstudied and unmitigated growth inducing impacts. The construction of new pipelines carrying water from the Delta to the southern California will facilitate the construction of thousands of new homes – especially in the southern San Joaquin Valley, resulting in the destruction of intact native habitat for urban development.

In Alameda and Contra Costa Counties, the SR239 roadway that has been proposed to connect Byron

and Antioch with Tracy and the Highway 580 corridor would already have substantial growth inducing impacts in the region. The increased water conveyance planned as part of the BDCP will exacerbate these effects and these impacts should be considered.

The large economic benefits of this project stated in the economic analysis rely upon models which forecast high levels of urban development in the areas served by the pipeline. This development and the resulting economic benefits would not be possible without the increased water supply that this project will provide. If this project hopes to consider this economic gain as a benefit, it must also accept responsibility for the resulting harm to the areas of native habitat that will be destroyed. This cause-effect relationship needs to be explicitly mentioned and considered in the final BDCP and EIR.

The potential for the preferred alternative to reduce incentives for water conservation in the agricultural and urban areas of Southern California also needs to be considered as part of this report.

Classification and Mitigation for Alkali Seasonal Wetlands

Objective ASWNC1.2 of the Conservation Strategy reads:

Restore or create alkali seasonal wetlands in Conservation Zones 1, 8, and/or 11 to achieve no net loss of wetted acres (up to 72 acres of alkali seasonal wetland complex restoration, assuming all anticipated impacts occur).

EBCNPS first notes the importance of differentiating between alkali seasonal wetlands and alkali sink scrub plant community types. The alkali sink scrub that occurs near the Byron Airport and Clifton Court Forebay is a unique plant community at the northernmost limit of its range (*Allenrolfea occidentalis* Shrubland Alliance in MCV2) that should be mitigated for with conservation/restoration of the same community type if any impacts to it are unavoidable.

Alkali wetlands and alkali sink scrub are both plant communities that cannot be successfully created. The plan should therefore prioritize the conservation and avoidance of what remains today rather than considering creation as a viable mitigation option.

While EBCNPS agrees that Conservation Zone 8 does have potential as an area to work to conserve alkali wetlands and alkali sink scrub, we disagree that Conservation Zone 1 is a feasible option. There is no alkali sink scrub habitat (*Allenrolfea* dominated) currently existing in Yolo County, and creation of this habitat type in an area that does not currently contain the requisite salty soils, climate, groundwater, and drainage would undoubtedly fail. Any attempt to mitigate for alkali sink scrub and alkali seasonal wetland beyond the regions where the impacts will take place would constitute as out of kind mitigation and would not be valid.

EBNCPS notes that Alkali communities in general have naturally low cover. It is therefore important that success criteria for these areas *not* include high cover for the areas being restored or enhanced.

Potential Conflict with East Contra Costa County Habitat Conservation Plan

The conservation goals of the East Contra Costa County Habitat Conservation Plan (ECCCHCP) for alkaline wetlands and grassland were based on what was available at the time the plan was developed. If the BDCP impacts some of this habitat, it may make it difficult for ECCCHCP to reach its conservation goals. BDCP should have to mitigate for those impacts in Contra Costa by acquiring 2:1 the amount of alkaline acreage they impact in the County. Minimizing any conflict between ECCCHCP should be a priority issue, especially since the area in question may be one of the only places where the ECCCHCP can secure occupied habitat for *Delphinium recurvatum*.

BDCP 1749

EBCNPS appreciates the consideration of these comments and will look forward to following this project in the future. Please do not hesitate to contact us with questions at conservation@ebcnps.org or by phone at (510) 734-0335.

Sincerely,

Mack Casterman
Conservation Analyst
California Native Plant Society, East Bay Chapter

From: jsbmswpi@earthlink.net
Sent: Tuesday, July 29, 2014 6:32 PM
To: Bay Delta Conservation Plan
Subject: Blackburn writing - Opposition to Twin Tunnels
Attachments: Letter on Twin Tunnels.pdf

Ryan Wulff,

Attached is my PDF letter in opposition to the proposed twin tunnels. It appears we have a lot of work to do to defeat this ridiculous plan, and we will defeat it...

John S. Blackburn, M.S.W., Professional Investigator Blackburn Investigative Services (#010839)
584 Castro Street, #128
San Francisco, CA 94114-2594
cellular:415-902-4975; fax:415-821-7534
Investigations-Criminal Defense, Social History and Mitigation

BDCP 1750

John S. Blackburn
281 Bradford Street, Bernal Heights
San Francisco, CA 94110
home/facsimile: 415-821-7534
cellular: 415-902-4975
email: jsbmswpi@earthlink.net

July 28, 2014

BDCP Comments
Ryan Wulff, National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814
BDCP.comments@noaa.gov

Dear Mr. Wulff:

I am writing to strongly oppose the Governor's proposed twin tunnel plan to ship Northern California water to Central Valley farming interests and Southern California water users. Using the misnomer, the Bay Delta Conservation Plan, the plan is simply a water-transfer-grab by Central Valley and Southern California water interests. This grab will involve two tunnels, estimated at $25 billion but will cost much more - no estimate of its funding source or actual costs have been produced.

This plan is yet another water conveyance system, another technological fix and another State-sponsored boondoggle that will never satisfy the thirst for water and profits by agribusiness, developers and land speculators. The plan is a reflection of the failure of both the Governor and Legislature in not honestly addressing our water policies and supply problems and offering reasonable solutions/options. This proposal is a bad deal for all of California and should not be approved in any form!!!

BDCP 1750

The Peripheral Canal Referendum (Proposition 9) was defeated by California voters (63 to 37%) in June, 1982, and sent a clear message to all Californians that water was our most precious resource, needed to be conserved and that water policy was something that had to be carefully managed so that no one special interest controlled policy or the resource. Since the day the referendum was defeated, powerful Central Valley and Southern California interests have been working on the next plan to take more Sacramento River water to the Central Valley and Southern California. Now we have before us, the twin tunnels plan, the Peripheral Canal II.

Water is the life-blood of California, a semi-arid desert that would not be here in its present state without our most precious resource, water. Yes, here we are again facing the prospect of a water transfer system proposed by Governor Brown and backed by Central Valley farming interests.

What is most egregious is that had it not been reported, Californians would not be aware that Governors Davis, Schwarzenegger and Brown have essentially given over our water policy to private agribusiness interests for campaign contributions (Stewart and Lyndia Resnick, Paramount Farms, Westside Mutual Water Company, Roll International, and the list goes on). This is a violation of their duties as trusted public servants, and they are essentially selling California's water system to the highest bidder for campaign contributions. This is unacceptable! They did an end-run around the voters of California. And, that the Department of Water Resources is complicit in this and acting as a subsidiary of water exporters is beyond unacceptable! What has gone wrong in Sacramento? Senators Feinstein and Boxer have taken substantial contributions in return for legislation that would strengthen the position of agribusiness in the Central Valley at the expense of urban residents. The Governor, in his most sleazy political tactic yet to isolate voters from the process and the truth of what is going on, did not see fit to ask his constituents, the voters, if this was a good idea but instead worked behind the scenes by given control of this issue over to billionaires who receive our tax-payer subsidized water. Something is very, very, very wrong in Sacramento!

Population growth and overuse of limited water resources are the two main

problems. Our state population has increased with the flood over time of illegal aliens and people moving into the state to take advantage of the expansion of job opportunities. There are too many people and this has created an imbalance between an exploding population and diminished water resources. We don't need to move more water south to encourage growth. California doesn't have enough water resources to effectively handle the population and use requirements.

Heavily water-dependent agriculture uses 85% of all water supplies in California. One need only look at the list prepared by National Geographic of water use by specific agriculture, industrial and urban practices to see where our population growth cannot be sustained with limited resources. Farmers have traditionally increased their use of subsidized water and then taken from groundwater sources accumulated over thousands of years, especially in the recent drought years (this one lasting 15 years so far). With the current drought situation, groundwater in California is being depleted at a more alarming rate by agribusiness interests who are pushing the twin tunnel plan, with no end in sight and no re-charging of the aquifers. The Central Valley is sinking and the Sierra Nevada Mountain are rising. Researchers have analyzed satellite data and found the Colorado River Basin has lost 65 cubic kilometers - 17.3 trillion gallons - of water between December, 2004 and November, 2013. We need to identify existing groundwater sources and manage and restrict its extraction to prevent a catastrophe when the well runs dry. With over 3,000 water agencies involved, there is no central or accountable management of groundwater.

The Governor called for mandatory rationing with a 20% reduction in use, yet overall use increased statewide by 1% and 8% in Los Angeles, Riverside and San Diego counties, and 5% along the eastern boundary with Nevada to the Oregon border. We have over-use by agribusiness who are planting water-intensive almonds, walnuts and pistachio orchards and other water-intensive crops, the fracking industry using eight million gallons per well, and people, mostly in Southern California, simply not conserving. And the Governor failed to call on agribusiness and the oil industry to conserve and do their part. A bit disingenuous of the Governor!

BDCP 1750

What is needed is not ridiculously expensive tunnels to move water we don't have south to special interests who want taxpayers to pay for the transfer system and get subsidized water, but the development of new sources of water. The only present option is desalination plants along the coast pumping treated water into the Central Valley water system to replace the lack of rainfall/snowpack and groundwater extraction overuse. Even if it started raining now and rained for years, we would never catch us for the loss in use and groundwater depletion.

As reported by Paul Rockwell in an op-ed piece, "It is absurd to believe that one more engineering project, crafted by the same power elites that have dominated water policy throughout the 20th century, will somehow bring stability to a state whose leaders continue to promote growth in desert regions already living beyond their regional means."

Given agribusiness's insatiable demand for control of water and maximized profits, there may be little hope of a reasoned solution in the current political climate of climate change. The twin tunnels are certainly not the answer...***you can't re-route and transport what isn't there!!!***

We need to extend the public comment period and for a new more open and honest Draft Bay Delta Conservation Plan (BDCP) and have a full and complete Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The EIR/EIS is fatally flawed due to its failure to include a viable, realistic funding plan and explanation of costs and options, exclusion of any true no-tunnels alternatives and its failure to comply with the Endangered Species Act. More troubling is the deliberate BDCP website suppression of comments, misrepresenting taking water to be a "conservation plan and secret BDCP planning with the exporters and their consultants, and lack of public outreach to all California, but especially non-English speakers who will in many ways be the most affected.

Thank you for considering my views and suggestions on this matter of mutual concern.

BCP 1750

Sincerely,

John S. Blackburn