

NORTH DELTA WATER AGENCY

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February 6, 2013

Dr. Jerry Meral
CA Natural Resources Agency
1416 Ninth Street, Suite 1311
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**SUBJECT: Comments on Task Order ICF-11 and Amendment 1
Cost-Benefit Study Scope of Work for the BDCP**

Dear Dr. Meral:

The North Delta Water Agency (NDWA) appreciates the BDCP pursuing a cost-benefit analysis as the NDWA requested in our September 21, 2012 letter and our previous November 4, 2011 letter asking to participate in the development of the assumptions and inputs for a statewide comprehensive cost-benefit study. We also appreciate the opportunity to comment on the proposed scope of work contract Task Order ICF-11 and methodology to be followed in the development of this cost-benefit analysis pursuant to the January 23, 2012 BDCP Finance Work Group meeting and presentation by ICF International and The Brattle Group. As we have stated previously, the quality of the final study is only as good as the quality of the assumptions and inputs used in developing the study.

While we recognize and appreciate the willingness of the BDCP to conduct a cost-benefit analysis, we do have concerns regarding its development. The information presented to date on the methodology and how the assumptions being used were made is superficial and general, rather than specific. Therefore, it is difficult to evaluate the quality, impartiality, equity and efficacy of the inputs and consequently the overall credibility of the results cannot be verified. Based on the Task Order and presentations, we are concerned the effort will not be as comprehensive, robust, independent, or as impartial as it should. The failure to meet the highest standards of objectivity and equality in identifying both the positive and negative impacts will have little value to decision makers or those impacted if it falls short in terms of day-lighting the true costs of the project and impacts, including significant negative impacts to the Delta region.

It is critical for the BDCP cost-benefit analysis to be an unbiased and accurate assessment of the individual and cumulative positive and negative impacts that will result in the different regions

of the state as well as the different economic sectors. Economic elements that should be included in the cost-benefit analysis Task Order to assure its impartiality and validity include:

- Economic Impact Analysis with equitable level of analysis between regions, export and the in-Delta water users, and primary economic sectors
- Sensitivity and Uncertainty Analyses
- Peer-Review of the Cost-Benefit Analysis and all related data and assumptions after Draft Technical Report is “edited” pursuant to Task 3 Deliverables and before public distribution and posting pursuant to Task 4.

Areas of concern with the BDCP cost-benefit analysis and methodology as currently described include:

- Failure to provide an equal level of effort to analyze the in-Delta impacts compared to the export water agencies
- Bias towards inflating benefits and diminishing or omitting analysis of negative impacts
- Failure to include common economic methods in the process (peer review, sensitivity and uncertainty analyses)
- Lacks independence and objectivity with work dictated and revised by non-objective, non-economists
- Failure to analyze major BDCP components independently
- Range of alternatives to be analyzed is too narrow, skewing the outcome in favor of a preferred project
- Manipulation of the No Action Alternative to favor an outcome supporting a preferred project
- Earthquake risks methodology is flawed
- Uses questionable discount rate which is not only inconsistent with the BDCP EIR/EIS, but inappropriately creates a bias in favor of a preferred project
- Non-Market values are insufficient and biased towards analyzing benefits and ignoring negative impacts

We offer the following comments and recommendations to assure the economic analysis is as comprehensive and balanced as possible, so the BDCP’s true costs and benefits are depicted in an impartial and peer reviewed documents that all impacted parties can trust.

ECONOMIC ANALYSIS STANDARDS

History

It is interesting to note that the Army Corps of Engineers (USACE) initiated the use of cost-benefit analysis in the U.S., after the Federal Navigation Act of 1936 effectively required cost-benefit analysis for proposed federal waterway infrastructure. The Flood Control Act of 1939 was instrumental in establishing cost-benefit analysis as federal policy. The use for broader public policy started from the work of Otto Eckstein, who in 1958 laid out a welfare economics foundation for cost-benefit analysis and its application for water resource development. Over the 1960s, cost-benefit analysis was applied in the U.S. for water quality. This is most relevant to the BDCP since most of the Conservation Measures (CMs), and particularly CM1 to build the

new water conveyance facilities, propose to alter, modify, and build on USACE's Project Levees which now comprise California's State Plan of Flood Control system.

Purpose

A cost-benefit analysis is a systematic process for calculating and comparing benefits and costs of a project, decision or government policy and has two purposes:

1. To determine if the project is a sound investment/decision (justification/feasibility)
2. To provide a basis for comparing projects that involves comparing the total expected cost of each option against the total expected benefits to see whether the benefits outweigh the costs, and by how much.

An additional outcome of a comprehensive, unbiased cost-benefit analysis is the identification of who the benefits accrue to and who is harmed by the project.

Value and Accuracy

The cost-benefit analysis is supposed to measure the positive or negative consequences of a project, which may include:

1. Effects on users or participants
2. Effects on non-users or non-participants
3. Externality effects
4. Option value or other social benefits.

The value of a cost-benefit analysis depends on the accuracy of the individual cost and benefit estimates. Comparative studies have shown that such estimates are often flawed, preventing improvement in the Pareto efficiency.

The Pareto efficiency or Pareto optimality is a concept in economics with applications in engineering. In a Pareto efficient economic allocation, no one can be made better off without making at least one individual worse off. A change to a different allocation that makes at least one individual better off without making any other individual worse off is called a Pareto improvement.

The widely accepted common causes of inaccuracies in the individual cost and benefit estimates analyzed to determine if projects are a sound investment/decision are:

1. Overreliance on data from past projects
2. Use of subjective impressions by assessment team members
3. Inappropriate use of heuristics (a.k.a: rule of thumb, educated guess, common sense, professional judgment) to derive money cost of the intangible elements
4. Confirmation bias among project supporters (looking for reason to proceed)

Additional inaccuracies may occur due to interest groups attempting to include or exclude significant costs from an analysis to influence the outcome.

Unfortunately, the cost-benefit analysis study proposed in the Task Order and as presented at the January 23, 2012 BDCP Finance work group meeting appears to suffer from all of the above in the following ways:

BDCP PROPOSED VALUATION METHODOLOGY

Inconsistencies with BDCP EIR/EIS

One of the biases being built into the BDCP cost-benefit analysis is using data/inputs that are different than the BDCP permit and the EIR/EIS, which appear to be subjective manipulations to influence the outcome of the cost-benefit analysis to favor the Preferred Project. There may be more inconsistencies in the assumptions the cost-benefit analysis consultants are using and the BDCP and EIR/EIS, but it is difficult to know until we are provided the complete data used to develop assumptions and values for the methodology. Following are just few examples of such manipulation:

Discount Rate – The BDCP February 2012 Admin Draft Section 8.3.4 Financial Assumptions (page 8-4) says the BDCP “assumes” a “nominal discount rate of 4.375% and a long-term inflation rate of 2.1%” and states the rate was selected to “match the fiscal year 2010 rate that the U.S. Army Corps of Engineers (USACE) and the U.S. Bureau of Reclamation (Reclamation) are required to use for developing and evaluating proposed plans for water project plan formulation and evaluation.” The footnote on the discount rate says: “The published rate of 4.0% (rounded) does not include any adjustment that may be needed to show the maximum rate of change of 0.25 of 1% per year. The Fiscal Year 2009 rate was 4.625%; hence, the adjusted Fiscal Year 2010 rate **cannot to be less than 4.375%**.” [*emphasis added*] It further states the long-term inflation rate is based on the spread between nominal and inflation-indexed 30-year U.S. Treasury notes (U.S. Office of Management and Budget 2008) with cost reported in constant 2010 dollars. Therefore, Dr. Sunding’s justification for an unusually low discount rate of 2.25% at the 1/23/13 BDCP Finance Work Group meeting conflicts with the BDCP EIR/EIS and Reclamation’s requirements on discounting. To avoid the possibility of bias that could influence or manipulate the outcome of the cost-benefit analysis, the assumptions used in the BDCP cost-benefits should NOT deviate from the BDCP and EIR/EIS or Reclamation’s guidelines for evaluating water projects.

No Action Alternative (NAA) – BDCP EIR/EIS Appendix 3D Section 3D.3.1.2 Existing Conditions Assumptions for State Water Project and Central Valley Project (page 3D-3) states the assumptions for the existing conditions used for the NAA related to the operations of SWP/CVP are described in the “Biological Assessment on the Continued Long-Term Operations of the Central Valley Project and the State Water Project,” August 2008, prepared by Reclamation (2008 BA) as modified by the NMFS BiOp and U.S. Fish and Wildlife service BiOp (USFWS BiOp). The Task Order mentions revising the NAA and at the 1/23/13 BDCP Finance Work Group meeting Dr. Sunding indicated the NAA alternative may be revised to lower water supply deliveries below the 4.7 maf average and the levels allowed under the BiOps to potentially as low as 3 maf. This number is substantially lower than existing conditions, arbitrary, and inconsistent with the BDCP EIR/EIS No Action Alternative. To avoid the possibility of bias that could influence or manipulate the outcome of the cost-benefit analysis the assumptions used in the BDCP cost-benefits should NOT deviate from the BDCP and EIR/EIS.

Inequitable Level of Analysis

Favors Quantifying Benefits, While Ignoring Harm – Unfortunately, both the previous work done by the consultants, the 1/23/13/ presentation, and the Task Order indicate a greater level of effort in researching, analyzing, and quantifying the positive impacts (benefits) versus the negative impacts of the project. This inequitable level of effort weights the outcomes in favor of the project, making it lopsided and therefore does not provide an unbiased quantification or comparison of negative versus positive impacts. Both documents are replete with references to measuring impacts that include positive modifiers such as, “improving,” “increased” and “benefits,” but are woefully silent on mentioning, let alone, measuring and quantifying the negative impacts. Areas where consultants are favoring quantifying positive impacts or over-estimating them without equal quantification of negative impacts to in-Delta and other impacted parties include: water quality and reliability, construction emissions, soil erosion, flood risk, and GHG benefits. Ignoring measuring and quantifying negative impacts will unduly skew the cost-benefit analysis to influence the outcome in favor of the Preferred Project. To be balanced and equitable, the same level of effort needs to be applied in measuring and quantifying the harm that result from this project as will be given to quantifying the positive benefits. Then the positive and negative impacts can be compared against each other in an equitable manner.

Greater Emphasis on Quantifying Impacts for Exporters Than Delta/ Other Impacted Parties

Unfortunately, both the previous work done by the consultants and the Task Order provide a greater level of effort in researching, analyzing, and quantifying the positive impacts (benefits) to the water exporters than is given to quantify the negative impacts that will occur to in-Delta water users or other impacted parties. Each of the impacts to the export areas/water users includes an adjective (increased/reduced) indicating an improvement or beneficial impact export water users. In contrast, the impacts to the in-Delta and other Delta users included no such adjective denoting benefits or negative impacts, except for the urban water treatment in the West Delta which would analyze the negative impact of increased salinity, but not for the whole Delta. So we are left to conclude the cost-benefit analysis is starting off with biased subjective impressions by the consultants. This inequitable level of effort weights the outcomes in favor of the water exporter, making the cost-benefit analysis lopsided and unable to provide an unbiased quantification or comparison of who benefits and who is harmed by the project.

In some cases, the documents presented by consultants make subjective assumptions that attribute benefits to the in-Delta community that are speculative, biased, and completely inaccurate. For instance, the Task Order calls the *permanent* conversion of over 45,000 acres of Delta farmland to aquatic and terrestrial habitat a “short-term” loss of cultivated land. Permanent means forever, so under BDCP these substantial acres are gone for good and so is the food grown on those acres. Adding insult to injury, the Task Order claims the BDCP will provide positive impacts (benefits) to Delta farmers by *increasing* the protection of cropland in the Delta from development because the Project will permanently preserve an equal amount of ag land as habitat. This is incorrect and should not be counted as a positive impact to Delta agriculture. Existing voluntary (Williamson Act/conservation easements) and regulatory (Delta Plan, FEMA/NFIP, Delta Protection Act) development restrictions in the Delta already prevent most all development outside of existing communities and are enforced by the counties, FEMA, Delta Protection Commission, and the Delta Stewardship Council. Therefore, the BDCP provides no additional protection of agricultural lands in the Delta and should not be counted as such in the cost-benefit analysis. In total, the BDCP proposes creating 100,000 acres of habitat, most of which is in the NDWA boundaries which is 300,000 acres (1/3 of the acreage). An

assumption should be added to the methodology of how changing land use on 100,000 acres out of the total 750,000 acres of Delta lands will impact the counties and the region as a whole.

Another example of inequitable level of analysis is the improved water quality for Delta exports (reduced salinity) at the expense of worsening the water quality (increasing salinity) for the in-Delta water user. The consultants have already spent a great deal of effort in measuring and quantifying the value of the benefits for the water quality improvements that accrue to water exporters. The bias and inequity inherent in the scope of work for the analysis is evident in the 1/23/13 powerpoint which states the study will measure increased water supply reliability and reduced salinity of water exports, but for in-Delta water quality the only mention is “BDCP may change the salinity of the Delta.” The water quality impacts associated with providing this reduction in salinity to export water agencies needs to be analyzed for how the rest of the in-Delta water users, taking into account the NDWA 1981 water supply and water quality Contract with DWR are affected. Impacts to ground water quality and availability should also be analyzed since many Delta residences rely on wells for their drinking water.

To be balanced and equitable, the same level of effort needs to be applied in measuring and quantifying the water quality impacts to in-Delta water users under this Project. Then the positive and negative impacts can be compared against each other in an equitable manner.

Inadequate Alternatives, Preventing Accurate Comparison to Other Viable Projects

Numerous stakeholders and impacted parties have identified alternative projects to improve water supply reliability and improve the Delta ecosystem, including Dr. Pyke’s Western Delta Intake, DWR’s DRMS Trial Scenario 2, and the Portfolio Alternative from NRDC et. al. In addition there are other options such as a no-tunnel with seismic levee upgrade improvements coupled with investments in water supply projects in export areas and reduced Delta pumping, and variations on tunnel size and configurations coupled with local water supply investments. The options would need to be paired with the appropriate level of habitat needed to meet the requirements of an HCP under ESA/CESA. Only comparing the Preferred Project to a No Action Alternative is insufficient as it fails to compare the Preferred Project to another proposal that uses a different mix of actions that may even be quicker and less expensive to achieve the same goals. Failure to compare the total expected cost of various viable options against the total expected benefits to see whether the benefits outweigh the costs for each and by how much does not meet the objective standards necessary to properly evaluate the proposed project. If DWR, Reclamation, and water exporters are confident the BDCP is in fact the *best* option (project) from an environmental, water supply, Delta-as-Place, and cost-benefit, then there should be no fear of comparing the BDCP to other viable options in the cost-benefit analysis.

It is important to assure a proper range of BDCP alternatives are analyzed against the Preferred Project in order to avoid undue bias that would influence the analysis to favor an outcome. Releasing a report that is inherently flawed would render the document useless and further alienate and infuriate Delta residents who are being asked to bear the burden of having these projects built in their area to benefit other regions of the state.

Biased Assumptions

Unfortunately, both the Task Order and the presentation by consultants on 1/23/13 both contain numerous examples of the consultants using biased, speculative, and one-sided assumptions on construction and operating costs of the project, impacts to the Delta economy, and in valuing non-market environmental impacts.

Reduced Seismic Risks to Export Water Supply

The methodology assumes benefits of increased water supply reliability to water exports from reduced seismic risks to the state and federal projects based on questionable/debatable assumptions regarding the probable risks of an earthquake occurring, the resulting damage, and that the new isolated conveyance will in fact protect water exports from earthquake induced outages. These assumptions are flawed for the following reasons:

Dual Conveyance – The BDCP proposes dual conveyance water operations with continued reliance/use of existing South Delta pumps. Therefore, even with the new tunnel, water exports would be reduced under a multi-levee failure, because the pumping restrictions of the North Delta intakes are limited at most times of the year to meet Sacramento River bypass flow requirements and would not necessarily be able to make up any South Delta pumping losses. This water supply impact could be addressed if the BDCP included a Conservation Measure to upgrade conveyance levees to a seismic standard – but it doesn't, so water reliability is still vulnerable to reductions even with the new intakes.

Tunnel Also Vulnerable to Earthquake – Although the new conveyance tunnels would be constructed to modern engineering standards, the tunnels and new intakes will still be vulnerable to earthquake damage because the location of the North Delta intakes and tunnel have the same risk of earthquake as the South Delta pumps – because they are being built in the same high-risk earthquake area known as the Delta. In addition, because the tunnel is subterranean (200+ feet underground) and earthquakes occur underground, the new conveyance facility may have *greater* risk of seismic failure than the Delta conveyance levees.

Vulnerability of Current SWP/CVP to Earthquake - The assumption that BDCP provides a benefit of increased water supply reliability to water exporters from reduced seismic risks to state and federal projects, is flawed unless the methodology equally analyzes the risks/potential for water outages from earthquake damage to the rest of the SWP/CVP water storage and conveyance facilities. For instance, the California Aqueduct is 701 miles of open canals and pipelines which may in fact be at greater risk to earthquake damage than existing Delta infrastructure due to its proximity to the San Andreas Fault. Research has shown the Southern segment from Parkfield in Monterey County to the Salton Sea is capable of a Richter scale 8.1 magnitude earthquake, Parkfield in the Central Valley has had six successive magnitude 6.0 earthquakes occur on the fault at unusually regular intervals between 12 and 32 years with an average of every 22 years between 1857 and 1966 with the most recent in 2004, and the Central segment exhibits a phenomenon called aseismic creep where the fault slips continuously without causing earthquakes. Therefore, it can be presumed a 6.0 or larger quake in the Parkfield area will occur twice during the 50-year life of the BDCP, in 2030 and 2052 based on 22-year average. Interestingly, the next “Big One” near Parkfield is expected to occur just after the cost-benefit analysis presumes operation of the new BDCP tunnel. In addition, a recent study by Yuri Fialko in 2006 concluded the San Andreas Fault has been stressed to a level sufficient for the next “Big One,” that is, a magnitude 7.0 or greater and further concluded that the risk of the “Big One” may be increasing more rapidly than researchers had previously believed.

No Recorded Delta Levee Failures Caused by Earthquakes - Despite the occurrence of past earthquakes on faults near the Delta, including the 1906 San Francisco earthquake when the levees were less robust, there has been no levee failure attributed as a result of the quakes. Table 9.6 in Chapter 9 of the EIR/EIS cites eight large, devastating earthquakes experienced in the San Francisco Bay region from 1868 to 1989 with lost lives and billions of dollars of damage, but *NO* levee failures in the Delta. We would like to know if Dr. Sunding factored in factual earthquake

statistics as shown in the EIR/EIS into the model he used to derive the value of BDCP's water supply benefits for exporters based on seismic risk reductions? Any inputs/assumptions used in Dr. Sunding's analysis should be consistent with the data in the BDCP and EIR/EIS.

Additionally, researchers from the University of California, Los Angeles, have twice set up a shaking machine on Sherman Island to simulate an earthquake, to see how levees made of peat soils would perform. The Eccentric Mass Shaker shook the model levee as hard as the 1989 Loma Prieta earthquake and then with the force of a magnitude 7.0 rupture directly atop the Hayward Fault. Each time the result was the same – visible waves rolled along the ground, work trucks bounced on their springs and the levee tossed about and eventually settled back into place, only sinking about a quarter of an inch – *but did not fail*. The simulation results appear to show the levee foundations are surprisingly resilient, casting doubt on the assumption that Delta levees are highly vulnerable to massive failures from an earthquake as posed in Dr. Sunding's analysis.

Selective Assumptions Used in BDCP Methodology - The presentations by Dr. Sunding on earthquake risk indicate his methodology assumes 2025 (the same date he assumes the tunnels will be completed) as the predicted date of an earthquake causing a catastrophic multi-levee failure in the Delta, an event which has *never* happened before. Using the year 2025 as an assumption input in the model inappropriately results in generating the largest possible numbers for the table. We were also concerned he is presenting the earthquake risk reduction benefits as raw numbers without multiplying by the probability that it happens, which results in exaggerating the benefits. The assumed 2 and 3 year export water delivery outages used in his methodology are considered by many to be highly improbable, and inappropriately assumes the state will not eliminate the earthquake risk to water exports through levee upgrades in the No Action Alternative which is inconsistent with the BDCP EIR/EIS Appendix 3D, page 3D-15, which says the NAA assumes continued operations of flood management facilities by the federal, state, and local agencies.

Other Comparisons – The water supply benefits from reduction of seismic risk presented by Dr. Sunding fails to recognize the benefits of improving levees to seismic standards as possibly being equal to building new North Delta conveyance facilities and therefore a viable alternative to the isolated tunnel. Even DWR's *State Water Project Final Delivery Reliability Report 2011* (published June 2012) mentions (page 35) the DRMS Phase 2 report on Trial Scenario 2 *Armored Pathway/Through-Delta Conveyance* findings that this scenario “would have the joint benefit of reducing the likelihood of levee failure from flood events and earthquakes and of significantly reducing the likelihood of export disruptions.” In addition, recent studies done by the Metropolitan Water District of Southern California found that a promising way to resume water exports after a multi-levee failure would be to place structural barriers at selected channel locations in the Delta and complete strategic levee repairs, thus isolating an emergency freshwater conveyance “pathway” through channels that may be surrounded by islands flooded with saline water.

BDCP Increasing Risk of Levee Failure – In determining the water supply value of avoiding water delivery outages from levee failures, an assumption should be included in the methodology that the BDCP has the potential to increase the risk of levee failures in the Delta. Failure to include a BDCP Conservation Measure that contributes funding towards the ongoing upgrade and maintenance of levees used to convey water to South Delta pumps which will still be used under BDCP's dual conveyance water operations, maintains the risk of temporarily shutting down the South Delta pumps due to levee failures. In addition, the increased risk of levee failures from seepage caused by aquatic habitat CMs and the new North Delta 750-acre 4-story dam holding 5,250 acre feet of water are significant possibilities that should be factored into the model. The vulnerability of Delta levees may be further compromised by BDCP construction exacerbating land subsidence by lowering land elevations on Delta islands from construction

activities: 1) digging large borrow pits; 2) excavation and grading; 3) an underground tunnel causing land above to settle and sink. These are essentially a man-made contribution to increasing land subsidence in the Delta, which can be a negative impact on export water supply that should be considered in the assumptions and methodology.

Manipulation of Water Supply Deliveries

Discussion at the 1/23/13 presentation and language in the Task Order, “This analysis will reflect refinements in how the no action alternative (NAA) is framed for the purpose of this analysis in construction and operation costs” led many in attendance to believe that Dr. Sunding is considering lowering the assumptions for export water supply delivery from below the current BiOps annual amounts to potentially as low as 3.0 maf, which is a distortion of current conditions. As Dr. Jeffrey Michaels with UOP has pointed out, one could argue an equal and possibly more likely probability of a potential increase in water exports based on pending litigation by the water exporters seeking higher levels of export than the existing Biological Opinions restrictions currently allow. The numbers for assumptions used in the cost-benefit analysis should match the numbers in the BDCP EIR No Action Alternative which is based on the BiOps water operations being in place and followed. Manipulation of the underlying assumptions in the No Action Alternative beyond those used in the BDCP EIR is inappropriate.

Flawed Construction Emission Values and Assumptions - Non-market environmental impacts in Section 2.3 of the Task Order present a flawed assumption that the implementation of BDCP conservation measures may partially offset the environmental impact of the GHG pollutants created by the conveyance construction and cites the establishment 5,000 acres of riparian habitat (trees) will be able to absorb the BDCP construction pollutants. There are three serious flaws with this assumption: 1) the U.S. Army Corps has strict vegetation policy on Project Levees which limits the ability to plant trees, which may result in only a few hundred acres of riparian acres being planted under BDCP; 2) ESA restrictions may also limit the number of riparian acres that can be planted; 3) there are not enough trees or tules that can be planted under the BDCP to offset the significant amount of *daily* pollutants to be created by BDCP construction over a TEN YEAR period.

According to the CA Air Resources Board (CARB) the top three 2004 Emissions by Sector were: Transportation 38%, Electricity Generation 25% (import and in-state combined), and Industrial 21%, all of which are significant actions/impacts in the BDCP. In addition, according to CARB, approximately one-fifth of the electricity and one-third of the non-power plant natural gas consumed in the state are associated with water delivery, treatment. According to Chapter 3 of the BDCP EIR/EIS dewatering pumping for the multiple intakes may occur 24 hours per day, 7 days per week, would continue throughout intake construction, and be powered by electric-powered dewatering wells installed throughout the site with diesel-powered standby generators (page 3-57, 3-58) and continuous truck transport of tunnel muck (7,000 cubic yards per day, EIR/EIS page 3-59). Also, new power line supply and grid connections will be built to supply power for operations of the new conveyance facilities under BDCP. Due to the amount of concrete to be used during construction of conveyance facilities concrete batch plants and fuel stations will be built (page 3-50). CARB has identified the cement manufacturing industry as a major source of carbon dioxide (CO₂) emission.

In addition, the most abundant greenhouse gas in Earth’s atmosphere is water vapor (H₂O), accounting for 36-72% contribution, followed by carbon dioxide (9-26%), methane (4-9%) and

ozone (3-7%). Therefore, the conversion of farmland to aquatic habitat (water) may also result in an increase in GHG contributions of the BDCP's other CMs and should be accounted for in the cost-benefit analysis. And finally, any potential BDCP habitat benefits will not be available for possibly several years after the construction of the conveyance facilities (CM1) because habitat will only have Programmatic EIR/EIS review and will NOT be project ready on the same timeline as the conveyance project, and in fact some of the expected habitat acres may in fact NEVER be created if project-specific EIR/EIS is not approved later. This level of uncertainty for habitat creation must be compared against the higher level of certainty for the conveyance project due to the differing levels of environmental review between the two in the BDCP.

Non-market Environmental Benefits – Benefits in the 1/23/13 presentation identified impacts to be measured as *reduced* soil erosion, *reduced* flood risk, greenhouse gas *benefits*. Using the terms *reduced* and *benefits* presumes an expected positive outcome before measuring and comparing the positive and negative consequences of a project. Because almost all of the BDCP CMs propose to modify or build on Project Levees that are part of the State Plan of Flood Control system with the intake structures permanently changing existing substrates and local hydraulic conditions (BDCP page 3-57), the BDCP may in fact increase flood risks in the Delta. In addition, increased seepage from new BDCP aquatic habitat and 750 acre 4-story dam (forebay) could cause levee failures. Cumulatively, the BDCP CMs may result in long-term increases to flood risk to in-Delta residents and export water supply. These are just a few examples of significant negative impacts associated with implementation of BDCP, so it is difficult to agree with the BDCP consultants that only positive soil erosion, flood, and GHG “benefits” should be measured in the cost-benefit analysis.

GHG Values and Assumptions for BDCP Habitat - Any potential BDCP habitat benefits will not be available for possibly several years or decades after the construction of the conveyance facilities (CM1) because CMs 2-22 will only have Programmatic EIR/EIS review and will NOT be project ready on the same timeline as conveyance construction, or ever since the BDCP does not include site-specific designs for CMs 2-22. This level of uncertainty of habitat creation must be compared against the higher level of certainty for the conveyance project due to the differing levels of environmental review between the two in the BDCP. In addition, the most abundant greenhouse gas in Earth's atmosphere is water vapor (H₂O), accounting for 36-72% contribution, followed by carbon dioxide (9-26%), methane (4-9%) and ozone (3-7%). Therefore, the conversion of 65,000 acres farmland to aquatic habitat (water) may also result in an increase in GHG contributions of the BDCP's other CMs and should be accounted for in the methodology.

Unrealistic GHG Carbon Credit Assumptions - There are several concerns with having the cost-benefit analysis focus time and attention in trying to determine a value for carbon credits in the BDCP methodology: 1) there is currently NO carbon credit protocol for wetlands in California and it will take years to develop and be adopted into the CA Climate Registry for trading, so it is a “Maybe Someday, Might Happen Wish and a Prayer,” not a near-term reality that should be researched and quantified in the BDCP cost-benefit analysis; 2) a baseline of carbon storage in wetlands must first be determined which could take years; 3) it will take several decades before additional carbon storage could be grown in enough quantity to produce tradable amounts of credit, which will occur sometime after the 50-year BDCP permit since the habitat CM1 are NOT permit ready (10-30 years to build BDCP habitat and another 30 years to grow sufficient biomass of carbon storage; 4) any credit can *only* be counted for *additional and verifiable* voluntary carbon storage created, not carbon stored pursuant to following practices already

required by law. Therefore, the acres of wetlands created as mitigation for CM1 (conveyance facility construction) in the BDCP EIR/EIS or to comply with the federal fishery Biological Opinions and possibly the CVPIA, *cannot be counted as credits*; 5) TEN YEARS of emitting *daily* GHG pollutants during construction would already be occurring prior to the potential BDCP wetlands being created in great enough masses to qualify as credits. The proposed cost-benefit valuation of BDCP carbon credits is like Alice chasing the white rabbit down the hole and is deeply concerning since the *consultants time would be better spent on researching and quantifying real and near-term impacts, including negative, to in-Delta residents as a result of implementing BDCP*. Therefore, it is inappropriate for consultants to spend undue time researching and quantifying GHG benefits associated with “someday, but maybe never hope and prayer” possibility of protocols and carbon trading being developed for wetlands in California, especially due to the BDCP long-term timeline for building any significant wetland acres, let alone the additional decades it will take to grow sufficient quantities of biomass to sell.

Silent on Delta Local Government and Community Impacts

There is nothing in the Task Order that specifically focuses on identifying impacts to counties and other local government agencies and special districts. This is a significant omission in light of the impacts and commitments made to the Delta Counties Coalition by the BDCP managers.

Local Tax and Assessment Revenue Losses – The acquisition and conversion of up to 100,000 acres of property in the Delta to create habitat will result in the property transferring from private to public ownership. Unfortunately, neither the federal nor state governments have a good track record of paying their local taxes/assessments to the counties, cities, reclamation districts or other special districts. In fact, the three largest delinquent landowners who have not paid the NDWA assessment are State Agencies. Section 8.4.3.2 Property Tax and Assessment Revenue Replacement Section of the BDCP indicates the intent that local taxes and assessments will be offset by BDCP, but lacks a mechanism to implement according to the same section which also says that no determination on how payments will be made has been identified. Therefore, the cost-benefit analysis should assume no payments of local taxes/assessments will be made based on existing non-payment of local assessments and quantify those financial impacts to each Delta county. This could be resolved if BDCP identified a funding source to fund a non-wasting endowment to last over the course of the 50-year plan to cover these revenues.

Delta Crop Choices - Impacts to Delta agriculture in Task 2.1 asserts that the conversion of over 45,000 acres of farmland to habitat in the BDCP results in a “short-term” net loss of cultivated land which is ridiculous since the conversion is permanent and those 45k acres of land will *not* be farmed ever again. It further asserts that BDCP proposes to also substantially increase the protection of cropland in the Delta which is factually incorrect as those Delta ag lands are already preserved in other state and local programs, so this myth and absurd assumption must be removed from any economic model and the decrease to county revenues from the loss of farm production on 45,000 acres must be researched, quantified and added as an assumption.

Job Losses – The analysis of job losses in the Delta region, primarily farm labor and recreation, should also identify the increase in each county’s unemployment rate and the impact to county budgets, particularly the potential increases in social services/welfare and other county services. This calculation should be calculated for all 50 years of the Plan.

Public Safety Services – Blocking and re-routing of roads in the Delta during BDCP’s ten year construction phase can result in adding up to 60 minutes of response time for emergency vehicles

such as fire and ambulances due to alternate routes resulting in having to drive around an island to find another route. The loss of life and property should be calculated based on an assumption of longer emergency response times for the ten year conveyance construction (CM1) period and outlying years from habitat construction.

Increase in Vehicle Miles Travelled – Blocking and re-routing of roads in the Delta during BDCP’s ten year construction phase can result in adding up to 60 minutes of drive time for Delta residents commuting to work and maneuvering through their community which will affect and contribute to the local air quality attainment standards the county must meet, resulting in substantial fines which must be accounted for in the assumptions.

Increase in Emergency Room Visits – According to the U.S. EPA, breathing air containing ozone can reduce lung function and increase respiratory symptoms. Ozone exposure also has been associated with increased susceptibility to respiratory infections, medication use by asthmatics, doctor visits, and emergency department visits and hospital admissions for individuals with respiratory disease. Ozone exposure may contribute to premature death, especially in people with heart and lung disease. High ozone levels can also harm sensitive vegetation and forested ecosystems. The ozone pollution created by BDCP construction on a *daily* basis for the 10 year construction period may result in more medical treatment, emergency room visits and deaths. The analysis should research and quantify the county costs for hospital visits and increased medical costs for Medicare patients and include in the assumptions/model.

Exacerbate County Non-Attainment – On April 15, 2004 EPA issued designations on attainment and nonattainment of the 8-hour ozone standard for the Sacramento/Yolo areas. EPA also issued a new rule classifying areas by the severity of their ozone conditions and establishing the deadline state and local governments must meet to reduce ozone levels. The ozone pollution created by BDCP construction on a *daily* basis for a *ten year* construction period may result in fines and penalties against the counties and should be included in the assumptions/model.

Questionable and Missing Assumptions

Export Water Demand – An important assumption is missing from BDCP methodology for determining the value on water supply: a realistic assessment of demand and commitment to pay for future State Water Project costs. Each water district in export areas have local water supply development options that compare favorably to the future MWD imported water costs if BDCP is implemented and have been investing money to develop/build these alternative water supplies because they are considered more reliable than Delta import water. MWD’s water sales have declined 32% since 2008. MWD had their lowest water sales in more than two decades in 2011, with 300,000 af less in sales than budgeted by their board. At the same time, MWD’s rates have risen 55% since 2008, possibly creating an elasticity problem in terms of future rates to pay their portion of BDCP. MWD’s projected sales in 2020 are 24% lower than 2000-2009 average. MWD’s rate structure is an unstable source of funding because it does not have water purchase contracts with its 26 member agencies to back up its “Take-or-Pay” SWP Supply Contract, which means its costs could be more than revenues in any given year over the 40-year bond repayment window. The consultants should research the realistic water demands of both urban and agricultural export water agencies and add an assumption to the methodology regarding those findings to the BDCP cost-benefit analysis.

Impacts to Labor Markets – The 1/23/13 presentation recognized the BDCP’s potential to cause large changes in employment in the Delta region, both positive and negative. However, it failed to mention the methodology and assumptions to be used in the BDCP cost-benefit analysis. This is very important as there is a very big difference between the short term impacts and the long term impacts. For instance, the positive impacts that may occur in the Delta region are probably only short-term due to temporary construction jobs to build the conveyance facilities, but the negative labor impacts to the Delta are permanent. Therefore, the level of impact is not apples to apples. The long term affects of permanent job losses would likely outweigh the short-term benefits of temporary construction jobs, but it is unclear whether this will be analyzed. Also, the cost-benefit analysis should analyze the ability of out of work farmers/farm workers, commercial fisherman, or Delta marina workers to find comparable work in the Delta region.

Soil Erosion Values and Assumptions - The reduced soil erosion values mentioned in Task 2.3 sound speculative and will need to be reviewed by the in-Delta agricultural community prior to being inserted into the model and should be put through an Uncertainty analysis and peer-reviewed prior to the cost-benefit analysis. In addition, their benefits will not be available for possibly several years after the construction of the conveyance facilities (CM1) because habitat will only have Programmatic EIR/EIS review and will NOT be project ready on the same timeline as the conveyance project, and in fact some of the expected habitat acres may in fact *never* be created pursuant to the Plan. This level of uncertainty of habitat must be compared against the higher level of certainty for the conveyance project due to the differing levels of environmental review between the two in the BDCP.

Water Quality Values and Assumptions - The water quality improvements from filtering and purification mentioned in Task 2.3 sound speculative and will need to be reviewed by the in-Delta water agencies and farmers prior to being inserted into the model and should be put through an Uncertainty analysis and peer-reviewed prior to the cost-benefit analysis. In addition, these speculative benefits will not be available for possibly several years after the construction of the conveyance facilities (CM1) because habitat will only have Programmatic EIR/EIS review and will NOT be project ready on the same timeline as the conveyance project, and in fact some of the expected habitat acres may in fact *never* be created pursuant to the Plan. This level of uncertainty of habitat must be compared against the higher level of certainty for the conveyance project due to the differing levels of environmental review between the two in the BDCP.

Flood Risks Values and Assumptions - Reduced flood risks mentioned in Task 2.3 are one-sided and biased, failing to identify and consider the negative flood impacts and increased flood risks created by the implementation of BDCP. The additional impacts that need to be analyzed include the increased chance of flooding to the population, agricultural lands, and businesses in the vicinity of the 750 acre 4-story dam (forebay) to be built in the North Delta if the dam fails, possibly due to an earthquake since its being built in the same high-risk earthquake area as the Delta levees. Seepage is a known stressor that can cause levee failure, so the risks of seepage and localized flooding caused by the forebay and new aquatic habitat projects in BDCP also need to be factored in as an assumption in the methodology. The Central Valley Flood Control Board, CA Central Valley Flood Control Association, and Delta reclamation districts should be consulted regarding the literature that should be used and/or avoided for source data for valuing flood control benefits and the assumptions to be used in the model.

PROCESS ISSUES

Peer Review – The Task Order does not include a requirement for the cost-benefit analysis report to be peer reviewed which is a common practice to validate the objectivity and ultimate credibility of the Study. The Draft Technical Report prepared under Task 3 should be amended to allow the Study to be peer-reviewed by an independent and impartial economic peer review team (Not the DSC Independent Science Board) prior to publication under Task 4 in order to give greater confidence to all interested/impacted parties in the report's credibility.

Sensitivity & Uncertainty Analyses – The Task Order does not call for Sensitivity or Uncertainty Analyses to be conducted which is important in order to test the robustness of the results of the model in the presence of uncertainty associated with the BDCP. This is a necessary step due to the uncertainty of BDCP CMs 2-22 and the consultants proposing very uncertain concepts and data to be inserted into the economic model including: earthquake risk reduction benefits; existing water supply deliveries; GHG credits associated with habitat CMs; skeptical non-market environmental impacts, and the potential use of biased data or subjective assumptions. The Task Order should therefore include the preparation of both Sensitivity and Uncertainty Analyses to test the results of the model.

Refinements to No Action Alternative - Task 2.1 of the Task Order states the analysis will reflect refinements in how the no action alternative is framed for the purpose of this analysis in construction and operation costs. Many impacted parties are concerned these “refinements” will: 1) be directed by Dr. Meral and the water export contractors who are neither economists nor impartial parties; 2) use a different annual water delivery amount than currently exists under current BiOps and is used as the assumption in the BDCP EIR/EIS No Action Alternative; 3) insert improbable assumptions about earthquake risks including using the year the collapse is predicted to occur, not multiplying by the probability collapse happens, using 2 and 3 year outages that are highly improbable and inconsistent with DWR reports. Assuming the state will not reduce the earthquake risk to water exports through levee maintenance and repair which is assumed in the BDCP No Action Alternative (EIR/EIS Appendix 3D, page 3D-15) and based on recent history of the investments over the last five years on Delta levees being higher than the total spent in thirty years before that combined. The cost-benefit analysis should match the BDCP EIR/EIS No Action Alternative with no “refinements” by the State, Bureau, or water contractors as allowed in the Task Order, that deviates from the EIR/EIS NAA.

Editing of Draft Technical Report – The Task 3 Deliverable contains concerning language to allow the Draft Technical Report to be released to DWR, Reclamation, and the water contractors involved in the BDCP for review *and editing*. In order for the BDCP cost-benefit analysis to be impartial, unbiased, and credible it must remain an independent economic analysis with no undue interference or influence by interest groups that would benefit from including or excluding significant costs from the cost-benefit analysis in order to influence the outcome. The Task Order should be revised to treat DWR, Reclamation, and water contractors like all other interest groups by removing their right for prior review and edit before the Final Technical Report is released to the public. They should have no greater ability to influence the outcomes of this Report than any other interest group or member of the public and should send comment letters on the cost-benefit analysis like everyone else.

Meetings and Coordination – We appreciate Task 5 to have the consultants schedule additional meetings with the BDCP Finance Work Group, Delta agricultural groups, and encourage these meetings to provide greater detail on ALL of the specific and final assumptions to be input into the economic analysis model to determine if they are inclusive of all issues that need to be analyzed and are characterized in an unbiased fashion to allow a credible product at the end that all impacted parties can trust. We would request: 1) adding the Delta Counties Coalition and Delta flood management groups to the list of impacted parties to meet with; 2) have the consultants make available the complete list of specific assumptions to be input into the model; and 3) allowing additional public comments on the development of the cost-benefit analysis once the next Administrative Draft of the BDCP is released later this month.

NDWA BACKGROUND

North Delta Water Agency Water Supply Reliability

The NDWA includes approximately 300,000 acres in the legal Delta and was formed by a special act of the Legislature in 1973 to negotiate an agreement to (a) protect the water supply of the lands within the NDWA against intrusion of ocean salinity and (b) assure the lands within the Agency of a dependable supply of water of suitable quality sufficient to meet present and future needs. In 1981, DWR and NDWA executed a Contract for the Assurance of a Dependable Water Supply of Suitable Quality (Contract). The purpose and intent of the 1981 NDWA/DWR Contract is a guarantee by the State of California that, on an ongoing basis, it will ensure that suitable water will be available in the northern Delta for agriculture and other beneficial uses.

In addition to being a water contractor with the Department of Water Resources, the North Delta is the location for all of the new water diversion intakes, new forebay, and a significant portion of the habitat restoration currently proposed in the BDCP, which individually and cumulatively have the potential to impact the criteria in our 1981 Contract. Any fixes pursuant to the 1981 NDWA/DWR Contract are requirements above and beyond the CEQA standard to simply mitigate the impacts.

Previous NDWA Comments

The NDWA and the Local Agencies of the North Delta (LAND) sent a joint letter on November 4, 2011 after listening to a BDCP economic presentation by Dr. David Sunding expressing our dismay at the lack of impartiality of the analysis and its one-dimension focus on benefits to export water contractors without any recognition of the negative impacts to the Delta region where the BDCP will be implemented. We additionally mentioned that the BDCP has as much potential to be an unemployment public works project due to permanent job losses in the Delta region as it does an employment boost from temporary construction jobs. Yet these same problems were still evident in the BDCP work product discussed presented at the 1/23/13 Finance work group economic briefing and therefore still persist.

In the NDWA September 21, 2012 letter, we stated it is critical for the economic study to accurately identify and fully analyze the direct and indirect positive and negative impacts of the BDCP actions (Conservation Measures) in the benefitted export areas and the project area in the Delta. Due to the significant impacts to taxpayers, ratepayers, environment, and economic sectors, the public deserves to have unbiased information to make an informed decision on such

a costly project that will have both positive and negative economic impacts in different regions of the state. Questions we said, and still believe, the economic study should answer include:

- Should the project be built at all?
- Should the project be built now?
- Should the project be built to a different configuration or size to reduce costs and avoid significant negative impacts.
- Will the project have a net positive social value for California irrespective of to whom the costs and benefits accrue?
- Are some groups more likely to benefit from the project when compared with other groups?
- Are some regions of the state more likely to benefit from the project when compared to other regions?
- Does the project result in an equitable distribution of benefits and costs between groups such as urban water v. ag water, or export water users v. in-Delta water users?
- Does the project result in an equitable distribution of benefits and costs between regions of the state, north v. south?
- Does the project result in an equitable distribution of negative impacts between groups such as urban water v. ag water, or export water users v. in-Delta water users?
- Does the project result in an equitable distribution of negative impacts between regions of the state, north v. south?

CONTRACTUAL AND STATUTORY REQUIREMENTS TO CONSIDER

NDWA Contract Compliance

The NDWA Contract has specific impacts caused by the operation of the SWP that are to be avoided, prevented, or mitigated not only in the Sacramento River but in ALL channels of the North Delta. Specifically:

- 1) State shall not convey SWP water so as to cause:
 - Decrease in natural flow detrimental to ND water users
 - Increase in natural flow detrimental to ND water users
 - Reversal of natural flow direction
 - Alteration in water surface elevations in Delta channels to the detriment of Delta channels or water users within the Agency
- 2) Seepage or erosion damage to lands, levees, embankments, or revetments adjacent to Delta channels with Agency:
 - State shall repair or alleviate the damage
 - State shall improve the channel as necessary
 - State shall be responsible for all diversion facility modifications required (hundreds of them in ND)

These 1981 NDWA/DWR Contract provisions are NOT discretionary for DWR as they are part of their assurances provided to the North Delta in the agreement. DWR's costs to purchase the majority of land on Sherman Island in the late 90's as an alternative to building a costly overland water supply to Sherman Island water users (Contract Amendment) could be used in developing

an assumption regarding potential implementation costs if Contract violations occur throughout the 50-year BDCP permit time period.

The Contract also requires water of such quality (as specified in the Contract criteria) to be in the Delta channels for reasonable and beneficial uses and prevents local diversions and uses from being disturbed or challenged by the State. If you couple these two provisions with the State being responsible for SWP diversion facility modifications required from detrimental impacts experienced by North Delta channels and water users from seepage, erosion, and altered water surface elevations due to the operation of the SWP (and BDCP as part of the SWP), then there are potential costly fixes depending on whether the plumbing changes and habitat trigger any 1981 NDWA/DWR Contract provisions.

Finally, the enforcement provisions of the 1981 NDWA/DWR Contract states that if the State fails to maintain water quality criteria (as specified in the Contract or standards adopted by SWRCB, whichever is better, and a 1998 MOU with DWR), then the State *shall*:

- Cease all diversions to storage
- Increase releases of stored water from SWP reservoirs
- Cease all export by the SWP from Delta channels
- Or any combination of these

Therefore, an assumption regarding the probability/risk of export water supply deliveries being reduced if BDCP water operations result in violating water quality provisions in the 1981 NDWA/DWR Contract and the associated increase in costs to export water should be considered in the methodology. An assumption of the potential increased BDCP construction costs if 1981 NDWA/DWR fixes are necessary from damage caused after construction and implementation of BDCP CM1 may also warrant consideration. These possibilities have just as much likelihood of occurring as the multi-level levee failure from an earthquake.

Delta Reform Act Compliance

The CA Water Code Section 85320(b) states that the public benefits associated with the BDCP *shall not* be eligible for state funding unless the BDCP does all eight items specified in the law.

One of the eight items that *must* be included in the BDCP in order for the habitat projects (public benefits of Conservation Measures 2-22) to be eligible for state funding, including bond money, is:

- A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of a NCCP
- Other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions
- Identify the remaining water available for export and other beneficial uses

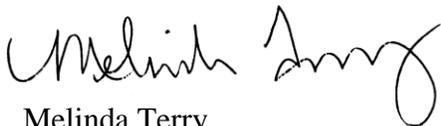
Currently the BDCP does not identify the remaining water available for export and other beneficial uses or rates of diversion, which would make the costs for CMs 2-22 ineligible for state funding. Therefore, one of the assumptions used in the methodology should be the

potential that the BDCP will *not* receive *any* state funding for CMs 2-22 and how that impacts the per acre cost of water and total debt financing for water exporters.

CONCLUSION

Despite our concerns about the approach the BDCP cost-benefit analysis has taken in the Task Order, we appreciate the opportunity for the public, particularly the Delta agriculture groups to provide input on the development of the Study. We hope your consideration of all written public comments as well as the additional coordination with impacted parties will lead to the correction of current deficiencies in the Task Order and ultimate BDCP Cost-Benefit Analysis Report. We welcome the opportunity to discuss in further detail any of the numerous issues raised in this letter. Please feel free to contact me if you have any questions regarding these comments and suggestions.

Sincerely,

A handwritten signature in black ink, appearing to read "Melinda Terry". The signature is fluid and cursive, with the first name "Melinda" written in a larger, more prominent script than the last name "Terry".

Melinda Terry,
Manager

cc: Commissioner Michael L. Connor, MLConnor@usbr.gov