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Via Email: BDCPComments@icfi.com

October 30, 2015

BDCP/California WaterFix Comments
SENT via U.S. MAIL and electronic mail
P.O. Box 1919
Sacramento, CA 95812

RE: Comment Letter to RDEIR/S – California Water Fix

SolAgra Water Solution – previously known as: West Delta Intake Plan Viable Alternative to BDCP/ CWF

The SolAgra Water Solution, previously known as the "SolAgra West Delta Intake Plan" is a viable alternative to the CWF that must be considered under not only NEPA and CEQA, but also the Clean Water Act.

SolAgra is disappointed that the RDEIR/S did not include additional analysis of alternatives that would meet water supply needs without damaging the Delta environment and communities. Since we received no response to our previously provided comments, there is also no publicly available basis for this omission. Our July 29, 2014 comment letter provided a detailed discussion of the various legal requirements to consider alternatives, including the SolAgra West Delta Intake Plan. All alternative solutions that proposed intakes in the west Delta were summarily dismissed without further analysis or consideration. The Pyke Plan (aka: West Delta Intake Concept) which was discussed in DEIR/S Appendix 3A, was preliminarily considered but not included for further analysis in the DEIR/S due to a presumed lack of viability. SolAgra's prior comment letter discussed the reasons why the SolAgra alternative is completely different from the Pyke Plan. The only similarities between the two alternatives are similar names and the use of Sherman Island for water intakes. To prevent the confusion between alternatives, we have renamed the SolAgra West Delta Intake Plan – the **SolAgra Water Solution ("SWS").** All of the comments made in our July 28, 2014 comment letter continue to apply in the context of the new preferred alternative, 4A, and it was a legal error for the RDEIR/S to omit consideration of the SolAgra Water Solution.

An additional basis for consideration of the SolAgra Water Solution, in addition to the requirements of CEQA and NEPA, is for purposes of determining the Least Environmentally Damaging Practicable Alternative ("LEDPA"). (See 33 U.S.C. §

1344(b)(1).) An application was recently submitted to the U.S. Army Corps of Engineers ("USACE") to fill almost 800 acres of wetlands with up to 30 million cubic yards of excavated material to construct Alternative 4A. USACE regulations provide, "[N]o discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem." (40 C.F.R. § 230.10(a).) USACE regulations specifically require the applicant to identify possible practicable alternatives especially including those alternatives that do not involve the discharge of fill material. (40 C.F.R. § 230.10(a)(i).)

The project purpose and need can be met by the SolAgra Water Solution. (See RDEIR/S, pp. I-9 to I-12.) In particular, diversions from the Delta under the SolAgra Water Solution can occur in a manner that "minimizes or avoids adverse effects to listed species, and allows for the protection, restoration and enhancement of aquatic, riparian and associated terrestrial natural communities and ecosystems." Due to the location of the SolAgra intakes in the western Delta, diversions can also "[r]estore and protect the ability of the SWP and CVP to deliver up to full contract amounts when hydrologic conditions result in the availability of sufficient water." (See RDEIR/S, pp. I-9.) Even in the case of insufficient available water quantities, as California has experienced during the most recent and ongoing four year drought, the SolAgra Water Solution would provide up to 1 Million Acre-Feet/ year ("MAF") of newly created water via a large desalination plant on Sherman Island. Using state-of-the-art desalination technologies, this water supply would be drought proof and would be immune to projected sea level rise.

The SolAgra Water Solution is a practicable alternative that would have a less adverse effect on the aquatic ecosystem than the currently preferred Alternative 4A. (40 C.F.R. § 230.10(a).) In particular, the SWS requires only one 19-mile long tunnel instead of two 35-mile long tunnels, PLUS the SolAgra tunnel would have a borehole diameter of 32 feet, appreciably smaller than the 46 foot borehole diameter tunnels proposed under Alternative 4A. Moreover, since the SolAgra tunnel would run primarily south of the Delta, from Sherman Island to the SWP facilities at Bethany Reservoir, NO WATERS/WETLAND fill would be necessary. CWF Alternative 4A proposes more than 30 million cubic yards of tunnel excavation/ fill material to be deposited in pristine areas of the Delta, the SolAgra Water Solution would deposit less than 1.5 million cubic yards of fill material, and this material would all be deposited on Sherman Island in areas that are currently upland grazing areas (not wetlands). This quantity of fill material can be deposited on 310 acres at a depth of only 3 feet. This quantity of fill material would be beneficial to the environment by offsetting the land subsidence that has occurred on Sherman Island over many years. When graded and re-compacted, this fill area can be re-seeded and returned to grazing with no impact to the environment. The SWS produces less than 10% the amount of fill material as the Preferred Alternative 4A. The SWS tunnel path uses existing easements and rights of way so that no private lands must be purchased or "taken" by eminent domain. Due to the location of the SolAgra tunnel, approximately 50% of the material removed from the tunnel will be rock that is sourced from beneath the foothills of Mt. Diablo. This rock will be used to produce the fish screening permeable levee sections that allow fresh and brackish water to be brought onto Sherman for processing and desalination.

The total tunnel length proposed in the Preferred Alternative 4A is more than 70 miles. This exceeds by more than 3 times the length of the single SolAgra tunnel shown in the SolAgra Exhibit 2. The SolAgra plan would be constructed near existing high capacity powerlines and ultimately be powered in large part by SolAgra's Ryer Island Solar Power plant and other locally generated renewable energy. Thus, the upcoming LEDPA determination that will occur with the USACE review provides an additional basis for full consideration of the SolAgra Water Solution.

We are responding to Governor Brown's stated willingness to hear better ideas to improve our Delta water supply system to support all of California. When it was announced that the Bay Delta Conservation Plan ("BDCP") was being abandoned and replaced by the California Water Fix ("CWF"), he said, ""If somebody has a better alternative, certainly we'll hear it. This is an imperative. We must move forward."

SolAgra Corporation has a better alternative and requests that it be heard and given serious consideration. The SWS is a reasonable and superior alternative to the BDCP/CWF. It is a legal imperative that practicable alternatives be fairly evaluated.

A description of the SolAgra WDIP was previously submitted as a superior alternative to the many potential project configurations considered in the BDCP's Draft EIR/EIS. As explained in our prior letter (copy attached), the WDIP is designed to better accomplish the tasks for which the BDCP, and the now rebranded "California Water Fix", was designed.

State and federal endangered species acts and environmental review statutes require that every project must fully consider alternatives to minimize take of endangered species and investigate means to avoid significant environmental impacts. The SWS accomplishes these tasks without the un-mitigatable economic, environmental and social impacts of the twin-tunnels proposed by the CWF.

The current CWF tunnel plan to divert up to 9,000 cfs of freshwater from the upper Sacramento River at Clarksburg produces unacceptable water quality in the lower Sacramento River. This plan also increases salinity downstream of the Clarksburg intakes, thus violating basic clean water requirements by moving X2 upstream. This was recently explained in the letter by the U.S. Environmental Protection Agency. The BDCP's severe impacts to fish in the northern Delta are one of the main reasons that the project could not be permitted as a 50-year conservation plan, and it was ultimately abandoned and replaced by the California Water Fix/EcoRestore.

Water from our proposed Sherman Island water processing and desalination plant is NOT vulnerable to drought or projected sea level rise. It will provide greater reliability to ensure as much (or more) than the quantity proposed by the BDCP/CWF.

The SolAgra Water Solution can be built in half the time and at far less cost both financially and environmentally. (See attached Exhibits for project specifics.)

The water quality in the Sacramento River at Sherman Island is far superior to the San Joaquin River water that is currently drawn into the Clifton Court Forebay by the Banks Pumping Plant. The desalinated water produced by the Sherman Island Desalination Facility will be far superior to the Sacramento River water. Therefore, the blended output from the Sherman Island Desalination Facility will far exceed the water quality that can be diverted by the CWF from the Sacramento River at Clarksburg.

1. **The SWS provides a superior alternative to BDCP and CWF. Please see below for the compare/contrast between the BDCP/CWF and the SolAgra Water Solution. The comparisons are undeniable.** Since the beginning of construction of the State Water Project ("SWP") in the 1950s, California has relied upon high risk "serial engineering". This means undertaking quick-fix solutions - reasoning that "the end justifies the means" OR "let's get the water flowing south and we'll worry about the consequences later." "Later" has now arrived and the consequences are dire. Each new engineering solution attempts to remediate the disastrous conditions created by the previous "solution." This is also the case with the currently proposed CWF. SWS will better restore Sacramento River flow pathways and volumes, resulting in significant benefits to native fish species and other wildlife in the Delta. It will also benefit fishermen, local residents and farmers. SWS would pump the SWP's entitlement through intakes on State owned land at Sherman Island.
2. SWS would increase the SWP's capabilities to export water to the rest of California. In fact, the SWS is the only alternative offered with the capability of generating approximately **1 million acre-feet of "new" drinking water each year** by filtering and desalinating brackish water arriving on the tides from Suisun Bay. **The SWS provides this capability irrespective of drought conditions.**
3. SWS would employ a Public-Private partnership similar to the business structure that was used by IDE Technologies to design and build the largest seawater desalination facility in the Western Hemisphere in Carlsbad, California – just north of San Diego. Desalinating brackish water from eastern Suisun Bay, with only 2-4% the salinity of seawater, can be up to 25 times more efficient and far less power intensive than desalinating 100% seawater.

The SWS would produce the same quantity of water (2.4 Million AF/year) at Sherman Island than is currently pumped from the south Delta at the Banks Pumping Plant ("Banks") during a "normal-water year". However, our use of desalination produces higher quality water than is pumped at Banks.

The water production and pumping to the SWP is accomplished using renewable hydroelectric power. The SWS would also be powered by 100% renewable energy from SolAgra's locally proposed Ryer Island Solar Power Plant. When required, that solar power could be augmented by wind power from the existing nearby Montezuma Hills (Rio Vista) wind farms. All power would be delivered via existing power corridors. No additional easements or rights of way would be required.

Banks currently uses eleven 26,000-horsepower pumps to pump water from the Clifton Court Forebay up to Bethany Reservoir, where it enters the SWP. This is a vertical rise of 244 feet. The SWS would use pressure created by the desalination process to pump water directly from Sherman Island to Bethany Reservoir, thereby bypassing Banks. This allows the current power used at Banks to become available for other uses while Banks is on standby, and it makes Banks available for a better use.

The needs of the Central Valley Project ("CVP") can be addressed by:

- In high water years, when water is plentiful and local hydroelectric power is available to power Banks, that pumping plant would be used, as needed, to create surge pumping capacity that has never before existed. This accomplishes the "Big Gulp" aspired to in the BDCP, and it does so with renewable energy.
- The SWS bypassing Banks would enable this increased surge capacity. This capacity, combined with the prudent design and construction of additional high capacity "plumbing", could move large quantities of water during the infrequent flood stages when reservoirs throughout the state are releasing water to avoid overtopping. This "Big Gulp" flow can be stored in Tulare Lake for later redistribution to San Joaquin Valley water districts. This provides a complete, environmentally superior alternative to the BDCP/CWF proposals.

The SWS would create a dual-plant, interconnected water processing system on State-owned land at Sherman Island. Plant #1 filters and processes incoming fresh water from the Sacramento and San Joaquin rivers via multiple fish-screened intakes around Sherman Island. Plant #2 intakes brackish water through fish-screened intakes on Sherman Lake and Mayberry Slough and then effectively desalinates this low salinity brackish water. After processing, desalinated water from Plant 2 is blended with fresh, filtered water from Plant 1. The combining of fresh water with the treated and desalinated brackish water will replace the 2.4 million Acre-Feet/year of fresh water that is currently conveyed through the SWP in a "normal water year." The water produced at Sherman Island will be of higher quality than the water that is pumped from the Clifton

Court Forebay in the south Delta via Banks because it will be **processed** at Sherman Island, not just screened and pumped. This means the State Water Contractors that receive the water from the SWP will receive higher quality water than they are currently receiving from Banks, **OR** that they would receive from the twin tunnels of the proposed CWF. **The SolAgra Water Solution is the ONLY alternative that processes and desalinates the water before supplying that water to the SWP.**

- The SWS can augment the low flow of fresh river water in years of reduced river flow due to drought or other issues. The output volume of the desalination plant can be increased to provide additional desalinated water to make up for reduced quantities of available fresh water caused by drought or sea level rise.
- The separation of processing functions into two discrete, but interconnected plants, allows both plants to operate at peak efficiency, while still accomplishing the end result of producing 2.4 Million Acre-Feet/year of fresh water for the SWP **irrespective of drought** conditions.

The fresh water that is produced at Sherman Island would be pumped through a single, 28 foot ID/ 32 foot OD pressure tunnel that is only 19 miles long (see Exhibit 2). This is far superior to the twin tunnels proposed by the BDCP/CWF, which are each 40 foot ID/ 46 foot OD. Due to the tunnel liner thickness, the proposed CWA tunnels require borehole diameters that are a minimum of **46 feet in diameter. Each tunnel** is proposed to be **35 miles long!**

Since the incoming water to Sherman Island will be fish-screened by long, low velocity intakes via permeable levees and pressurized via the filtration and desalination processes, it can completely bypass the Clifton Court Forebay and the Banks Pumping Plant. It can be pumped directly to Bethany Reservoir, where it will begin its gravity flow into the SWP's California Aqueduct.

The principle objectives and benefits of intake relocation to Sherman Island as proposed in the SWS:

- By placing the Banks Pumping Plant on standby, the 2.4 Million Acre-feet/year ("MAF") being drawn into the Banks' intakes is instead permitted to once again flow completely through the Sacramento and San Joaquin Rivers. This restores more natural East to West flow through the Delta, closer to what occurred before the State Water Project began pumping operations in 1960.
- After flowing completely through the Delta, 1.4 MAF is brought onto Sherman Island and added to 1.0 MAF of desalinated brackish water that is in taken from Sherman Lake on the south end of Sherman Island. The additional 1.0 MAF of fresh water that is not brought onto Sherman Island continues its flow into the San Francisco Bay/Delta Estuary ("SFBDE"). This additional flow supports the retention of X2 at its historic range OR even moves it further west. This improves

water quality in the SFBDE and facilitates the recovery of natural breeding and feeding grounds for aquatic species of concern. This meets the recommendations for increased minimum Delta outflow that the EPA. State of the Estuary Report, State Water Resources Control Board and many other analyses have clearly shown are necessary to restore the Bay-Delta and its fisheries;

- Improves both in-Delta and export water quality, rather than improving export water quality **at the expense of in-Delta water quality**; and
- Avoids significant impacts to the Sacramento Region, including North Delta communities, farmers, water supplies and flood control facilities.

We believe the SolAgra Water Solution is a viable alternative which could accomplish this greater task in less than half the time and at far less cost than the BDCP/CWF.

This new capability can be created by SolAgra using renewable energy, with no need to build additional fossil fuel power plants, nuclear plants, or to import "brown" power from other states. The SolAgra approach is thus fully consistent with groundbreaking statewide efforts to reduce greenhouse gas emissions.

The power easements, water conveyance rights-of-way currently exist. No additional purchases of easements or rights-of-way are required. The State of California owns 8,776 acres on Sherman Island that are more than adequate for the facilities that are proposed by the SolAgra Water Solution. No additional land must be condemned or acquired. No Delta property owners must be displaced or have their lives and/or farming operations temporarily or permanently impacted.

The SolAgra Water Solution better restores Bay-Delta ecosystems than the alternatives studied in the RDEIR/S while equaling or exceeding the water quantities projected by the CWF with far less cost, in far less time and without environmental impact. This reduces or eliminates expensive environmental mitigation requirements. Under the SWS, Sherman Island can become the center of the "California Water Solution."

The SolAgra Water Solution alternative would preserve natural river flows and maintain water quality in the Delta while simultaneously improving reliability of export water supply. It would also minimize or completely avoid many of the significant environmental impacts that are identified in the RDEIR/S. The SWS is the drought-proof solution that has been desperately needed in California for more than 50 years. This Plan **IS** the necessary alternative to the "serial engineering" that has been plaguing California since the creation of the CVP and the SWP. The SWS is a practicable and superior alternative to the BDCP/CWA. It must be fully evaluated.

SolAgra has evaluated the construction methodology in the Final Draft of the DWR's Conceptual Engineering Report for the CWF that is dated July 1, 2015. Barry Sgarrella, CEO of SolAgra is an experienced tunnel engineer. He has major reservations and concerns regarding the viability of the construction methodology in the CER, and particularly in Chapter 11 – Tunnels. SolAgra will be submitting his evaluation of the CER under separate cover for evaluation and consideration by DWR.

We welcome the opportunity to discuss the SolAgra WDIP in greater detail. We have all invested significant resources to find the best solution to California's longstanding water issues. California is experiencing the longest drought in its history. It is essential that we find the most sustainable and best solutions to resolve this issue.

We agree with Governor Brown: "...this is an imperative. We must move forward." We believe that we must move forward with the best solution possible.

Please contact us to schedule an appointment to discuss the benefits of the SolAgra Water Solution so that you may obtain the information needed to adequately review this superior alternative to the CWF.

Sincerely,

Barry Sgarrella
Chief Executive Officer
SolAgra Corporation

Exhibits:

1. Compare Contrast BDCP/CWF to SolAgra Water Solution
2. Master Map of the SolAgra Water Solution.
3. Ryer Island to Sherman Island Map – POWER PATH
4. Sherman Island to Bethany Reservoir Map – WATER PATH

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BDCP/CWF - COMPARE/ CONTRAST with SOLAGRA WATER SOLUTION

	Project Refinements	BDCP Administrative Draft EIR/EIS	BDCP 2013 Project Refinements	CWF 2014 Project Refinements	SolAgra 2015 Water Solution
1	Water Facility Footprint (acres)	3,654	1,851	1,810	110
2	Intermediate Forebay Size (Surface Acres)	750	40	28	500
3	Private Property Impacts (acres)	5,965	5,557	4,288	0
4	Public Lands Utilized (acres)	240	657	733	610
5	Number of Tunnel Reaches	6	5	11	2
6	Number of Launch & Retreval Shaft Locations	7	5	5	2
7	Agricultural Impacts (acres)	6,105	6,033	4,890	1,100
8	Number of Tunnels	2	2	2	1
9	Total Length of Tunnels (miles)	70	70	70	19
10	Borehole (finished diameter + tunnel liner) (feet)	46	46	46	32
11	Total Volume of Tunnel Excavation (cubic yards)	30,705,928	30,705,928	30,705,928	2,988,225
12	Number of Tunnel Boring Machines	9	9	11	1
13	New Tunnel Easements required (acres)	1,273	1,273	1,273	0
14	Tunnel Path Access for Geotech work (soil borings)	15%	15%	15%	100%
15	Length of Screens to prevent fish entrainment (feet)	5,000	5,000	3,000	58,080
16	Intake Water Velocity @ fish screens	HIGH	HIGH	VERY HIGH	VERY LOW
17	Probability of Entraining Endangered Fish Species	HIGH	HIGH	VERY HIGH	VERY LOW
18	Probability of Successful Completion	LOW	LOW	LOW	VERY HIGH

Data provided by CWF Website & CER

Data provided by SolAgra Corporation

Outline of the SolAgra Water Solution:

Historic maximum water shipments from the State Water Project ("SWP") via Banks Pumping Plant/ Califoria Aqueduct is 2.4 Million Acre Feet/ year ("MAF").
This 2.4 MAF never reaches the confluence of the San Joaquin & Sacramento Rivers. It increases salinity and moves X2 east (up river) especially in droughts.
The BDCP/CWF would seriously exacerbate the salinity issues in the lower Sacramento River impacting fish and other marine life.
The SolAgra Water Solution turns off the Banks Pumping Plant. This allows that 2.4 MAF to flow to the confluence of the rivers at Sherman Island.
SolAgra captures 1.4 MAF of fresh water from the rivers & brings it onto Sherman Island using low velocity fish screen sections that total 8 miles in length.
The additional 1.0 MAF flowing downstream in the rivers continues flowing toward Suisun Bay, significantly improving environmental conditions in the SFBDE.
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Desalination of low salinity brackish water is done with greater thru-put and far less energy than desalinating sea water.
Brine from desalination process is greatly reduced due to low salinity intake water. Brine from desalination will NOT significantly influence salinity in the SFBDE.
With 1.0 MAF of fresh water flowing west - X2 will move west (down river) improving the environment in the SFBDE.
The fresh water from north Sherman Island is blended with desalinated water from the south end of Sherman. A total of 2.4 MAF is pumped into a new tunnel.
This new single tunnel, 28 feet inside diameter, extends 19 miles to Bethany Reservoir where it enters the SWP after completely bypassing the Banks Pumping Plant.
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THE SWS PROVIDES DIRECT SOLUTIONS TO THE SWP SIDE OF THE EQUATION. THE CVP IS AIDED VIA "BIG GULP" TRANSFERS WHEN WATER IS AVAILABLE.

Summary:

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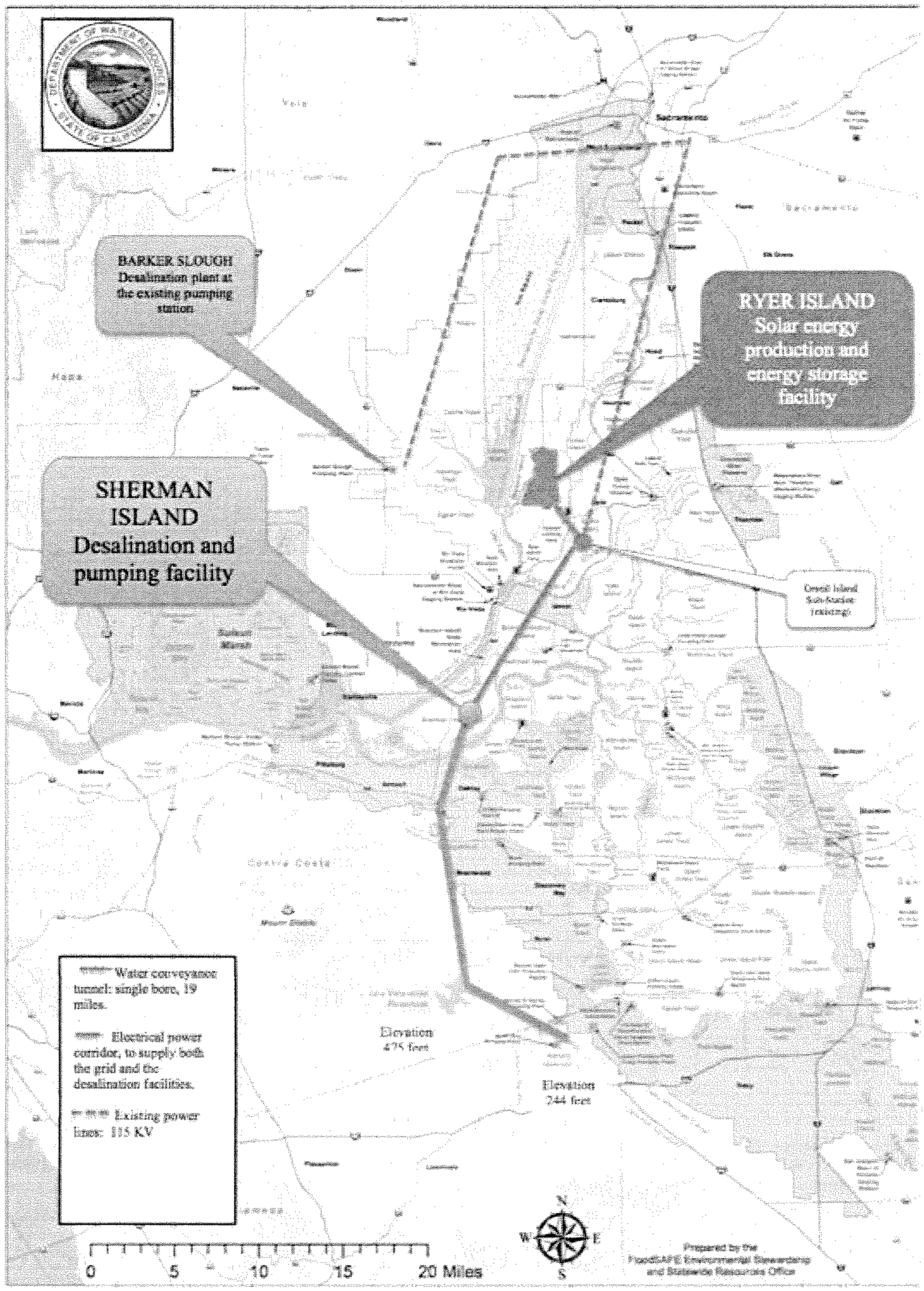
The SWS supports: 3.7 MAF to CVP + 2.4 MAF to SWP via Sherman Island + 2.4 MAF Big Gulp water - while adding 1.0 MAF to the SF Bay-Delta Estuary.

BDCP/California WaterFix Comments
October 30, 2015



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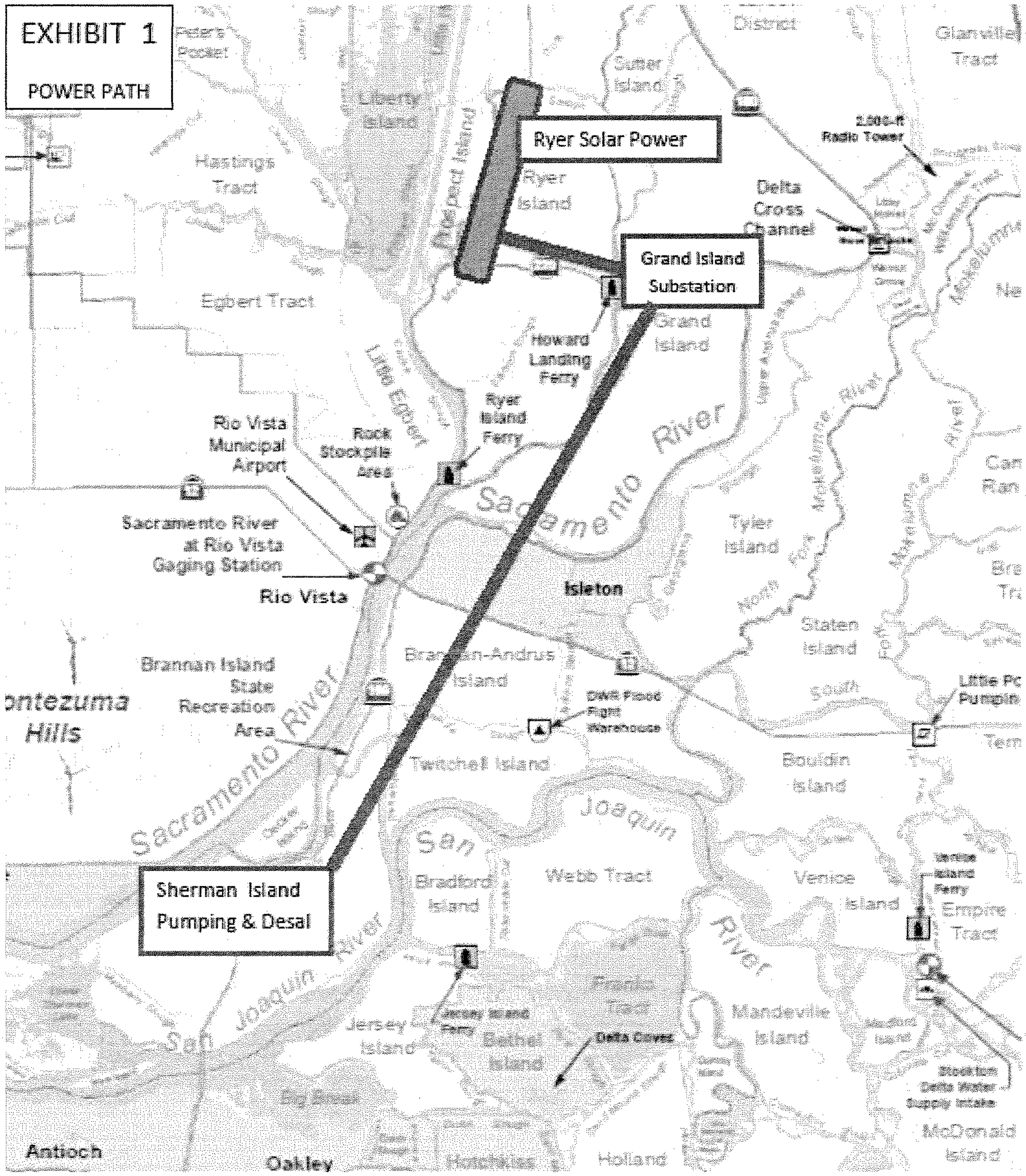
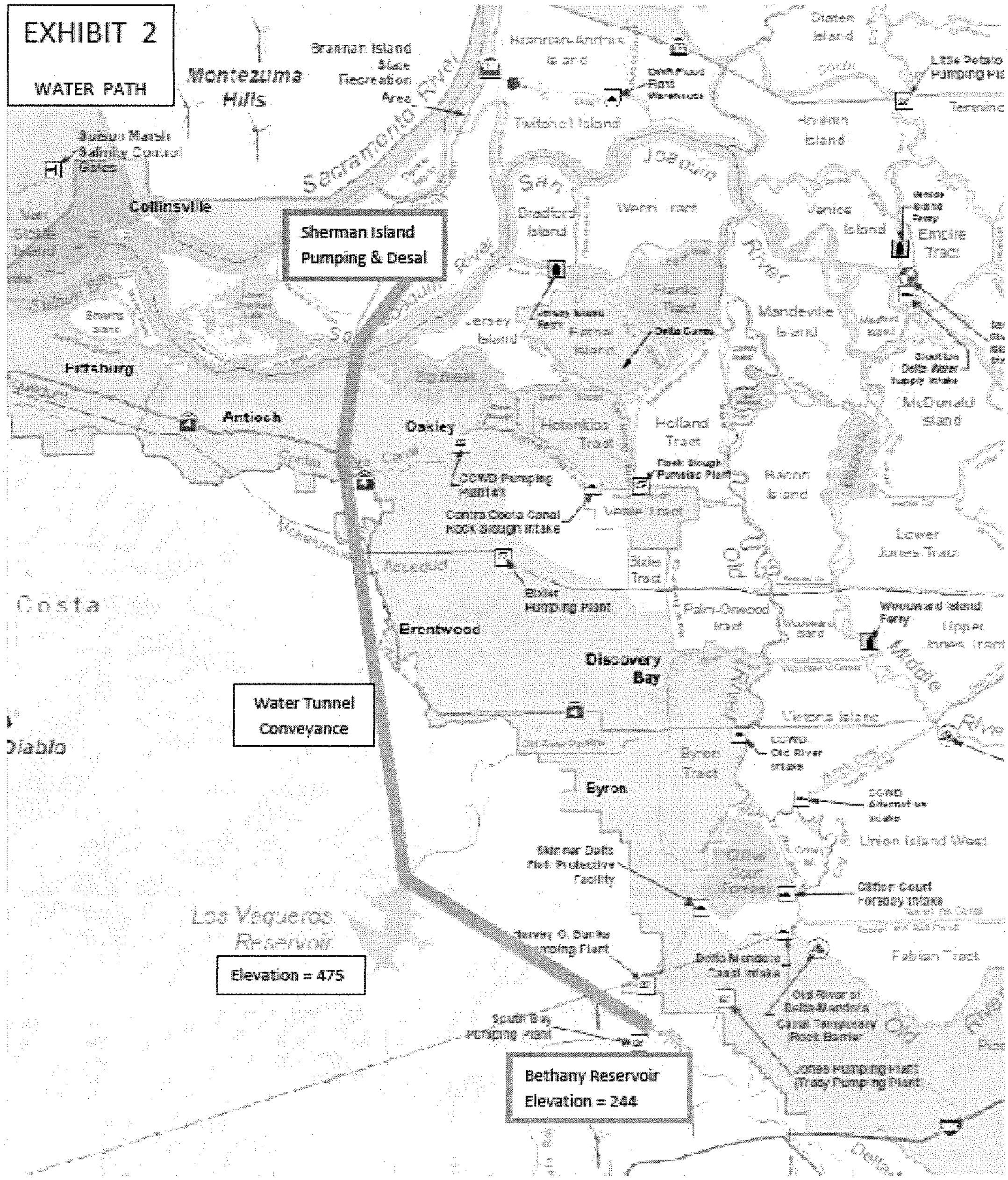


RYER ISLAND to SHERMAN ISLAND

Electrical Power Corridor



SHERMAN ISLAND to BETHANY RESERVOIR

Water Tunnel Conveyance

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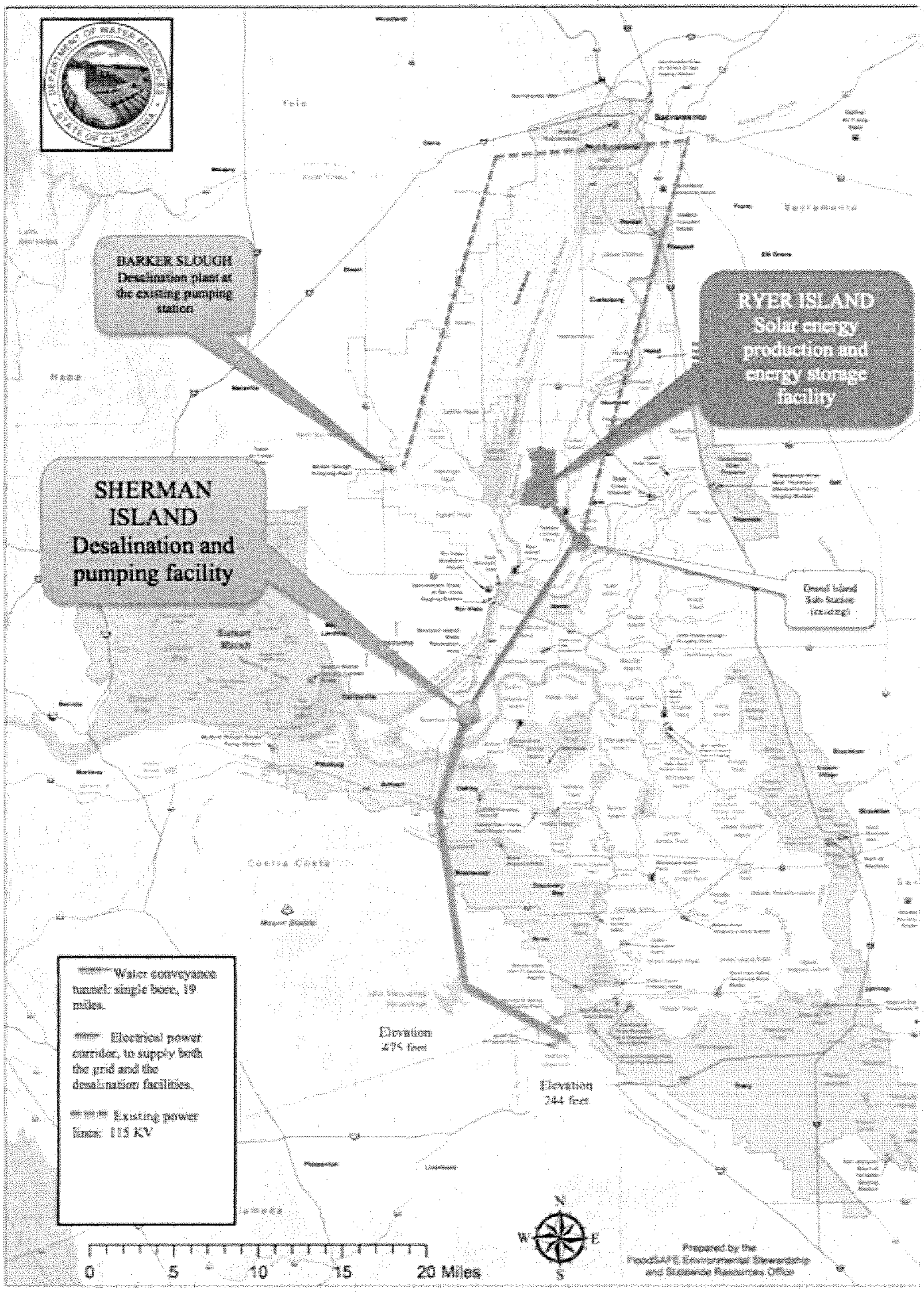
BARKER SLOUGH
Desalination plant at the existing pumping station
RYER ISLAND
Solar energy production and energy storage facility
SHERMAN ISLAND
Desalination and pumping facility
Grand Island Sub Station (existing)
Sacramento
Elevation 475 feet
Elevation 244 feet
Water conveyance tunnel: single bore, 19 miles.
Electrical power corridor, to supply both the grid and the desalination facilities.
Existing power lines: 115 KV
0 5 10 15 20 Miles
N
W
E
S

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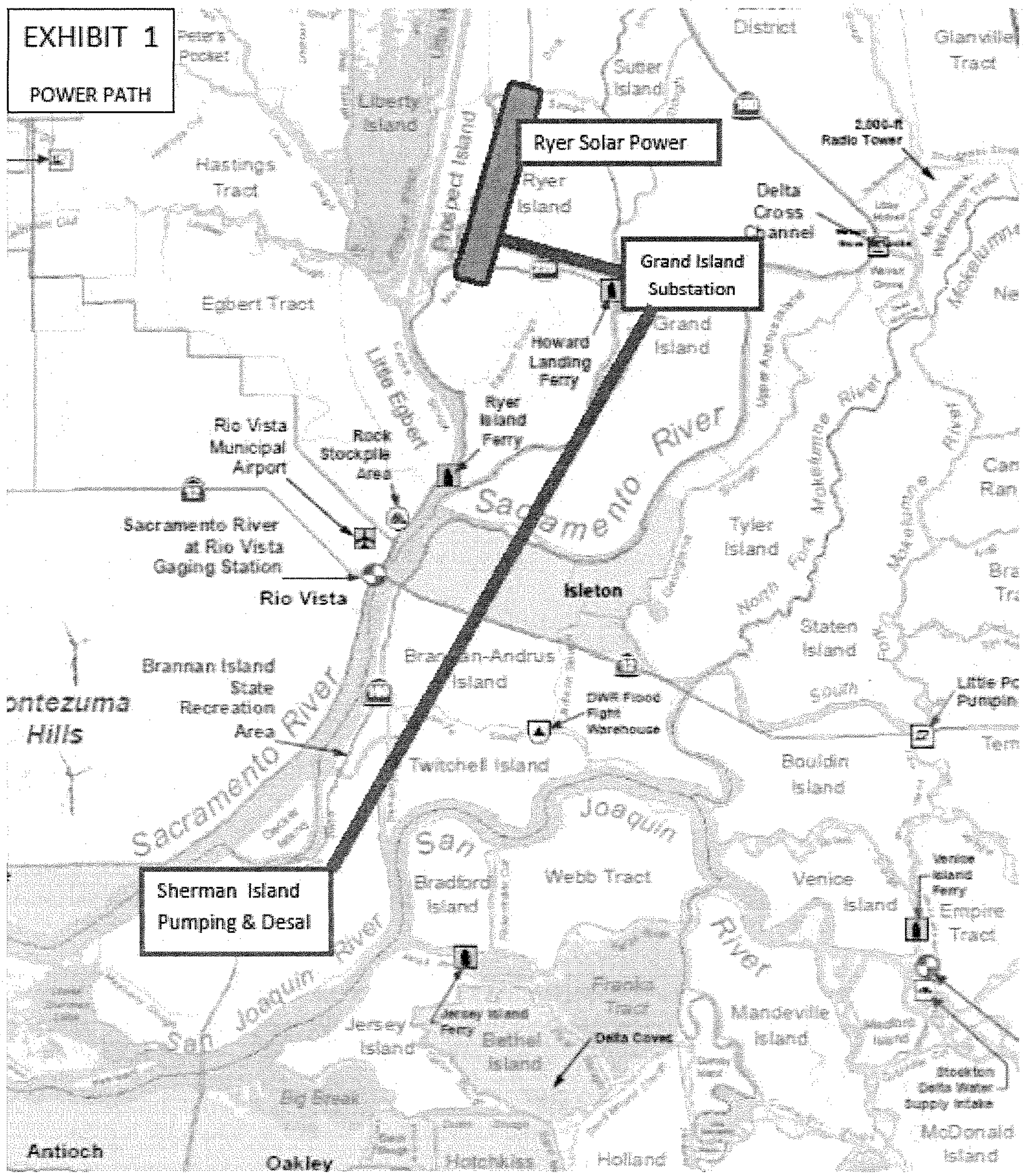

RYER ISLAND to SHERMAN ISLAND

Electrical Power Corridor

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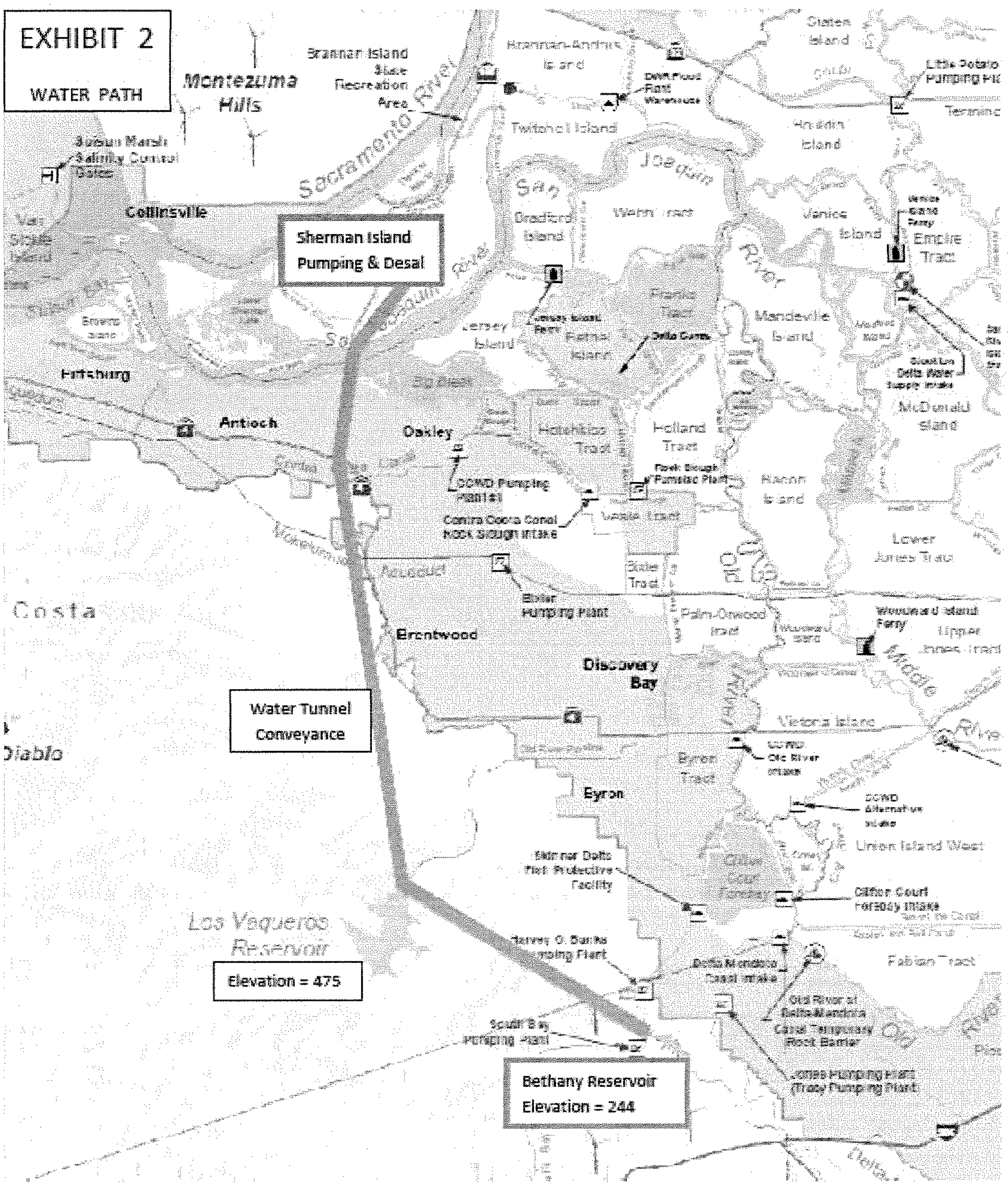
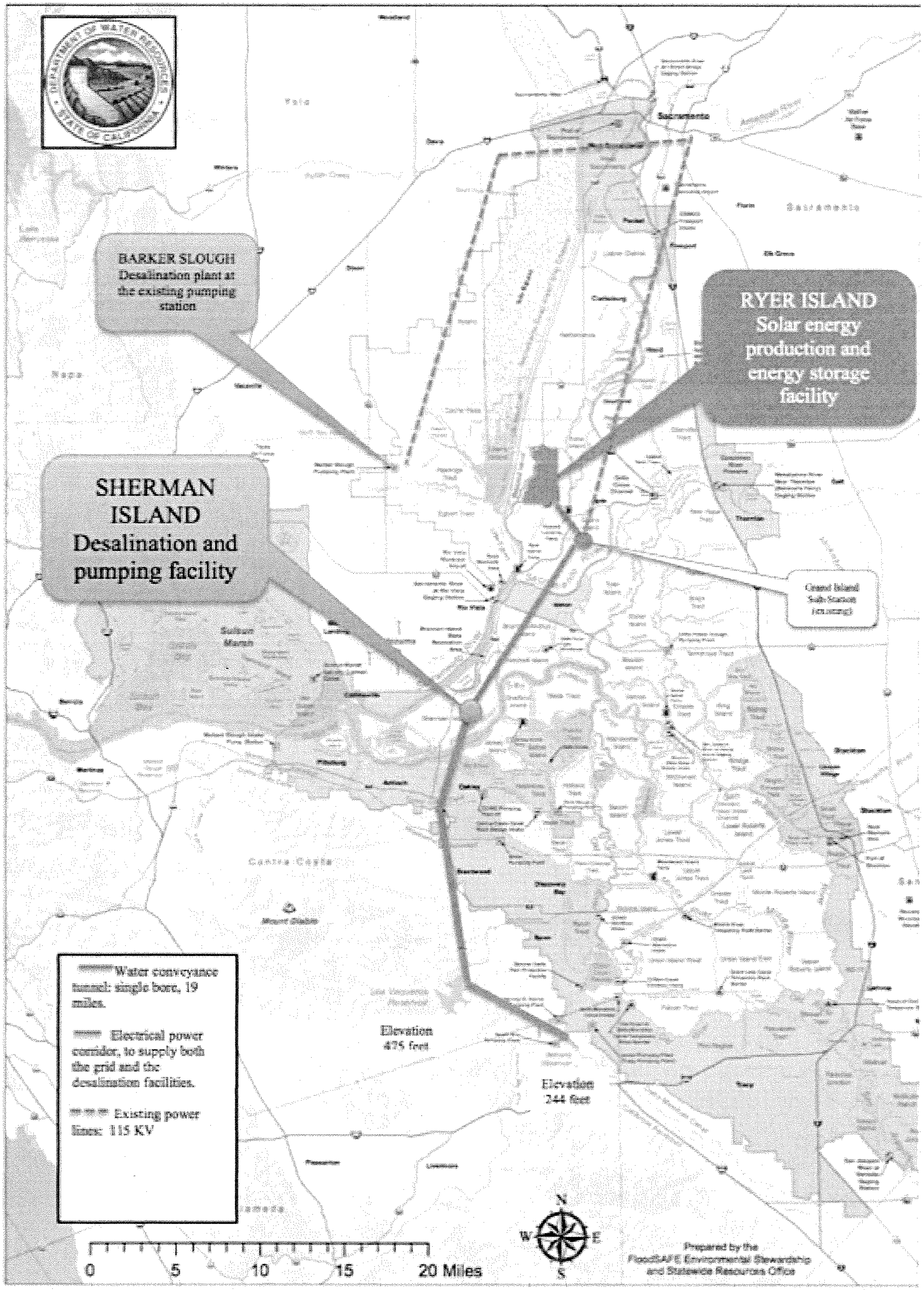
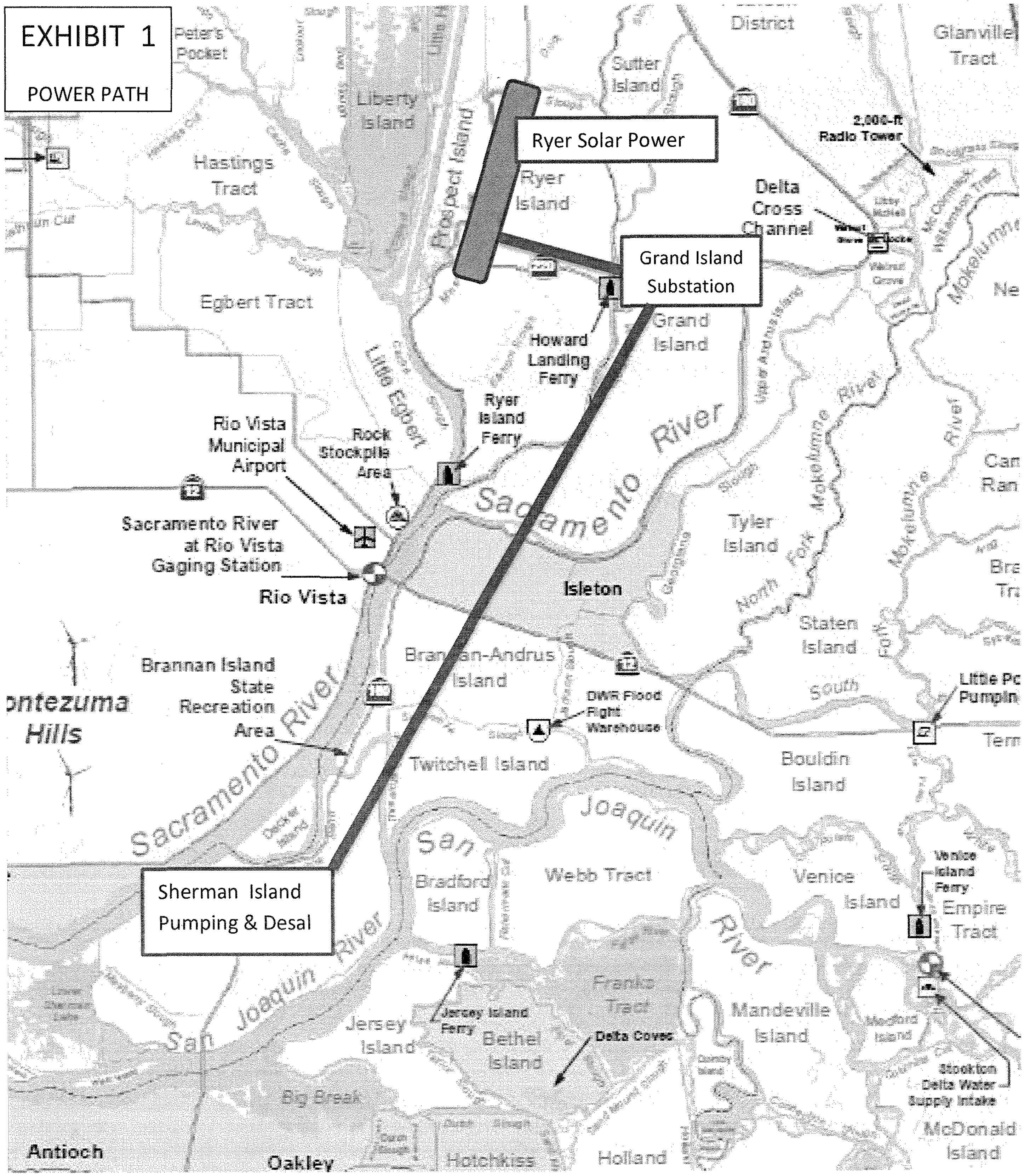


SHERMAN ISLAND to BETHANY RESERVOIR

Water Tunnel Conveyance


BARKER SLOUGH
Desalination plant at the existing pumping station
RYER ISLAND
Solar energy production and energy storage facility
SHERMAN ISLAND
Desalination and pumping facility
Grand Island Sub-Station (existing)
Elevation 475 feet
Elevation 244 feet
Water conveyance tunnel: single bore, 19 miles.
Electrical power corridor, to supply both the grid and the desalination facilities.
Existing power lines: 115 KV
0
5
10
15
20 Miles
N
S
E
W
Prepared by the FloodSAFE Environmental Stewardship and Statewide Resources Office
Yolo
Napa
Contra Costa
Sacramento
Sacramento
Suisun Marsh
Mount Diablo



RYER ISLAND to SHERMAN ISLAND

Electrical Power Corridor

BDCP/CWF - COMPARE/ CONTRAST with SOLAGRA WATER SOLUTION

	Project Refinements	BDCP Administrative Draft EIR/EIS	BDCP 2013 Project Refinements	CWF 2014 Project Refinements	SolAgra 2015 Water Solution
1	Water Facility Footprint (acres)	3,654	1,851	1,810	110
2	Intermediate Forebay Size (Surface Acres)	750	40	28	500
3	Private Property Impacts (acres)	5,965	5,557	4,288	0
4	Public Lands Utilized (acres)	240	657	733	610
5	Number of Tunnel Reaches	6	5	11	2
6	Number of Launch & Retreval Shaft Locations	7	5	9	2
7	Agricultural impacts (acres)	6,105	6,033	4,890	1,100
8	**Number of Tunnels**	2	2	2	1
9	**Total Length of Tunnels (miles)**	70	70	70	19
10	**Borehole (finished diameter + tunnel liner) (feet)**	46	46	46	32
11	**Total Volume of Tunnel Excavation (cubic yards)**	30,705,928	30,705,928	30,705,928	2,988,225
12	**Number of Tunnel Boring Machines**	9	9	11	1
13	**New Tunnel Easements required (acres)**	1,273	1,273	1,273	0
14	**Tunnel Path Access for Geotech work (soil borings)**	15%	15%	15%	100%
15	**Length of Screens to prevent fish entrainment (feet)**	5,000	5,000	3,000	58,080
16	**Intake Water Velocity @ fish screens**	HIGH	HIGH	VERY HIGH	VERY LOW
17	**Probability of Entraining Endangered Fish Species**	HIGH	HIGH	VERY HIGH	VERY LOW
18	**Probability of Successful Completion**	LOW	LOW	LOW	VERY HIGH

Data provided by CWF Website & CER

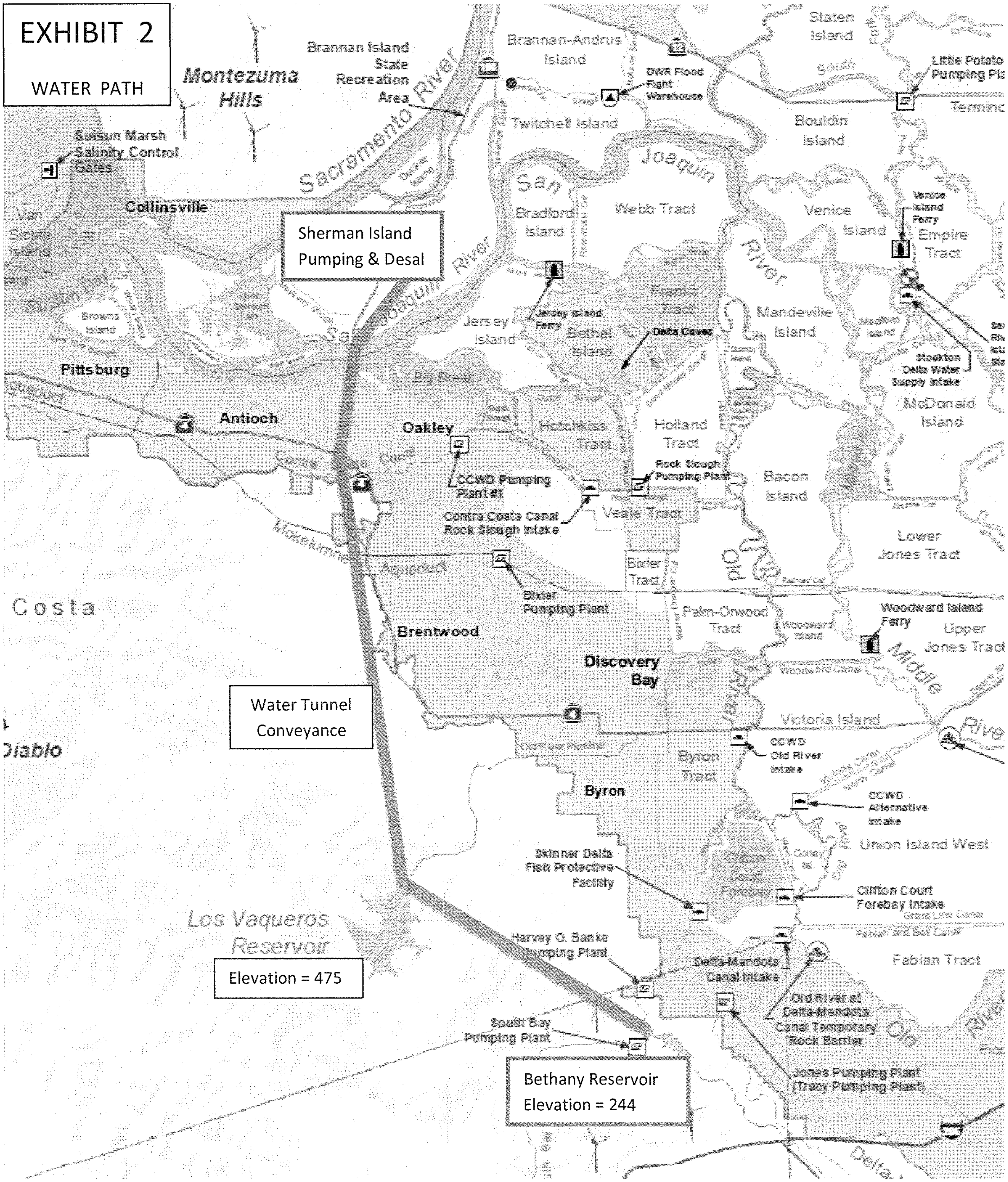
Data provided by SolAgra Corporation

Outline of the SolAgra Water Solution:

Historic maximum water shipments from the State Water Project ("SWP") via Banks Pumping Plant/ Califoria Aqueduct is 2.4 Million Acre Feet/ year ("MAF").
This 2.4 MAF never reaches the confluence of the San Joaquin & Sacramento Rivers. It increases salinity and moves X2 east (up river) especially in droughts.
The BDCP/CWF would seriously exacerbate the salinity issues in the lower Sacramento River impacting fish and other marine life.
The SolAgra Water Solution turns off the Banks Pumping Plant. This allows that 2.4 MAF to flow to the confluence of the rivers at Sherman Island.
SolAgra captures 1.4 MAF of fresh water from the rivers & brings it onto Sherman Island using low velocity fish screen sections that total 8 miles in length.
The additional 1.0 MAF flowing downstream in the rivers continues flowing toward Suisun Bay, significantly improving environmental conditions in the SFBDE.
SolAgra intakes brackish water from Sherman Lake using low velocity intakes (permeable levees) adjacent to and thru Mayberry Slough.
The brackish water is desalinated using renewable energy from the SolAgra Solar Power Plant on Ryer Island - producing 1.0 MAF of high quality water.
Desalination of low salinity brackish water is done with greater thru-put and far less energy than desalinating sea water.
Brine from desalination process Is greatly reduced due to low salinity intake water. Brine from desalination will NOT significantly influence salinity in the SFBDE.
With 1.0 MAF of fresh water flowing west - X2 will move west (down river) improving the environment in the SFBDE.
The fresh water from north Sherman Island is blended with desalinated water from the south end of Sherman. A total of 2.4 MAF is pumped into a new tunnel.
This new single tunnel, 28 feet inside diameter, extends 19 miles to Bethany Reservoir where it enters the SWP after completely bypassing the Banks Pumping Plant.
The path of the new tunnel uses existing easements & R/W beneath SR-160 & SR-4 to access Open Space beneath Mt. Diablo - no new easements or R/W are needed.
Banks Pumping Plant is placed on Standby, but held in reserve for "Big Gulp" years when it can pump an additonal 2.4 MAF during periods of heavy rainfall.
THE SWS PROVIDES DIRECT SOLUTIONS TO THE SWP SIDE OF THE EQUATION. THE CVP IS AIDED VIA "BIG GULP" TRANSFERS WHEN WATER IS AVAILABLE.

Summary:

Creating 1.0 MAF of new water and adding it to the captured 1.4 MAF, equals the 2.4 MAF currently pumped by Banks, but with no environmental impacts.
Using Banks to pump an additional 2.4 MAF during "Big Gulp" times of available heavy rains brings the SolAgra Water Solution to 4.8 MAF/year.
Alternatively, the 2.4 MAF available during "Big Gulp" times enters the Clifton Court Forebay. It could be used by SWP (via Banks) or CVP (via Jones Pumping Plant).
The SolAgra Water Solution requires no private land to be condemned and/or acquired. SWS uses ONLY public lands on Sherman Island and highway rights of way.
The SWS supports: 3.7 MAF to CVP + 2.4 MAF to SWP via Sherman Island + 2.4 MAF Big Gulp water - while adding 1.0 MAF to the SF Bay-Delta Estuary.



SHERMAN ISLAND to BETHANY RESERVOIR

Water Tunnel Conveyance

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July 28, 2014

SENT VIA EMAIL (BDCP.comments@noaa.gov)

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

RE: Comments on Draft Bay Delta Conservation Plan and Associated Draft Environmental Impact Report/Environmental Impact Statement

Dear Mr. Wulff:

These comments are submitted in relation to the Bay Delta Conservation Plan Alternative 4 ("BDCP") and associated draft Environmental Impact Report/Environmental Impact Statement ("EIR/EIS"). Any project, and particularly a project of the magnitude proposed here, must fully consider alternatives to minimize take of endangered species and means to avoid these and other significant environmental impacts. To better accomplish the tasks for which the BDCP was designed, construction of water intakes in the west Delta should be considered. The SolAgra West Delta Intake Plan (WDIP), could be powered by 100% renewable resources from our locally proposed Ryer Island Solar Power Plant, and augmented by power from the existing nearby Rio Vista wind farms. This alternative would better preserve natural river flows and maintain water quality in the Delta while simultaneously supporting export water supply needs and minimizing or avoiding many of the significant environmental impacts of implementing the BDCP identified in the Draft BDCP and EIR/EIS. As explained below, SolAgra would like to discuss our proposed solution with the BDCP proponents.

Why is SolAgra Interested in the Delta and the BDCP?

SolAgra Corporation is a California Corporation that develops utility-scale renewable energy power plants. SolAgra holds a 40-year lease on 2,422 acres of Ryer Island that SolAgra intends to use for the development of a 720 MW solar energy production facility. This facility will pair sustainable agriculture beneath the solar arrays, using a patent-pending method of "solar double cropping" technology known as SolAgra Farming. This technology is currently being beta tested and peer reviewed by U.C. Davis, Plant Sciences Department under the auspices of Dr. Heiner Lieth. Dr. Lieth is a leading expert in this field and his team at U.C. Davis has already completed successful testing of this concept.

The SolAgra project will also develop an energy storage system capable of storing up to 640 MW of electrical power that can be used to time-shift the power delivery to a time when normal solar power is not available due to lack of sunlight. SolAgra has secured the use of depleted natural gas wells beneath its leased land to provide necessary subterranean storage for its Compressed Air Energy Storage ("CAES") System and other patent-pending energy storage technologies of its own design. SolAgra also has the right of first offer to purchase up to 6,202 acres on Ryer Island to expand the total electrical power production capability to 1,800 MW.

Since SolAgra's Ryer Island Solar Power Plant will also sustain agriculture beneath the solar arrays, the continued need for good quality irrigation water in sufficient quantities on Ryer Island is essential. The salinity barriers proposed by the Department of Water Resources ("DWR") for Steamboat and Sutter Sloughs, would devastate agricultural operations on Ryer Island. The potential that this high salinity level could continue, and be exacerbated due to the upstream diversions proposed by the new BDCP intakes on the Sacramento River is unacceptable to farming operations on Ryer Island and to many other rich agricultural areas of the Delta that rely on the Sacramento River to successfully produce crops for California and the nation.

SolAgra has studied the EIR/EIS for the BDCP as well as the many comments that have been submitted to date. While we agree that the water problems that have plagued California for more than 100 years require changes, we are convinced that the BDCP is not a solution.

Since the beginning of construction of the State Water Project ("SWP") in the 1950s, California has been guilty of "serial engineering". This means undertaking solutions that are not completely thought-out, reasoning that "the end justifies the means" OR "let's get the water flowing south and we'll worry about the consequences later." "Later" has now arrived and the consequences are dire. Each new engineering solution attempts to improve a disastrous condition created by the previous "solution." This is also the case with the currently proposed BDCP.

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Many critics of the BDCP have stated their concerns regarding the currently proposed BDCP and their disbelief at the scope and cost of the proposal — both environmentally and fiscally. These comments allege that the current draft BDCP plan and EIR/EIS are inadequate and will require remedial research, re-coordination and recirculation prior to project approval. However, few alternatives to BDCP have been offered. The SolAgra approach provides an alternative that would better restore Sacramento River flow pathways and volumes, with significant resulting benefits to local residents, farmers, native fish species and other wildlife in the Delta while continuing to meet export water supply needs for the rest of California.

What Exactly is SolAgra Proposing?

The SolAgra proposal calls for the fresh water of the Sacramento River to flow to near its natural endpoint, where it mixes with the brackish water flows between Sherman Island and Chipps Island near the Antioch Bridge. (See Exhibit 1.) This is the perfect location to capture significant quantities of fresh river water before it mixes with the inexhaustible supplies of sea water that arrive by tidal flow from San Francisco, San Pablo and Suisun Bays. By installing a blending/treatment plant that is capable of blending inflows from the Sacramento and San Joaquin rivers, with the brackish waters of Sherman Lake, and filtering/desalinating this "custom blended" brackish water from multiple intakes around Sherman Island; the treatment and desalination (using reverse osmosis and later a far more efficient graphene desalination technology) will easily provide the 2.4 million Acre-Feet/year of fresh water that is currently shipped through the SWP in a "good water year." This new, clean water that is created on Sherman Island will be pumped through a single, smaller tunnel that is 19 miles long (See Exhibit 2), versus the twin tunnels proposed by the BDCP that are each 38 miles long and are proposed to be over 40 feet in diameter! Since this new water will be fish-screened and pre-filtered at Sherman Island, it can completely bypass the Clifton Court Forebay and the Banks Pumping Plant for processing, and be pumped directly to Bethany Reservoir where it will begin its gravity flow into the California Aqueduct.

By modularizing the pumping and desalination plants at Sherman Island, water taken directly from the Sacramento or San Joaquin Rivers that has not yet mixed with the brackish tidal flows, can be filtered (if necessary) and pumped directly into the tunnel for the journey to Bethany Reservoir. To augment the flow of fresh river water in years of limited river flow due to drought or other issues, the desalination plant adjacent to the pumping / filtration plant can be increased in volume operation to add desalinated water to make up for the limited fresh water that is coming down river. This separation of processing functions allows the efficiency of both processes to be operated at peak efficiency, while still accomplishing the end result of producing 2.4 Million Acre-Feet/year of fresh water for introduction into the SWP. THIS WATER CAN BE ADDED TO WATER FLOWS THAT ARE CURRENTLY BEING PUMPED AT THE BANKS PUMPING PLANT TO EQUAL OR EXCEED THE VOLUME PROPOSED BY THE BDCP.

This new approach to dual-conveyance means that existing operations of the CVP and SWP will continue as they operate today **during normal rain years**. In drought years, rather than continuing to pump 2.4 million acre-feet/year OR MORE (per BDCP) and thereby decreasing the flow down the Sacramento River, thus allowing salinity levels to move up river – as they are doing today – we advocate that Banks Pumping Plant pump less water, thereby allowing more of the limited available fresh water to flow completely through the Sacramento & San Joaquin Rivers to Sherman Island. There it will be picked up filtered and/or desalinated as necessary, combined with the Bay water that arrived from the west on flood tides and then pumped at a rate of 2.4 million acre-feet/year to Bethany Reservoir for introduction into the SWP. The combination of these conveyances and the introduction of 2.4 million Acre-Feet/year from Sherman Island provides as much (or more) than the up to 9,000 cfs (6.5 million acre-feet/year) that is proposed by the BDCP. **The SolAgra WDIP alternative accomplishes that task without the environmental, economic and social impacts of the BDCP.**

During times of high river flow, the "big gulp" advocated by the BDCP can still be accomplished by pumping more through Banks AND by using Sherman as a pumping plant (only), since no desalination will be required during times of high fresh water flows. This will obviously require Central Valley Project ("CVP") water contractors to develop sufficient storage south of the Delta to provide reserves for lower precipitation years.

By modularizing the pumping plant(s) at Sherman, we can pump fresh water directly into the tunnel that goes from Sherman Island to Bethany Reservoir, desalinate the incoming tidal brackish water from Sherman Lake and then pump that water into the tunnel. This selectivity increases the efficiency of the entire system by transferring the fresh water directly and desalinating only the brackish water. Desalinating brackish water is far more efficient than desalinating sea water, so the entire concept capitalizes on Sherman Island as the perfect location in the State to accomplish this task.

Electrical power needed for the desalination and pumping of water can be provided by the SolAgra Solar Power Plant proposed for Ryer Island, without interrupting or impacting the electrical power balance in the State. The State's power balance is currently impacted by the permanent closing of the San Onofre Nuclear Generating Station. The newly created Ryer Island green solar power can be delivered to the adjacent Grand Island Substation and transmitted directly to Sherman Island via the existing Brighton-Grand Island 115KV power corridor. Unlike the BDCP-proposed project, no new power corridors must be created or power rights-of-way acquired. Additional power may also be obtained from the windfarms west of Rio Vista. That power can be transmitted via the Birds Landing/ Contra Costa 230 KV transmission corridor that runs from the Montezuma Hills wind farms (west of Rio Vista) directly through Sherman Island. There would be no need to create new power corridors, obtain new power rights-of-way or otherwise increase environmental impacts from construction of new transmission corridors.

Why should BDCP Proponents Consider the SolAgra Alternative?

The SolAgra approach solves all of the major problems associated with the creation and transmission of water via the SWP without incurring many of the un-mitigatable consequences and expenses in the North Delta alternative that is enumerated in the EIR/EIS for the BDCP. We believe the SolAgra WDIP alternative could accomplish the task for **less than half the projected cost and in less than half the time of the BDCP**.

Rather than juggling and moving existing water from place-to-place via a bureaucratic scheme, the SolAgra proposal would create 2.4 million acre-feet/ year of new, fresh water for the SWP that California has never had previously. This new water would be created each and every year - IRRESPECTIVE OF DROUGHTS, tidal flows, sea levels or other weather conditions or anomalies. Under the SolAgra proposal, the CVP conveyance through the existing system can remain in place, avoiding unaffordable water rate increases that would make commercial agriculture less fiscally sustainable – creating a true "dual conveyance" solution – with new water supplies while providing reliable and higher quality water to the SWP in accordance with state law. This new water can be produced using green power, with no requirement to build additional fossil fuel power plants, nuclear plants, or to import "brown" power from other states that typically burn coal to generate electricity. The SolAgra WDIP also better restores the eco-balance in the Bay-Delta than the alternatives studied in the current draft BDCP and associated EIR/EIS while equaling or exceeding the water quantities projected by the BDCP with far less environmental impact.

The SolAgra WDIP alternative is part of a reasonable range of alternatives that should be considered. Critically, the SolAgra alternative would reduce several of the significant and unavoidable impacts on the environment caused by the proposed BDCP project. The requirement to consider a reasonable range of alternatives and the ability of the SolAgra alternative to avoid or reduce significant impacts is discussed in more detail below.

A Reasonable Range of Alternatives Includes Water Supply Intakes in the West Delta

The BDCP review process is required to consider an adequate range of alternatives under CEQA, NEPA and the ESA. Under CEQA, an EIR must "describe a range of reasonable alternatives to the project. . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." (14 Cal. Code Regs., § 15126.6(a).) "[T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." § 15126.6(b). In its screening and review of alternatives, the EIR must provide more than "cursory" analysis. (*PCL v. DWR* (2000) 83 Cal. App. 4th 892, 919.) An EIR should not construe project objectives so narrowly that only the proposed project could conceivably be capable of achieving them.

Under NEPA, the alternatives section "is the heart of the environmental impact statement." The alternatives section should "sharply" define the issues and provide a clear basis for choice among options by the decision-maker and the public. (40 C.F.R. § 1502.14.) The EIS alternatives section must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated." (40 C.F.R. § 1502.14(a).) If "a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion. The agency shall

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make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action." (40 C.F.R. § § 1502.9(a).)

Under the ESA, a conservation plan submitted in support of an incidental take permit application must include "Alternative actions the applicant considered that would not result in take, and the reasons why such alternatives are not being utilized." (Habitat Conservation Planning and Incidental Take Permit Processing Handbook (1996), p. 3-10, citing 16 U.S. C. § 1539(a)(2)(A)(3), 50 C.F.R. §§ 17.22(b)(1), 17.32(b)(1), and 222.22.) HCPs must also include, among other things, information regarding the applicant's plan to "minimize and mitigate" the impacts likely to result from incidental takes. (16 U.S.C. § 1539(a)(2)(A)(ii).)

We understand that an EIR need not study in detail an alternative that is infeasible or that the lead agency has reasonably determined cannot achieve the project's underlying fundamental purpose. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 574 ["a project alternative which cannot be feasibly accomplished need not be extensively considered"].) Moreover, a "potentially feasible alternative that might avoid a significant impact must be discussed and analyzed in an EIR so as to provide information to the decision makers about the alternative's potential for reducing environmental impacts." (*Habitat & Watershed Caretakers v. City of Santa Cruz* (2013) 213 Cal. App. 4th 1277, 1304 [striking down EIR for failure to consider any alternative that would reduce the project's effect on the city's water supply].) The SolAgra approach could achieve the fundamental purposes of the BDCP **and** reduce significant environmental impacts, and should therefore be considered.

With the exception of Alternative 9, the BDCP EIR/EIS evaluates only variations on the common theme of adding an isolated conveyance from the North Delta to the existing export facilities in the South Delta, referred to as Conservation Measure ("CM") 1. There is also virtually no variation in CMs 2-21 among the project alternatives, which are the remaining so-called "conservation measures" in the BDCP aimed at species recovery. (EIR/EIS, Table 3-1.)

Three years ago the National Academy of Sciences declared in reviewing the then-current version of the draft BDCP: "Choosing the alternative project before evaluating alternative ways to reach a preferred outcome would be post hoc rationalization – in other words, putting the cart before the horse. Scientific reasons for not considering alternative actions are not presented in the plan." (*National Academy of Sciences* Report in Brief (May 5, 2011), p. 2.) This

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problem has still not been corrected. Early in the BDCP planning process, there was a decision to focus on new north Delta diversions on the Sacramento River as the primary means to meet the objectives of the BDCP participants. (BDCP Appendix 3A, pp. 3A9-3A-11.)

Moreover, to achieve the objectives, purpose and need of the BDCP, a frank and detailed study of alternatives is required. The BDCP should include alternatives that actually provide water supply reliability, restore the Delta ecosystem, and improve water quality for both exporters and in-Delta users. Such a goal is included the 2009 Delta Reform Act, which directs the State as a whole to: "Achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." (Wat. Code, § 85054.) The Delta Stewardship Council can only accept the BDCP into the Delta Plan if, and only if, the BDCP has studied a reasonable range of conveyance alternatives (Wat. Code, § 85320, subd. (b)(2)(B)), among other requirements. If the BDCP does not meet these requirements, it cannot be included in the Delta Plan and it will otherwise be non-compliant with State law.

Several alternatives have been proposed publically to date, but not adequately studied as alternatives in the BDCP.[1] The Western Delta Intakes Concept ("WDIC") is the closest alternative given any consideration in the BDCP EIR/EIS to that proposed by SolAgra. (BDCP Appendix 3A, Section 3A.11.4.) The WDIC would relocate the principal point of diversion for exports from the South Delta to the West Delta. Water surplus to upstream and in-Delta needs and the Delta outflow required to sustain fisheries would be extracted through permeable embankments on Sherman Island and then conveyed through large tunnels to Clifton Court Forebay for subsequent export.

The principle objective and benefits of this intake relocation would be:

- To restore more natural flows through the Delta both in pattern and quantity, supporting the retention of X-2 at its historical range, contributing

[1] Another such alternative is the Environmental Water Caucus, which has proposed a "Responsible Exports Plan" that calls for reducing exports from the Delta, implementing stringent conservation measures but no new upstream conveyance. This Plan prioritizes the need for a water availability analysis and protection of public trust resources that would comply with EPA statements indicating that more outflow is needed to protect aquatic resources and fish populations. (http://www.ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf.)

to the recovery of natural breeding and feeding grounds for aquatic species of concern and more capable of coexisting with the increased minimum Delta outflow requirements that EPA, the State of the Estuary Report, the State Water Board and many other analyses have clearly shown would be required to restore the Bay-Delta and its fisheries;

- To improve both in-Delta and export water quality, rather than improving export water quality at the expense of in-Delta water quality; and
- To avoid significant impacts to North Delta communities, water supplies, and flood control facilities.

A western delta intake location thus should be considered. The EIR/EIS describes how a concept similar to what SolAgra proposes, referred to as the "Pyke Proposal", was not carried forward for further analysis. (EIR/EIS, Appendix 3A, pp. 3-89 to 3-92.) A point by point rebuttal to the coverage of the WDIC is provided in Appendix A to the comments of Dr. Pyke on the draft BDCP, dated May 26, 2014, and is not repeated here. The EIR/EIS primarily dismisses the WDIC over concerns of water quality affecting export reliability. (BDCP EIR/EIS, Appendix 3A, p. 3-91.) However, the SolAgra WDIP alternative addresses this issue by proposing to directly pump fresh water when available from the Sacramento River into the tunnel for immediate conveyance, and to only desalinate water from the WDIP as necessary. The SolAgra alternative also avoids the creation of a Sherman Island Forebay that was severely criticized due to the large volume of mass excavation that was required to create it. By processing incoming fresh and brackish water in real time, the need for a forebay on Sherman Island is eliminated.

The BDCP EIS/EIS, however, does not consider the possibility of providing water treatment – desalination – at the WDIP location. Though energy demand can be a limitation on the feasibility of desalination, in this case, solar powered filtration/desalination and pumping into the west delta operational facilities could convey newly created fresh water from Sherman Island to the SWP's Bethany Reservoir. This would be the best destination because the SWP primarily serves urban water users that require higher quality water. In summary, variations of the WDIC proposal, including that proposed by the SolAgra WDIP, meet project objectives and are feasible, and therefore must be considered.

How Would a Western Delta Intake be More Likely to Receive Take Authority <u>and</u> Meet Project Objectives?

One of the many barriers to the proposed BDCP project is the ability to be permitted as both a state and a federal habitat conservation plan. However, the primary objective of the BDCP – obtaining incidental take permits – may not be met in view of the BDCP's failure to produce an effects analysis that can meet minimum requirements of state and federal law.

For instance, the benefits to listed species are uncertain at best for BDCP. For instance, the current public review draft of the BDCP shows that implementation of the BDCP could potentially imperil nine key species including salmon, Delta smelt and greater sandhill cranes.[2] A plan that imperils the very species it seeks to cover is unlikely to receive needed permits under the state and federal endangered species acts. These species are imperiled by factors such as the reduction in freshwater flows in the Sacramento River, entrainment in the new and existing SWP/CVP pumps, and by the major land use changes brought about by the conversion/creation of tidal habitat in presently dry areas.

The ability of the restoration components of the BDCP to function as planned is also severely doubtful. As indicated in the March 2014 Delta Science Program Independent Review Panel Report - BDCP Effects Analysis Review, Phase 3:

> *The net effects analysis tends to overreach conclusions of positive benefits for covered fish species, given the inability to quantify the over-all net effects and the realization of high uncertainty. In particular, it does not adequately defend conclusions regarding the net effects of habitat restoration. Restoration of tidal wetlands (and other communities) is highly uncertain and at least an extremely long process. The Effects Analysis does not adequately justify the critical assumption of the benefit of tidal wetland restoration as a food web subsidy for covered pelagic fish given the uncertainties of tidal wetland restoration itself. A critical issue is the implicit expectation that restoration activities will result in increases in abundance of lower trophic levels, but it is uncertain whether the resulting increased production will result in food web pathways supporting covered species. . . .*

[2] See article by Matt Weiser, *Fate still unclear for nine species in Delta water tunnel plan* (December 18, 2014), available at: http://www.sacbee.com/2013/12/18/6009767/fate-still-unclear-for-nine-species.html Species include Longfin smelt, Delta smelt, Winter Spring and Fall Chinook salmon, Green sturgeon, White sturgeon, Steelhead and Greater sandhill crane.

(BDCP Effects Analysis Review, Phase 3, p. 7, available at: http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Science-Independent-Review-Panel-Report-PHASE-3-FINAL-SUBMISSION-03132014_0.pdf.)

The shoreline lengths along Sherman Island and the difference in water properties that can be obtained by water inflows that are taken along various segments of the Sacramento River, San Joaquin River and the brackish water flows in the Sherman Lake area allow the installation of multiple, low-flow intakes rather than the few high volume intakes proposed by the BDCP's North Delta intake plan. Multiple low-flow intakes, with lower probability of fish take, have a higher probability of approval. By providing water supply in a less environmentally damaging manner that preserves the natural flow of the Sacramento River, the SolAgra WDIP Alternative is more likely to be permitted as a state and federal conservation plan than the BDCP.

What Significant Effects Could be Avoided with the SolAgra Alternative?

TheSolAgra WDIP alternative would reduce or avoid significant impacts identified in the EIR/EIS, as well as reduce or avoid impacts that the EIR/EIS has either failed to address or inaccurately characterized as less than significant. A few of those impacts are discussed below. With proper review and analysis as a project alternative, additional environmental and other benefits of the SolAgra alternative would be determined in greater detail.

Agricultural Resources and Delta Communities

By reducing the freshwater flow through the Delta that is normally provided by the Sacramento River, the BDCP will significantly degrade water quality for more senior - Delta agriculture and municipal/industrial intakes, as well as for species of concern. Removal of fresh water inflows from the Sacramento River is expected to result in several significant and unavoidable water quality exceedances for which only inadequate mitigation is proposed. (BDCP EIR/EIS, Chapter 8.) These water quality impacts will reduce or eliminate agricultural productivity in an area that currently has excellent water quality. Relocation of intakes to Sherman Island would avoid local water supply impacts while also providing higher quality water to the SWP.

Additionally, the BDCP "conservation measures" require up to 150,000 acres of productive, agricultural land to be acquired, converted, restricted or otherwise impacted. This conversion of productive agricultural land to aquatic habitat can be more generically described as: **"flooding precious farmland"**. (BDCP, Tables 3-4, 6-2, 8-1.) Under the SolAgra WDIP alternative, less than 1,000 acres of grazing land would be used to construct the Pumping & Desalination facilities on Sherman Island. PLUS, the indirect effects on agriculture from changes in salinity and water levels in the north Delta from operation of the BDCP's proposed Sacramento River intakes would be completely avoided. Moreover, the SolAgra alternative would not require any agricultural land conversion to accommodate experimental restoration projects to create mitigation for the **unavoidable environmental consequences** described in the EIR/EIS for the BDCP.

Construction of the BDCP - CM1 tunnels, in particular, would bring about major changes to north Delta communities and landscapes. **With the SolAgra alternative, impacts to the historic communities in the North Delta would also be entirely eliminated.** Sherman Island is already largely in public ownership. Much of the land is grazing land. This makes conversion of a small percentage of its land area for use for water pumping, processing, desalination and limited storage far less disruptive than what is proposed under BDCP Alterative 4.

Greenhouse Gas Emissions

In the SolAgra alternative, construction and operational greenhouse gas ("GHG") emissions would also be significantly reduced and 100% offset by production of green power at Ryer Island.

The EIR/EIS discloses that the BDCP would produce over 1.7 million metric tons of GHG during an estimated 9 year construction period for the Dual Conveyance Tunnels. (EIR/S, Table 22-94.) An additional 161 metric tons of GHG emissions would be emitted every year under operation of the proposed project. (EIR/S, Table 22-96.)

This calculation understates the actual amount however, as the Draft EIR/EIS presents a (global warming potential) GWP for methane ("CH_4"), of 21 over a 100-year time horizon. Yet, the IPCC updated the GWP for methane to 25 over a 100-year time horizon[3] and the EPA updated its GHG reporting rule in

[3] IPCC, Fourth Assessment Report: Climate Change 2007; http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html.

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2013.[4] The EIR/EIS should rely on the most recent scientific consensus for GWPs published by the IPCC.

Construction GHG emissions under the SolAgra approach would be significantly reduced primarily due to a single, smaller, pressure tunnel that is less than half the length of that proposed in the BDCP Alternative 4. The SolAgra tunnel from Sherman Island to Bethany Reservoir would be the size of a normal transit (subway) tunnel for which Tunnel Boring Machines ("TBMs") are readily available. The dual tunnels proposed by the BDCP are so large that they would require the invention and creation of TBMs of a size that have never been previously built. GHG emissions during construction of the SolAgra tunnel would be more than offset by the production of Renewable Energy Credits (carbon credits) generated by the operation of the Ryer Island Solar Power Plant that provides power to operate the Sherman Island pumping/ desalination plants. Ultimately, the SolAgra alternative would actually reduce GHG emissions rather than increase them. Continued operation of the pumping/ desalination facilities during the entire life of the project at Sherman Island would be accomplished using 100% green power, making the SolAgra alternative an environmental benefit rather than the environmental deficit created by the BDCP.

The EIR/EIS incredibly assumes reduced GHG emissions under project operations by assuming that DWR will reduce GHG emissions statewide by compliance with its Climate Action Plan ("CAP"), and that no mitigation is necessary, even though operation of the tunnels would add approximately 1,405 GWh of additional net electricity demand each year. (EIR/EIS, pp. 22-43, 22-263.) Direct provision of renewable energy for the SWP would be a superior approach.

The transmission of 2.4 million acre-feet/year from Sherman Island to Los Vaqueros Reservoir at elevation 475 feet for ultimate delivery to Bethany Reservoir at elevation 244 feet would provide the opportunity to install a hydro-electric power plant just above Bethany Reservoir that would produce enough green hydro-electric energy to power many of the pumping plants along the California Aqueduct that currently are powered by "brown" power from local utilities. Using the SolAgra concept at Sherman Island, the California Aqueduct

[4] EPA, 40 CFR Part 98, [EPA-HQ-OAR-2012-0934; FRL-9902-95-OAR], RIN 2060-AR52, 2013 Revisions to the Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements, November 15, 2013, Table 2, page 21; http://www.epa.gov/ghgreporting/documents/pdf/2013/documents/2013-data-elements.pdf.

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could become "self-powered" using the pumping pressure of the water flow from the pumping/desalination plant that is also powered by green solar power.

Conclusion

Thank you for considering the information in this comment letter. We strongly suggest that the SolAgra WDIP alternative, and any other reasonable variations, be fully analyzed as viable alternatives to the BDCP in the recirculated BDCP Plan and its associated EIR/EIS. The SolAgra WDIP alternative, and other local innovations, can comprise workable, 21st Century solutions that meet water supply objectives without compromising the environmental and economic values of the Delta without burdening our children and future generations with 50 years of unnecessary debt. Let's provide future generations with good water from sustainable resources at a reasonable price.

We welcome the opportunity to discuss the SolAgra WDIP in greater detail.

Sincerely,

Barry Sgarrella
Chief Executive Officer
SolAgra Corporation

Exhibits:

1. Ryer Island to Sherman Island Map – POWER PATH - showing the location of the proposed Ryer Island Solar / CAES project, existing Montezuma Hills Wind Farms and proposed Sherman Island Pumping & Desal
2. Sherman Island to Bethany Reservoir Map – WATER PATH - showing the proposed Sherman Island Pumping & Desal Facility, a potential path of the Conveyance Tunnel from Sherman Island to Bethany Reservoir, including the possibility of creating hydro-electric power from the pressure head created by the flow from Las Vaqueros Reservoir to Bethany Reservoir.
3. Northern California Power Map – showing the 115 KV power corridor from Ryer Island to Sherman Island and Barker Slough desal facilities, plus the 230KV power corridor from the Montezuma Hills Wind Farms to Sherman Island, and a table showing calculations comparing various elements & power required (for the SolAgra WDIP alternative compared to BDCP Alt 4 proposal)

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cc:

The Honorable Governor Jerry Brown
State Capitol, Suite 1173
Sacramento, CA 95814

John Laird, Secretary
California Natural Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Mark Cowin
Director, California Department of Water Resources
P.O. Box 942836, Room 1115-1
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Chuck Bonham
Director, California Department of Fish and Wildlife
1416 9th Street, 12th Floor Sacramento, CA 95814

The Honorable Sarah "Sally" Jewell
Secretary, U.S. Department of the Interior
1849 C Street, NW, Room 6156
Washington, DC 20240

Ren Lohoefener
Regional Director, U.S. Fish and Wildlife Service
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The Honorable Penny S. Pritzker
Secretary, U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

The Honorable Regina A. "Gina" McCarthy
Administrator, U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW, Room 3000
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Will Stelle
Regional Director, National Marine Fisheries Service
7600 Sand Point Way, NE, Bldg. 1
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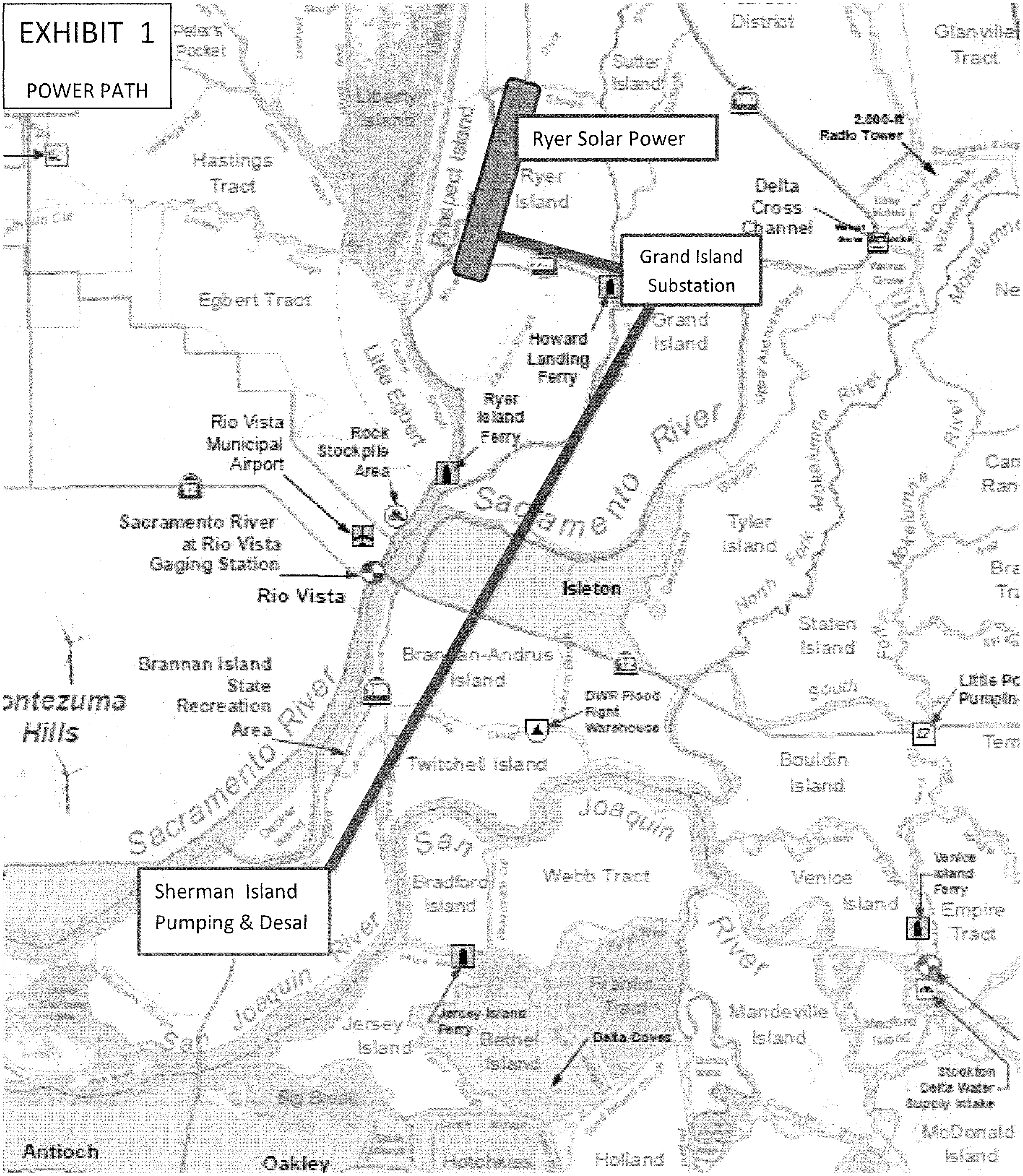
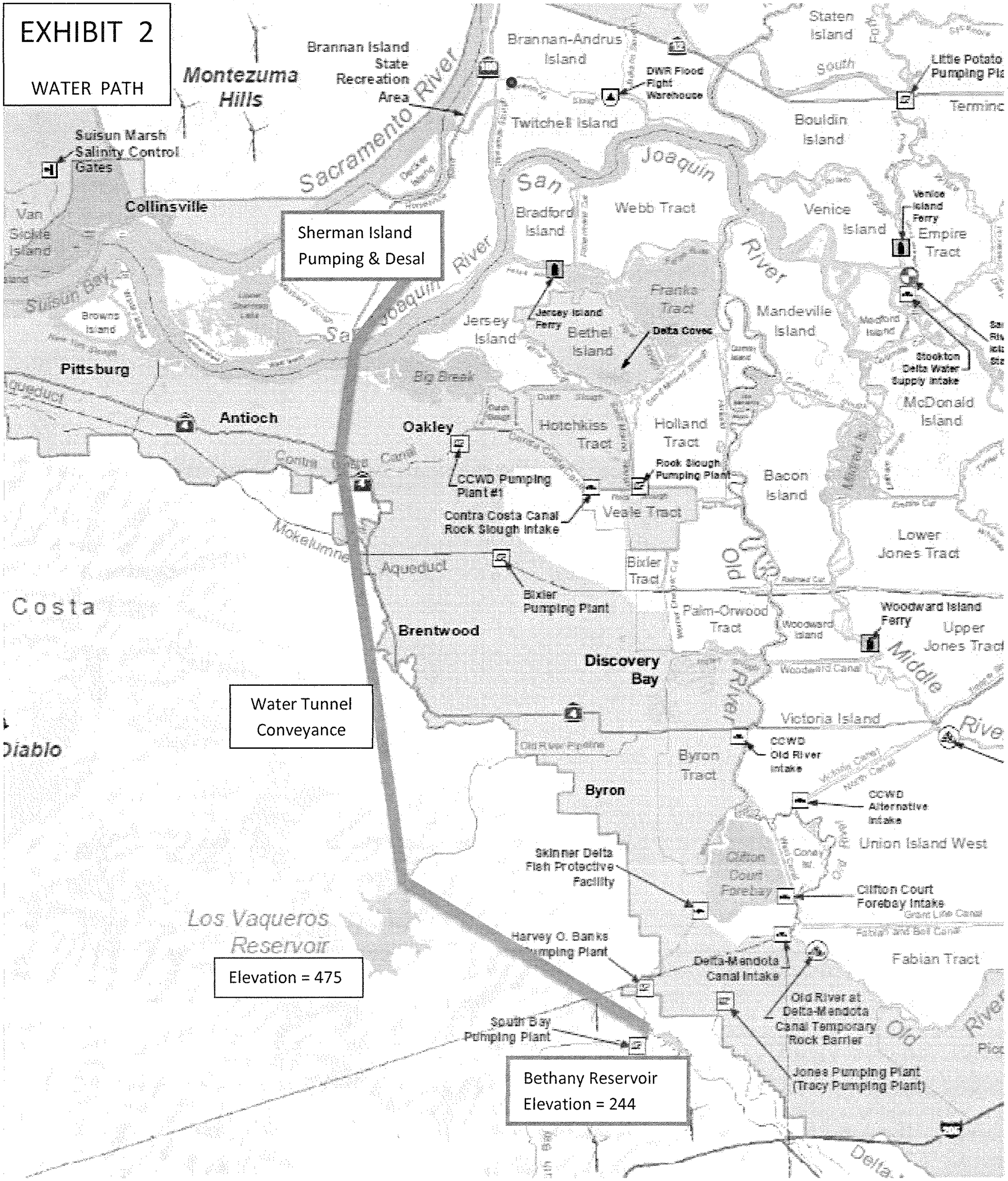


RYER ISLAND to SHERMAN ISLAND

Electrical Power Corridor

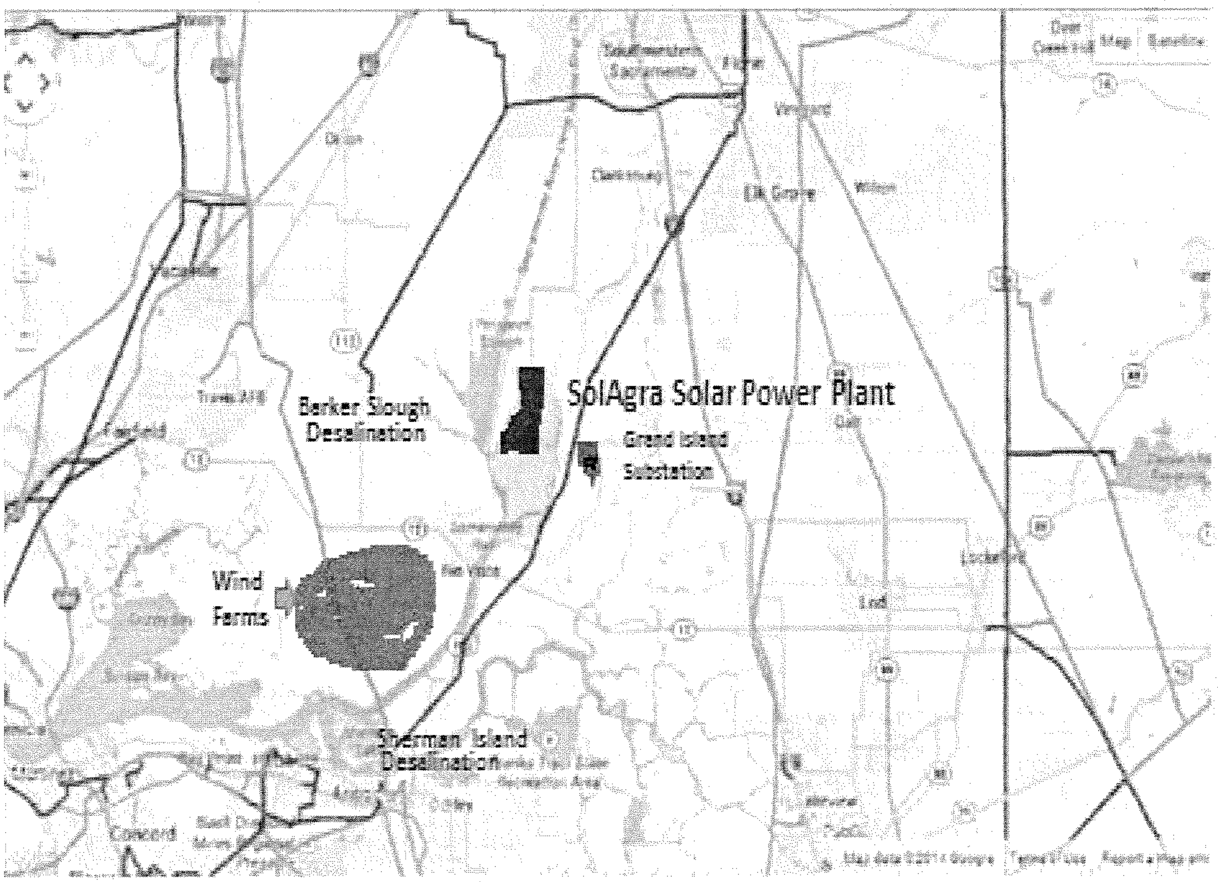


SHERMAN ISLAND to BETHANY RESERVOIR

Water Tunnel Conveyance

EXHIBIT 3
POWER GRID

Northern California Power Grid:



SolAgra's Solar Power Plant is ideally located along the power corridors to deliver power to Sherman Island and Barker Slough

Purple lines - 115 KV Transmission Corridors from Grand Island to Sherman Island & Barker Slough

Aqua lines - 230 KV Transmission Corridors from Wind Farms thru Sherman Island

Estimated Annual Energy Demand and Annual Energy Production Table

	SolAgra Energy Production Capability	West Delta Intake Plan Pumping & Desalination	BDCP - Alternative 4 Energy Demand
Diversion & Delivery	5,256 GWh	669 GWh	1,405 GWh
Desalination		1,105 GWh	N/A
Unmitigated CO2e Emissions	0	0	161

From: Barry Sgarrella <barry@solagra.com>
Sent: Friday, October 30, 2015 4:46 PM
To: BDCPcomments
Subject: SolAgra Comment Letter - RDEIR/S - Viable Alternative to CWF
Attachments: BDCP-CWF - COMPARE-CONTRAST with SOLAGRA WATER SOLUTION 10 29 2015.pdf; SolAgra Water Solution - Sherman Island - Power & Water Layouts.png; Exhibit 1 - RYER ISLAND to SHERMAN ISLAND.pdf; Exhibit 2 - SHERMAN ISLAND to BETHANY RESERVOIR.pdf; SolAgra BDCP-EIR-EIS Comment 07 28 2014-signed.pdf; SolAgra Comment Letter - RDEIR-S - Viable Alternative to CWF (5)-signed.pdf

SolAgra Corporation hereby submits its REVISED comments regarding the RDEIR/S for the California Water Fix. These comments supersede comments that were emailed earlier today.

These comments demonstrate that the SolAgra Water Solution is a viable, and in fact, superior alternative to the CWF. The SolAgra Water Solution must be fairly evaluated and studied under the mandates of CEQA, NEPA and the Clean Water Act. Each Exhibit that is contained within the attached SolAgra Comment Letter is also separately attached to this email for your convenience.

The comments contained in our Comment Letter dated October 30, 2015, are continuing comments to those contained in our original comment letter dated July 28, 2014 which related to the DEIR/S for the BDCP. These comments continue to apply to the BDCP – now revised and rebranded as the California Water Fix.

SolAgra questions the validity of simply revising the Draft EIR/S that was for the BDCP and using it for the California Water Fix when the project sponsors admit the CWF is a different project. It is our assertion that a totally new EIR/EIS should be prepared to fully evaluate the CWF since the scope of the project has so radically changed.

We welcome the opportunity to discuss the SolAgra Water Solution with project sponsors of the CWF to explain why this viable alternative is superior to the BDCP/CWF, and why it must be considered and fairly evaluated to comply with State and Federal laws.

Please contact me to arrange a meeting.

Sincerely,

Barry Sgarrella
Chief Executive Officer
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C: 415-720-5060
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water • energy • stewardship

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October 30, 2015

VIA EMAIL TO: BDCPComments@icfi.com

BDCP/WaterFix Comments
PO Box 1919
Sacramento, CA 95812

SUBJECT: Comments on BDCP/CalWaterFix RDEIR/SDEIS

The Placer County Water Agency (PCWA) provides these comments on the Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) for the Bay Delta Conservation Plan (BDCP)/California WaterFix (CalWaterFix) Project (Project). By letter dated July 28, 2014, PCWA provided comments on what was then the proposed draft BDCP, the draft Implementing Agreement and the Draft Environmental Impact Report/Environmental Impact Statement. PCWA, in its July 28, 2014, comment letter also noted it had participated in the preparation and submittals of comments as part of the North State Water Alliance (NSWA) and the American River Water Agencies (ARWA). Both the NSWA and ARWA also submitted comment letters on the draft BDCP and PCWA, as a member of each of those groups, joined in those letters. In addition to the comments outlined in this letter, PCWA has again participated in the preparation and submittal of comments as part of the NSWA and ARWA and, as a member of those groups, again joins in those letters.

I. INTRODUCTION

PCWA engaged expert consultants to assist in the review of the draft BDCP and the initial environmental documentation prepared and circulated for the BDCP. In this regard, PCWA attached technical memoranda prepared by those experts to its July 28, 2014, comment letter. In reviewing the RDEIR/RDEIS, it is apparent that the issues and concerns raised by those technical memoranda have not been addressed in the RDEIR/RDEIS. Those memoranda are attached hereto and the analysis and conclusions contained in those technical memoranda are incorporated herein. In addition to the analysis and conclusions contained in the attached memoranda, PCWA offers the following comments on the RDEIR/RDEIS:

II. COMMENTS ON THE BDCP/CALWATERFIX RDEIR/SDEIS

An overarching concern with and flaw in the RDEIR/SDEIS is that it completely fails to adequately address or answer basic questions regarding short- and long-term impacts to the American River region and its water supplies. The improper narrow focus of the RDEIR/SDEIS ignores the reasonably foreseeable and inevitable changes to upstream operations, including changes in operation of Folsom Reservoir and the impacts associated with those changes, including water supply impacts and impacts to environmental resources in the Lower American River.

The RDEIR/RDEIS itself is virtually unusable to the average citizen or expert. Its unwieldy and confusing structure and organization, along with internal errors in editing make it, at best, difficult to understand and make understanding the project and its impacts impossible. The RDEIR/RDEIS does not provide meaningful information about many of the Project's adverse effects and it omits consideration of many impacts of concern to PCWA. In these ways the RDEIR/SDEIS fails to summarize and convey information essential to the PCWA's and the public's understanding of Project impacts in a manner reasonably calculated to inform the readers and decision makers, in violation of the National Environmental Policy Act (NEPA) readability requirement and in violation of the California Environmental Quality Act (CEQA).

Given these shortfalls, among other defects, the RDEIR/SDEIS fails to adequately provide the requisite, accurate environmental documentation necessary for the local citizenry and public decision makers to reach an informed and thoughtful determination of whether the Project will provide a reliable water supply for the State while restoring the Delta's ecosystem, without adversely impacting not only the fragile Delta ecosystem, but also upstream water supplies and reliability and the ecosystems that will be impacted by changes in upstream operations resulting from the Project. PCWA, members of the ARWA and NSWA, have invested significant time and resources protecting and enhancing those upstream water supplies and ecosystems and the failure of the RDEIR/RDEIS to adequately inform readers of impacts to those resources and to mitigate for those impacts is a fatal flaw in the RDEIR/RDEIS.

A. The RDEIR/SDEIS Violates CEQA and NEPA in Failing to Actually Inform the Reader

A major criticism of the initial DEIR/DEIS for the BDCP was that it failed to summarize and convey information essential to the understanding of Project impacts in a manner reasonably calculated to inform the readers and decision makers, in violation of NEPA's readability requirement and CEQA. The RDEIR/SDEIS repeats and compounds these problems. The RDEIR/RDEIS contains a confusing mix of new, old and partially edited impact sections; lack of clear and concise summary tables; omission of blocks of text from the revised impact chapters (without any strikeout to inform the reader which sections were deleted from the prior draft); failure to integrate figures into text; reliance on multiple appendices and appendices and exhibits to appendices; and cross references to old (DEIR/DEIS and BDCP) and new (RDEIR/SDEIS) documents. This confusing collection of disconnected information places the burden on readers to independently determine where the actual document revisions are and to make assumptions regarding which portions of the prior draft DEIR/DEIS survived the edits and recirculation. This makes it impossible for even the most able analysts to piece together all the information the RDEIR/SDEIS contends supports its impact assessments and determinations.

PCWA is not alone in expressing significant concern with the readability and presentation of information in the RDEIR/SDEIS. The Delta Independent Science Board (ISB), which is comprised of 10 PhD experts in the areas of hydrodynamics and fisheries biology, found the RDEIR/SDEIS "sufficiently incomplete and opaque to deter its evaluation and use by decision makers, resource managers, scientists and the broader public." (September 30, 2015 correspondence to R. Fiorini et al from Delta Independent Science Board Re. Review of environmental documents for California WaterFix ("2015 ISB Report", attached as Exhibit A, at p. 1.) As a result of these fundamental flaws in the RDEIR/RDEIS, the ISB concluded that the RDEIR/SDEIS "fails to adequately inform weighty decisions about public policy." (Id at p.4.)

A draft EIR must be recirculated when it is "so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." (CEQA Guidelines, § 15088.5(a)(4).) An EIR that is a "mass of flaws" must be redone completely and recirculated. (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 741-742.) The RDEIR/SDEIS is so fundamentally and basically inadequate and contains a "mass of flaws" as to render it useless in informing the public of the impacts of the Project. The Project EIR must be completely rewritten and recirculated for public review and comment so that PCWA and the rest of the public can begin to understand the true impacts of the Project -- and in turn, provide detailed, consequential comments to help inform the Project and EIR/EIS.

B. The RDEIR/SDEIS Fails to Summarize or Resolve Disagreements among Technical and Scientific Experts Regarding its Underlying Data and Methodologies

The CEQA Guidelines specify that when experts disagree about an EIR's data or methodology, the EIR should summarize the main points of disagreement. (CEQA Guidelines, §15151.) When the EIR's discussion and analysis is not modified to incorporate the suggestions made in comments on the draft document, the EIR must acknowledge the conflict in opinions and explain why they have been rejected, supporting its statements with relevant data. (*Berkeley Keep Jets Over the Bay Comm. v. Bd. of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1367, 1371.) An EIR that fails to explain major discrepancies in critical data and fails to resolve the conflict with substantial evidence is legally inadequate. (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260.)

Likewise, CEQ Guidelines state that "[a]ccurate scientific analysis" is essential to implementing NEPA. (40 C.F.R. §1500.1(b).) Agencies must ensure the scientific integrity of analyses in environmental impact statements. (40 C.F.R. §1502.24.) In doing so they must discuss any responsible opposing view and indicate the agency's response to the issued raised. An EIS "must respond explicitly and directly to conflicting views in order to satisfy NEPA's procedural requirements." (*Earth Island Institute v. Carlton* (9th Cir. 2010) 626 F.3d 462, 472.) Here, qualified experts (including, but not limited to, the Delta ISB, and NSWA experts MBK Engineers, Cardno, Dave Vogel and Robert Latour) provided detailed comments constituting substantial evidence that showed why and how the DEIR/DEIS's hydrologic modeling and fisheries analyses were flawed and inadequate to support the DEIR/DEIS's analysis, impact determinations, public participation or agency decision making. These expert comments raised issues of such significance regarding the fundamental assumptions, data and methodology used in the DEIR/DEIS as to merit discussion in a revised and recirculated Draft EIR/EIS. The RDEIR/SDEIS does not address these fundamental expert criticisms of the DEIR/DEIS.

By deferring any discussion of these issues to the Final EIR/EIS, the lead agencies have effectively precluded informed public participation on some of the most important aspects of the environmental review documents and has failed to incorporate the best available science into the environmental review of the proposed project. Given the magnitude of the criticisms levied at the DEIR/DEIS data and methodologies, and the fact that the same errors appear to have been repeated in the RDEIR/SDEIS, it was an abuse of discretion for the lead agencies to fail to directly address the key expert criticisms in the RDEIR/SDEIS so the public and decision makers could understand and weigh the agencies' views and supporting evidence in their evaluation of the RDEIR/SDEIS.

C. Fundamental Flaws in the Hydrologic Modeling Supporting the RDEIR/SDEIS Fatally Undermine its Conclusions

PCWA commented previously on the numerous errors and omissions in the BDCP and DEIR/DEIS's hydrologic modeling. The RDEIR/SDEIS fails to correct these problems, as demonstrated by the further expert report prepared by MBK Engineers and submitted on behalf of the NSWA. Expert reports evaluating the RDEIR/SDEIS submitted previously by PCWA as part of its July 28, 2014 comment letter and being submitted on behalf of the NSWA as part of comments on the RDEIR/RDEIS demonstrate that the same questions and concerns about the impacts of the previously preferred project apply to the new alternatives, including Alternative 4A.

CEQA requires that an EIR analysis and impact determinations be based on substantial evidence. CEQA "[c]ase law defines 'substantial evidence' supporting an agency's decision as ' "relevant evidence that a reasonable mind might accept as adequate support for a conclusion"' [citation] or 'evidence of "'ponderable legal significance . . . reasonable in nature, credible, and of solid value"' [citation]." (*Banker's Hill, Hillcrest, Park West*

Community Preservation Group v. City of San Diego (2006) 139 Cal.App.4th 249, 26, fn. 10.) NEPA likewise requires a record of sufficiently detailed information to fully assess significant environmental impacts so as to allow determinations by informed, reasoned choice. "Accurate scientific evidence remains essential to an Environmental Impact Statement... [and] an agency [can] not rely on 'stale' scientific evidence or 'ignore reputable scientific criticism" in its Environmental Impact Statement.'" (*City of Carmel-By-The-Sea v. U.S. Dept. of Transp.* (9th Cir. 1997) 123 F.3d 1142, 1151, quoting *Seattle Audubon Soc. v. Espy* (9th Cir. 1993) 998 F.2d 699). The technical analyses supporting the RDEIR/SDEIS do not meet this standard; their flaws are so substantial as to invalidate the RDEIR/SDEIS analysis and impact determinations upon which they are based.

D. The EIR is Inadequate to Support Responsible Agency Decision Making

The numerous flaws with the DEIR/DEIS and RDEIR/SDEIS, including but not limited to the lack of essential information about the Project's effects on upstream water supplies and impacts to threatened and endangered fish species, render the document inadequate to meet the needs of the state responsible agencies and federal agencies with permitting jurisdiction over the Project. For example, as a CEQA responsible agency the State Water Resources Control Board (SWRCB) must rely on the Project EIR when considering the required water rights changes necessary to implement the Project. The DEIR/RDEIR/DEIS/SDEIS cannot support the SWRCB's required findings for petitions to change because there is insufficient evidence to conclude the Project will not injure other legal users of water. The specific bases for this concern have been stated previously in the July 28, 2014, comments of PCWA, the ARWA, and the NSWA, among many others. With respect to the current RDEIR/SDEIS, for example, to the extent the new preferred project (Alternative 4A) includes provisions for additional Delta outflow, the effect of that component on upstream hydrology, and the ability of upstream water users to exercise their water rights, has not been evaluated. Similarly, substantial flaws in the analysis of impacts to threatened and endangered fish species fail to satisfy the informational requirements necessary to support issuance of a Clean Water Act section 404 permit for the proposed diversion structures. For these reasons the DEIR/RDEIR provides no substantial evidence to support a finding that the Project will not injure other legal users of water and is inadequate to support the subsequent approvals required to implement the Project.

E. The RDEIR/RDEIS Fails to Consider Reasonable Alternatives

The Project is a significant departure from the original Draft BDCP. The prior project was a Habitat Conservation Plan purporting to be prepared in accordance with Section 10 of the federal Endangered Species Act. CalWaterFix significantly departed from the BDCP, altogether abandoning the habitat conservation portion of the project, moving to a "conveyance" only project. The change is so significant that the Project no longer qualifies for inclusion into California's Delta Plan. (Water Code section 85320.) As the scope and purpose of the project has changed to eliminate the restoration of the Delta ecosystem as a part of the project, the project proponents must analyze a reasonable range of alternatives to satisfy NEPA. (40 C.F.R. §1505.1(e).) The Council on Environmental Quality, in its Memorandum For Federal NEPA Liaisons, Federal, State, and Local Officials and Other Persons Involved in the NEPA Process, dated March 16, 1981 (CEQ Memorandum), explains that the range of alternatives "include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." (CEQ Memorandum, π 2a.) The RDEIR/RDEIS fails to consider a reasonable range of practical or feasible alternatives that focus solely on conveyance. As such, the RDEIR/RDEIS fails to satisfy NEPA's mandate that a range of alternatives be considered.

F. The RDEIR/RDEIS Fails to Consider Impacts to Upstream Operations and Fails to Analyze the Impacts Associated with the U.S. Bureau of Reclamation's Commitment to Participate in the CalWaterFix

It should be beyond dispute that the participation by the U.S. Bureau of Reclamation (USBR) in the CalWaterFix is required in order to make the project economically feasible. This is perhaps best demonstrated by the fact that the USBR has joined the California Department of Water Resources (DWR) in submitting Petitions for Change of the points of diversion and/or to add points of rediversion to allow the USBR to move water diverted and stored by the Central Valley Project (CVP) through the new conveyance facility proposed as part of the CalWaterFix. Indeed, the prior iteration of the Project, the BDCP, included draft proposed funding and other commitments that provided for a "wheeling" agreement between the USBR and DWR.

The RDEIR/RDEIS fails to acknowledge, disclose, study, and analyze the effects of such an agreement or commitment to move federal Central Valley Project (CVP) water through the new conveyance facility. By failing to adequately disclose and analyze this commitment and agreement to move federal CVP water through the new conveyance facilities, the USBR has failed to disclose how it proposes to operate the CVP as part of the CalWaterFix. The lack of any available operations plan precludes any review, let alone meaningful review, of the Project on upstream reservoirs and facilities and the ecosystems affected by those operations. For example, adverse impacts associated with changes to operations at Folsom Reservoir, on the ecosystem of the Lower American River, were discussed in the previously submitted technical memorandum prepared by Cardno and attached hereto. The issues raised by that memorandum were not addressed in the RDEIR/RDEIS.

This fatal flaw renders the document inadequate for the SWRCB to undertake its role as a responsible agency under CEQA and makes it impossible to determine whether any legal users of water would be injured as a result of the CalWaterFix when deciding whether to approve the requested changes sought by DWR and the USBR.

III. CONCLUSION

It is well established that "[T]he purpose of an EIR is not only to protect the environment but to demonstrate to the public that it is being protected. (*County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.) As explained in PCWA's comments, the RDEIR/SDEIS, like the DEIR/DEIS before it, does not provide sufficient information, nor does it present information in a way that allows the public a meaningful opportunity to understand and comment on the CalWaterFix Project's substantial adverse impacts. To date, the EIR/EIS has failed to demonstrate to the rate payers of PCWA that they, their water supplies, and the environment in the American River watershed, will be protected from the significant impacts of constructing and operating the CalWaterFix Project. Due to the fundamental changes in the project since publication of the DEIR/DEIS, the significant changes needed to the underlying technical studies and analyses, and the extensive comment and criticism of these documents, further edits and revisions or partial recirculation of the current DEIR/DEIS or RDEIR/SDEIS will not satisfy CEQA and NEPA's informational mandate. The state and federal lead agencies must start over and prepare a new draft EIR/EIS that addresses the concerns raised in comments on the DEIR/DEIS and RDEIR/SDEIS.

Sincerely,

PLACER COUNTY WATER AGENCY

Andrew Fecko
Director of Resource Development

Attachment

c: U.S. Senator Dianne Feinstein
U.S. Senator Barbara Boxer
U.S. Congressman Doug LaMalfa
U.S. Congressman Tom McClintock
State Senator Ted Gaines
State Senator Jim Nielsen
State Assembly Member Frank Bigelow
State Assembly Member Brian Dahle
State Assembly Member Beth Gaines
State Assembly Member Dan Logue

David Murillo, Regional Director, Mid-Pacific Region, U.S. Bureau of Reclamation
Drew Lessard, Area Manager, Mid-Pacific Region, U.S. Bureau of Reclamation
Placer County Board of Supervisors
David Boesch, Chief Executive Officer, County of Placer
City of Auburn, City Manager
City of Colfax, City Manager
Marcus Yasutake, Environmental & Water Resources Director, City of Folsom
City of Lincoln, City Manager
Town of Loomis, Town Manager
City of Rocklin, City Manager
City of Roseville, City Council and City Manager
Foresthill Public Utilities District
Shauna Lorance, General Manager, San Juan Water District
Brad Arnold, General Manager, South Sutter Water District
Ryan Bezzara, Legal Counsel, American River Water Agencies
Tim Quinn, Executive Director, Association of California Water Agencies (ACWA)
Director of Federal Relations, ACWA
Senior Regulatory Advocate, ACWA
Executive Director, California Municipal Utilities Association
Executive Director, California Special Districts Association
John Kingsbury, Executive Director, Mountain Counties Water Resources Association
Executive Director, National Water Resources Association
David Guy, President, Northern California Water Association
John Woodling, Executive Director, Regional Water Authority
Chief Executive Officer, Sacramento Area Council of Governments
Chief Executive Officer, Sacramento Metropolitan Chamber of Commerce
Tom Gohring, Executive Director, Water Forum
PCWA Board of Directors
Einar Maisch, PCWA General Manager
Scott Morris, PCWA Legal Counsel
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Attachment

MBK ENGINEERS

Water Resources • Flood Control • Water Rights

DATE: July 11, 2014

TO: Dan Kelly, Ryan Bezerra, and Martha Lennihan

FROM: Lee G. Bergfeld, Dan Easton, and Walter Bourez

SUBJECT: Technical Comments on Bay-Delta Conservation Plan Modeling

This technical memorandum is a summary of MBK Engineers' ("Reviewers") findings and opinions on the hydrologic modeling performed in support of the draft environmental document for the Bay-Delta Conservation Plan (BDCP) for Folsom Reservoir and the American River Basin. The results of that modeling are summarized in Appendix 5A to the draft BDCP EIR/EIS.

The Reviewers' analysis of the BDCP modeling is summarized in categories: (1) assessment of general assumptions and operations; (2) assessment of American River demands; (3) assessment of climate change assumptions, implementation, and effects; (4) assessment of the assumptions and operational criteria for inclusion of the new BDCP facilities. The issues discussed in (1), (2) and (3) are relevant for all modeling scenarios, both baseline scenarios that do not include BDCP and with project scenarios that evaluate BDCP or the Alternatives. The issues discussed in (4) are specific to the inclusion of the BDCP as defined in the draft BDCP plan and identified as Alternative 4 in the Draft EIR/EIS.

This review focuses on water operations modeling using CalSim II. CalSim II is a computer program jointly developed by DWR and Reclamation. CalSim II presents a comprehensive simulation of State Water Project (SWP) and Central Valley Project (CVP) operations, and is used by DWR as a planning tool to predict future availability of water for the SWP. CalSim II is widely recognized as the most prominent water management model in California, and it is generally accepted as a useful and appropriate tool for assessing the water delivery capability of the SWP and the CVP.

Broadly speaking, CalSim II estimates, for various times of the year, how much water will be diverted, how much will serve as instream flows (e.g., flow in the rivers at various locations, such as Delta outflow), and how much will remain in the reservoirs. Within the context of the BDCP, CalSim II is used to estimate the amount of water that will be diverted from BDCP's proposed North Delta Diversion (NDD) facilities. Thus, for BDCP, the CalSim II model estimates how much water will be diverted at the NDD facilities, how much flow will remain in the Sacramento River below Hood (the approximate location of the NDD facilities), how much water will be diverted through the existing South Delta Diversion (SDD) facilities at Tracy, how much flow will leave the Delta by flowing out to the Bay, and how much water will remain in storage in upstream reservoirs (including Folsom Reservoir). The location and timing of the diversion and the amount of water remaining instream and in reservoirs are significant because they can cause impacts on species, water quality degradation, and the like.

The coding and assumptions included in the CalSim II model drive the results it yields. Data and assumptions, such as the amount of precipitation runoff at a certain measuring station or the demand for water by specific water users are input into the model. Criteria used to operate the CVP and the SWP (including current regulatory requirements) are included in the model as assumptions; because of the volume of water associated with the CVP and SWP, these operational criteria significantly influence the model's results. Additionally, operational logic is coded into the CalSim II model to simulate how DWR and Reclamation would operate the system under circumstances for which there are no regulatory or otherwise definitive rules (e.g., when to move water from upstream storage to south of Delta storage). This attempt to specify (i.e., code) the logic sequence and the relative weighting that humans will use as part of their "expert judgment" is a critical element to the CalSim II model.

The model's ability to reliably predict effects of a proposed action depends on the accuracy of its coding and its representation of operations criteria. In other words, the model's results will be only as good as its data, coding, assumptions, and judgment and the knowledge of the modelers. For this reason, a detailed operating plan of existing facilities and the proposed facility is essential to create an accurate model of how a proposed action will affect existing water operations. In reviewing the BDCP modeling, it became apparent that coding errors and operating assumptions are inconsistent with the actual purposes and objectives of the CVP and SWP, thus limiting the utility and accuracy of the results.

The CalSim II model is the foundational model for analysis of the BDCP, including the effects analysis in the Draft BDCP and the impacts evaluation in the Draft EIR/EIS. Results from CalSim II are used to examine how water supply and reservoir operations are modified by the BDCP, and the results are also used by subsequent models to determine physical and biological effects, such as water quality, water levels, temperature, Delta flows, and fish response. Any errors and inconsistencies identified in the underlying CalSim II model are therefore present in subsequent models that estimate impacts on water quality, hydrodynamics in the Delta, economics, hydropower, and other parameters and adversely affect the results of analyses based on those subsequent models.

No Action Alternative

Water operations modeling assumptions used in CalSim II for the BDCP No Action Alternatives (NAA) are defined in the December 2013 Draft BDCP[1] and associated draft EIR/S. Those assumptions include assumed changes to hydrology cause by climate change, so the NAA includes that assumed climate change. Assumptions affecting modeling results for Folsom Reservoir and the American River are the focus of this review. Because Folsom Reservoir is operated as an integral part of the CVP, system-wide assumptions affect conditions on the American River and these assumptions are included in this review. Demands for American River supplies also influence American River storage and flow conditions, therefore demand assumptions are included in this review. Because climate change assumptions not only affect system-wide operations, but have a significant influence on American River operations, these assumptions are reviewed to understand the basis for the NAA model results. In addition to input assumptions, the NAA operation depicted by CalSim II is reviewed for reasonableness.

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[1] The detailed assumptions are stated in BDCP draft EIR/EIS Appendix 5A.

Each of the NAA assumes the same regulatory requirements, generally representing the existing regulatory environment at the time of study formulation (February 2009), including Stanislaus ROP NMFS BO (June 2009) Actions III.1.2 and III.1.3, Trinity Preferred EIS Alternative, NMFS 2004 Winter-run BO, NMFS BO (June 2009) Action I.2.1, SWRCB WR90-5, CVPIA (b)(2) flows, NMFS BO (June 2009) Action I.2.2, American River Flow Management NMFS BO (June 2009) Action II.1, no SJRRP flow modeled, Vernalis SWRCB D1641 Vernalis flow and WQ and NMFS BO (June 2009) Action IV.2.1, Delta D1641 and NMFS Delta Actions including Fall X2 FWS BO (December 2008) Action 4, Export restrictions including NMFS BO (June 2009) Action IV.11.2v Phase II, OMR FWS BO (December 2008) Actions 1-3 and NMFS BO (June 2009) Action IV.2.3v. The modeling protocols for the recent USFWS BO (2008) and NMFS BO (2009) have been cooperatively developed by Reclamation, NMFS, U.S. Fish and Wildlife Service (USF&WS), California Department of Fish and Wildlife (CDF&W), and DWR.

American River Basin Demands

BDCP model inputs were reviewed to understand demand assumptions for water purveyors in the American River Basin. Table 1 is a summary of average annual demands used in CalSim II by the BDCP modeling at both the existing (Existing Conditions) and future (NAA) levels of development. The Existing Conditions model run was not used in the analysis of project effects, but is provided for reference. A single level of demand was used to represent the two future conditions simulated, early long term (ELT) and late long term (LLT) that represent planning horizons of approximately 2025 and 2060, respectively.

There are several problems with the demands summarized in Table 1. Existing Conditions are approximately representative of current demands. Future demands for Placer County Water Agency (PCWA) are not representative of current projections. PCWA diverts water at the American River Pump Station and delivers water into Folsom Reservoir for diversion by San Juan Water District (SJWD), Sacramento Suburban Water District (SSWD), and the City of Roseville (Roseville). The total projected annual demand for these four entities is approximately 120,000 acre-feet. Demands represented in the BDCP modeling total between 64,000 and 81,000 acre-feet annually, depending on the annual demand of SSWD. One error that contributes to underestimating PCWA's future demand is the assumption that Roseville will take only 5,000 acre-feet of their 30,000 acre-feet of contract supply from PCWA. Most future level of development CalSim II studies, such as those produced for the 2013 State Water Project Delivery Reliability Report, assume Roseville's demand for water from PCWA is 30,000 acre-feet. Roseville's 2010 urban water management plan projects that Roseville will have a demand for its 30,000 acre-feet per year of PCWA water by 2025.[2]

A second concern is that the BDCP modeling assumes that demands will increase significantly over the next 11 years, from Existing Conditions to ELT at approximately 2025, but then remain unchanged over the next 35 years to LLT conditions in 2060. Issues with this assumption are in part illustrated by reference to the City of Sacramento's most recent (2010) Urban Water Management Plan which identifies water demands continuing to increase as a result of development through at least 2035. For example, that UWMP projects total year 2030 demands within the retail service area and wholesale demands to be 250,000 acre-feet and year 2035 demands to be 261,000 acre-feet.

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[2] Roseville's 2010 urban water management plan is available at https://www.roseville.ca.us/eu/water_utility/water_efficiency/plan.asp.

Another demand-related issue with the NAA and the with-Project scenarios is that BDCP modeling does not simulate diversion limitations at the Fairbairn water treatment plant when releases from Nimbus Reservoir are below the "Hodge Flows" limits that apply to the City of Sacramento's diversions at Fairbairn. These limitations are included as terms in the City of Sacramento water right permits, and therefore are known and should be accurately reflected in the BDCP modeling.[3] This omission affects modeling of flows in the lower American River downstream of Fairbairn and simulated diversions at Fairbairn and the Sacramento River Intake.

Table 1. American River Basin Demand Assumptions

Water Purveyor	Existing Conditions (1,000 acre-feet)	NAA (1,000 acre-feet)
Placer County Water Agency (PCWA)	35.5	35.5
PCWA – CVP contract	0.0	35.0
City of Folsom	27.0	27.0
City of Folsom – CVP contract	7.0	7.0
Folsom Prison	2.0	5.0
San Juan Water District (SJWD)	33.0	33.0
SJWD - from PCWA	17.0	24.0
SJWD – CVP contract	11.2	24.2
City of Roseville - from PCWA	5.0	5.0
City of Roseville – CVP contract	32.0	32.0
Sac. Suburban Water District (SSWD) - from PCWA	0.0 - 17.0	0.0 - 17.0
El Dorado Irrigation District (EID)	0.0	17.0
EID – CVP contract	7.55	7.55
El Dorado County – CVP contract	4.0	15.0
So. Cal. Water Company /Arden Cordova Water Service	5.0	5.0
California Parks and Recreation	1.0	5.0
Sacramento Municipal Utilities District (SMUD)	15.0	15.0
SMUD – CVP contract	5.0	30.0
City of Sacramento (Fairbairn and Sacramento River)	120.3	245.0
City of Carmichael	12.0	12.0
Sacramento County Water Agency Total (SCWA)	15.0	109.7
SCWA – CVP contract	10.0	45.0
East Bay Municipal Utilities District – CVP contract	N/A	up to 112.0

Climate Change

[3] Water right permit numbers 11358, 11359, 11360, and 11361.

Analysis presented in the BDCP draft plan and draft EIR/EIS attempts to incorporate the effects of climate change at two future climate periods: ELT at approximately the year 2025; and LLT at approximately 2060. Although BDCP modeling includes both the ELT and LLT, the EIR/EIS relies on the LLT and only includes the ELT in Appendix 5. As described in the BDCP draft plan and draft EIR/EIS[4], other analytical tools were used to determine anticipated changes to precipitation and air temperature that is expected to occur under ELT and LLT conditions. Projected precipitation and temperature were then used to determine how much water is expected to flow into the upstream reservoirs over an 82-year period of variable hydrology; these time-series were then input to the CalSim II model.

A second aspect of climate change, the anticipated amount of sea level rise, is incorporated into the CalSim II model by modifying a subroutine that determines salinity within the Delta based on flows within Delta channels. Effects of sea level rise will manifest as a need for additional outflow when Delta water quality is controlling operations to prevent seawater intrusion. In this technical memorandum, we do not critique the climate change assumptions themselves, except in the limited manner described below.[5] This review is limited to evaluating how modified flows were incorporated into CalSim II and whether the operation of the CVP and SWP in response to modified flows and modified flow-salinity relationship is reasonable for ELT and LLT conditions. This review focuses on assumed underlying hydrology and simulated operation of the CVP and SWP, assumed regulatory requirements, and the resultant water deliveries.

To assess climate change, the three without Project ("baseline" or "no action") modeling scenarios were reviewed: No Action Alternative (NAA)[6], No Action Alternative at the Early Long Term (NAA – ELT), and No Action Alternative at the Late Long Term (NAA –LLT). Assumptions for NAA, NAA-ELT, and NAA-LLT are provided in the Draft EIR/EIS's modeling appendix[7]. The only difference between these scenarios is the climate-related changes made for the ELT and LLT conditions (Table 2).

Table 2. Scenarios Used to Evaluate Climate Change

	Climate Change Assumptions	
Scenario	**Hydrology**	**Sea Level Rise**
No Action Alternative (NAA)	None	None
No Action Alternative at Early Long Term (NAA-ELT)	Modified reservoir inflows and runoff for expected conditions at 2025	15 cm
No Action Alternative at Early Long Term (NAA-LLT)	Modified reservoir inflows and runoff for expected conditions at 2060	45 cm

Differences between the NAA and NAA-ELT reveal effects of climate change assumptions under ELT conditions; similarly, differences between the NAA and NAA-LLT reveal effects of climate change assumptions under LLT conditions.

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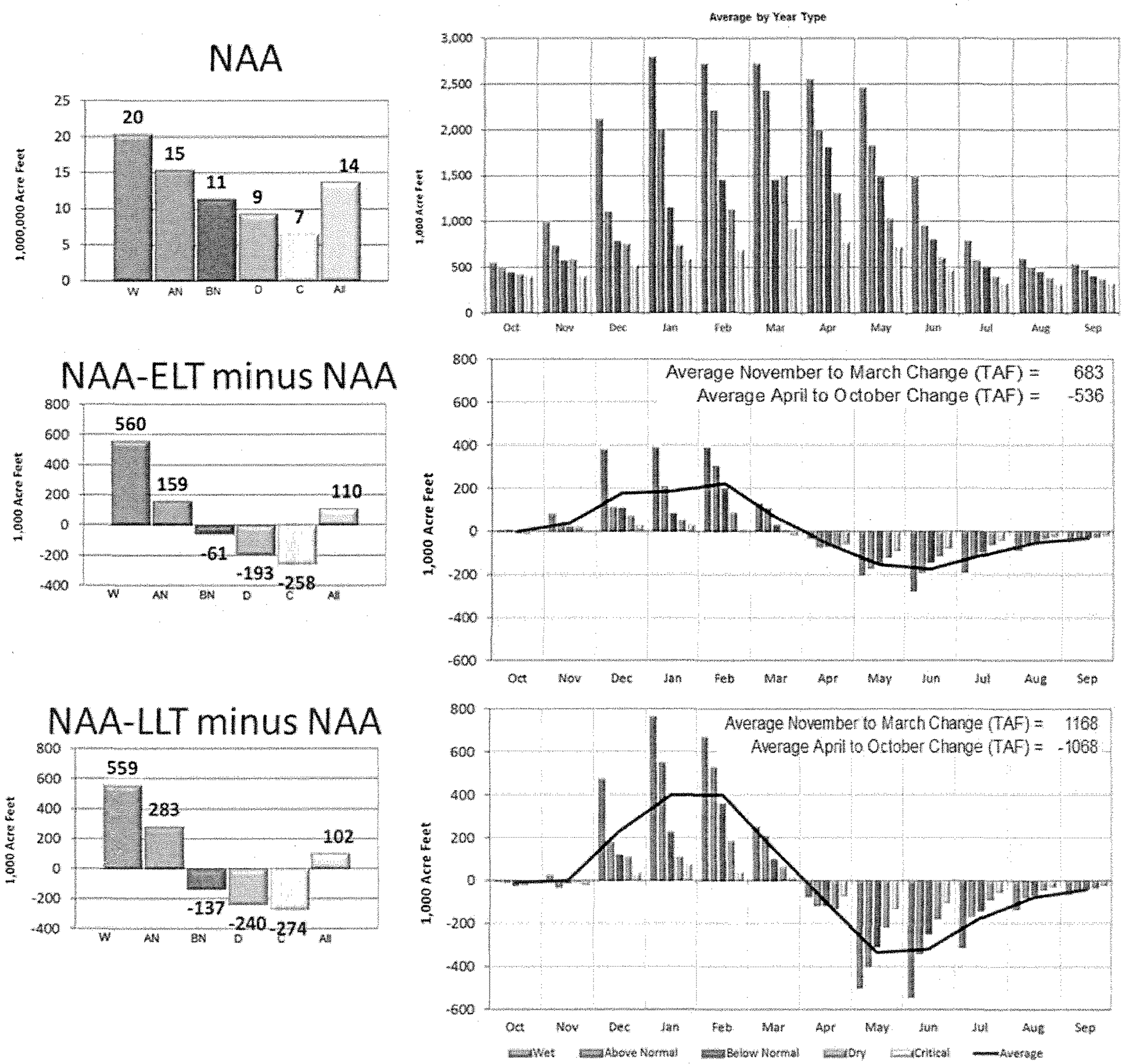
[4] BDCP EIR/EIS Appendix 5A, Section A and BDCP HCP/NCCP plan Appendix 5.A.2
[5] This should not be read to imply that climate change assumptions are reasonable or considered correct or incorrect; the limited review reflects the scope of this memorandum.
[6] NAA is also called the Existing Biological Conditions number 2 (EBC-2) in the Draft Plan.
[7] BDCP EIR/EIS Appendix 5A, Section B, Table B-8.

There is considerable uncertainty regarding the effects of climate change on future temperature and precipitation. Analysis of only one potential future condition at different planning horizons does not cover the range of potential effects. While other analyses attempt to bracket the range of climate change effects (e.g. 2008 OCAP analysis[8]) on proposed projects, BDCP's entire effects analysis is based on a single climate change scenario. Standard practice for modeling CVP and SWP operations is to impose future demand projections on historical hydrology to develop No Action Alternatives. BDCP did not follow the standard practice of evaluating effects of BDCP using historical hydrology, but relied solely on one climate change scenario to form the basis of their analysis.

The significance of changed hydrology between the three without project baselines (NAA, NAA-ELT, and NAA-LLT) is illustrated below in Figure 1. The figure illustrates the projected combined inflow of Trinity, Shasta, Oroville, and Folsom Reservoirs under the NAA and the change relative to the NAA for the NAA-ELT and NAA-LLT baselines. BDCP baselines show Trinity, Shasta, and Oroville inflow are projected to increase overall, but with a significant shift from spring runoff to winter runoff and increases in wetter years with decreases in drier years.

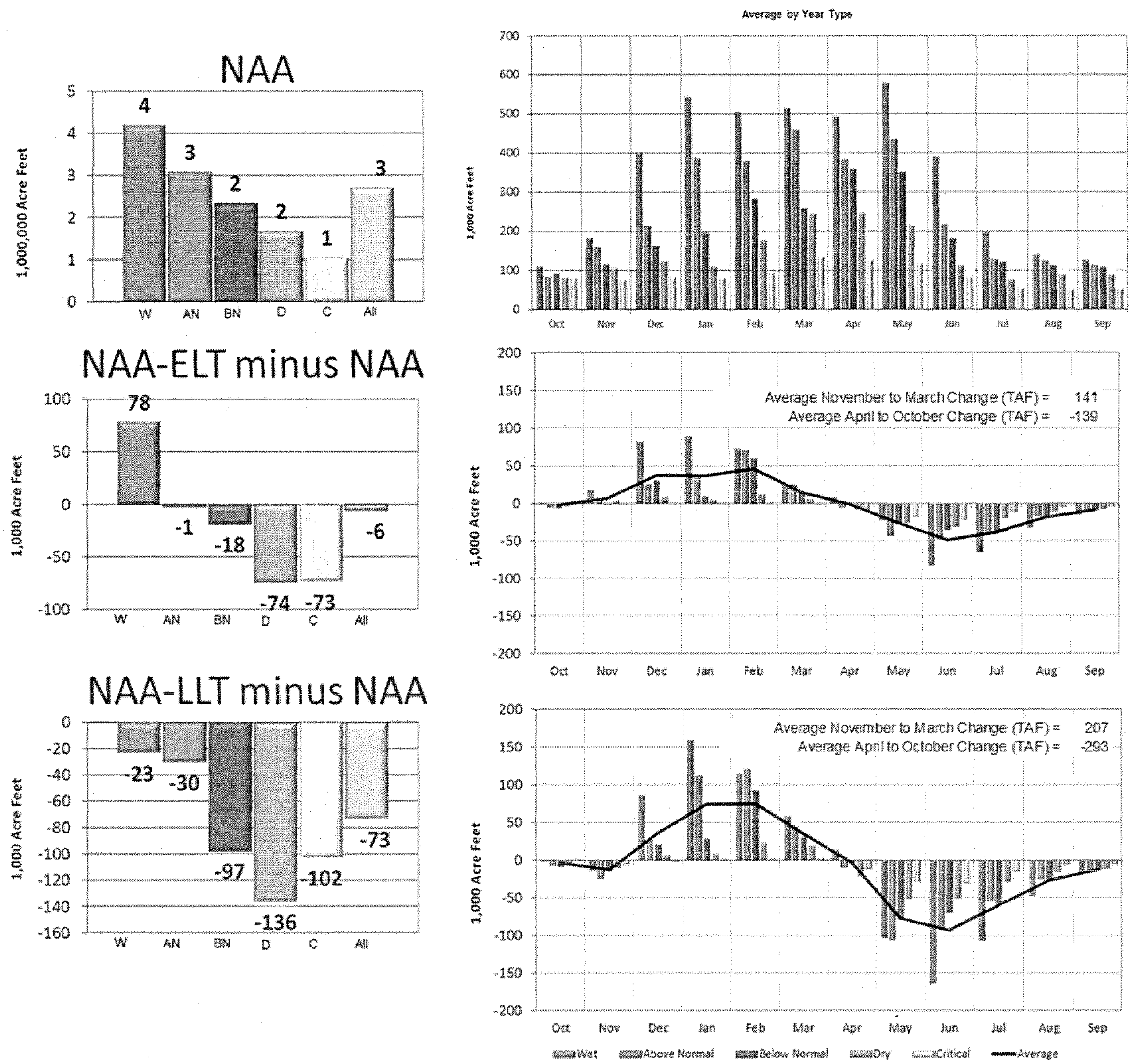
[8] USBR, 2008. Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project, Appendix R Sensitivity of Future Central Valley Project and State Water Project Operations to Potential Climate Change and Associated Sea Level Rise, U.S. Bureau of Reclamation, July 2008.

Figure 1. Inflow to Trinity, Shasta, Oroville, and Folsom Reservoirs – NAA, NAA-ELT and NAA-LLT



The effect of assumed climate change on average annual Folsom Reservoir inflow in the NAA-ELT scenario is minor, but causes decreases in inflow of about 70 TAF in the NAA-LLT scenario. The spring to winter shift in runoff is also projected for Folsom Reservoir inflow. Figure 2 is an illustration of Folsom inflow under the NAA and the change relative to NAA for the NAA-ELT and NAA-LLT baselines. To properly incorporate climate change into modeling of Folsom Reservoir and the American River, climate change effects must be applied to flows and reservoirs upstream from Folsom, which was not done. There is significant storage capacity in the upper American River watershed in PCWA's Middle Fork Project and the Sacramento Municipal Utility District's (SMUD) Upper American River Project. The operation of Folsom is significantly affected by changes in upstream conditions and operations.[9] Because climate change in BDCP modeling is imposed on the American River by adjusting only the inflow to Folsom only, however, the effect on the American River is likely misrepresented in the BDCP NAA-ELT and NAA-LLT scenarios.

Figure 2. Projected Inflow to Folsom Reservoir – NAA, NAA-ELT and NAA-LLT



Comparison of inflow changes illustrated in Figure 1 and Figure 2 show the effects of climate change are large in the American River Basin relative to changes in other river basins. Total changes illustrated in

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[9] SMUD's Upper American River Project alone is estimated to have water storage capacity of about 430,000 acre-feet. "The History of SMUD's UARP", Sacramento Municipal Utility District (2001).

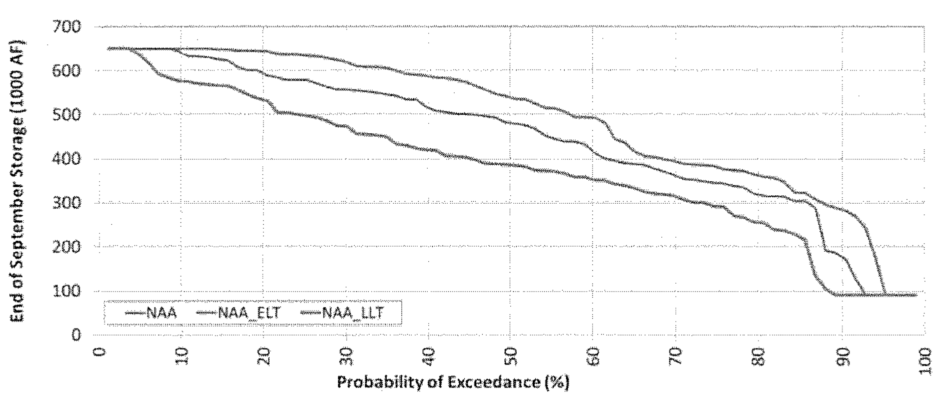
Figure 1 show wetter conditions in wet years and drier conditions in dry years when considering the four basins together. However, climate change in the American River Basin for the LLT shows drier conditions in all year-types. Additionally, a large percentage of the dry and critical year inflow reduction, 57 and 37 percent respectively, for the combined four basins occur in the American River Basin. By comparison, runoff from the American River at Folsom is approximately 20 percent of the sum of runoff of the Trinity, Sacramento, Feather, and American rivers.

Changes in Folsom inflow can affect American River operations in a variety of ways, such as changes in lower American River flows based on the June 2009 NMFS BO Action II.1 (American River Flow Management), availability of water to M&I purveyors in the American Region Basin, and flood control operations in Folsom Reservoir. Climate change is imposed on the American River Basin by adjusting Folsom inflow without adjustments to operations upstream from Folsom. Lower American River flow requirements are calculated and adjusted using several different indices that include forecasted inflow to Folsom, end-of-September storage in Folsom and upstream reservoirs, forecasted Folsom storage, and the Sacramento River Index. Water deliveries from Folsom are partially based on water supply in upstream reservoirs. Required flood reservation space in Folsom Reservoir is affected by storage in upstream reservoirs. Because Folsom Reservoir operation is affected by storage conditions upstream from Folsom, climate change must be applied to the entire American River basin to properly analyze conditions with climate change.

For Folsom and other upstream CVP and SWP reservoirs, the shift of in timing of inflows along with a continuing need to satisfy downstream environmental requirements and demands significantly affects carryover storage. Because of climate change's assumed effect on hydrology and the lack of CVP/SWP operational adaptations in the BDCP modeling, the CVP and SWP simply cannot satisfy water demands and regulatory criteria imposed on them in the NAA-ELT and NAA-LLT modeling scenarios. Figure 3 illustrates change in carryover storage in Folsom Reservoir. The relatively high frequency (approximately 10% of time) of minimum storage occurring at Folsom Reservoir leads us to question whether the NAAs reflect credible or defensible operations. The projected occurrences of low and dead storage conditions projected by the BDCP modeling result in severe reduction of flow available to sustain habitat in the Lower American River and severe reductions in water supply reliability.

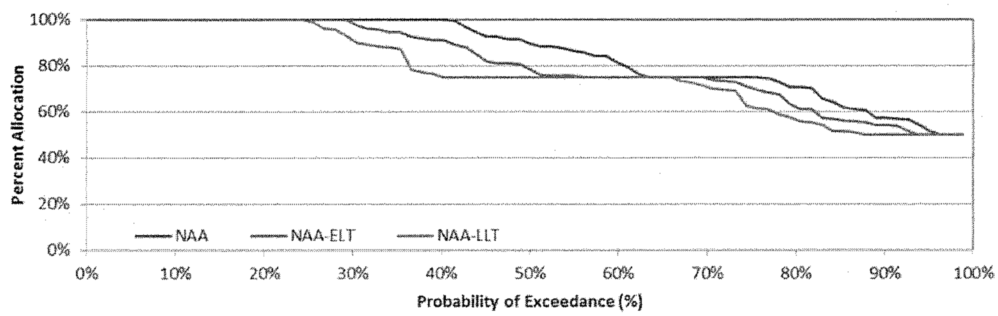
Figure 3. Folsom Reservoir Carryover Storage

	Year Type	NAA_ELT minus NAA	NAA_LLT minus NAA
Folsom	W	-42	-115
	AN	-54	-128
	BN	-58	-136
	D	-43	-112
	C	-43	-68
	All	-47	-113



Assumed effects of climate change and lack of adaptation reduces CVP water supply allocations to American River CVP Water Service Contractors. Figure 4 contains exceedance probability plots of CVP M&I allocations for the NAA, NAA-ELT, and NAA-LLT scenarios. Full allocations are made 40% of the time under the NAA, this is reduced to about 30% in the NAA-ELT, and full allocations are made about 25% of the time in the NAA-LLT. The occurrence of 50% allocation increases from about 4% in the NAA to about 7% in the NAA-ELT and to about 12% in the NAA-LLT. In addition to reduced water service contract allocations, water supply allocations under any right cannot be satisfied due to low storage levels in Folsom Reservoir and low flow in the Lower American River. It is not physically possible to divert water for M&I use from Folsom Reservoir when reservoir storage drops below about 100,000 acre-feet because, at that level, the M&I intake in the reservoir would be dry. In addition, flows in the lower American River below about 500 cfs make it impossible for the City of Sacramento to divert water at its Fairbairn diversion. The water-supply and other effects of these physical conditions occurring in the NAA scenarios are not identified or evaluated in the draft BDCP EIR/EIS.

Figure 4. CVP North of Delta M&I Water Service Contract Allocation



If climate change were to result in significant inflow changes, it is highly likely that certain underlying operating criteria such as instream flow requirements and flood control diagrams would also require changes. For example, the CVP and SWP are unlikely to draw reservoirs to dead pool as often as the NAAs depict. The NAA-ELT and NAA-LLT model scenarios show that, in 10% of years, Folsom Lake levels would drop to a "dead pool" condition where diversions to M&I use from the reservoir would not be physically possible. As a result, in this scenario, the modeling implies that American River M&I deliveries from the reservoir would be below what is needed for public health and safety in 10% of years. Additionally, low storage in Folsom would lead to water temperature conditions that would likely be detrimental for listed species and not achieve the temperature objectives in the June 2009 NMFS BO Action II.2 (Lower American River Temperature Management). In addition to affecting fishery habitat in the lower American River, increases in temperature cause problems with water treatment for urban water supplies. In short, the NAA-ELT and NAA-LLT do not provide reasonable underlying CVP and SWP operations on which to superimpose the BDCP and evaluate effects of Alternatives.

In the Reviewers' opinion, the CalSim II operations depicted in the NAA BDCP modeling that incorporate climate change do not represent a reasonably foreseeable future operation of the CVP and SWP. Although an argument is typically made that these NAAs will be used in a comparison analysis with Project Alternatives tiering from these NAAs, the Reviewers believe that the depicted NAA operations are so fundamentally flawed that there can be no confidence even in the comparative results. Therefore, results of the depicted operations are inappropriate as the foundation of technical analysis of a Project Alternative. As such, although the modeling approach may provide a relative comparison between equal foundational operations, little confidence can be placed in the computed differences shown between the NAA and Project Alternative Scenarios.

Conclusions Regarding No Action Alternatives

BDCP No Action Alternatives include errors and omissions in American River demands and Fairbairn diversion limitations. However, the most significant issues with the NAAs are in operation of the CVP/SWP with climate change. The BDCP Model uses assumed future climate conditions that obscure the effects of implementing the BDCP. The future conditions assumed in the BDCP model include changes in precipitation, temperature, and sea level rise. The result of these assumptions is that BDCP's modeled changes in water project operations and subsequent environmental impacts are caused by undefined combinations and inter-relations of three different factors: (1) sea level rise; (2) climate change; and (3) implementation of the alternative that is being studied.

The inclusion of climate change, without adaptation measures, results in insufficient water needed to meet all regulatory objectives and user demands. For example, the BDCP Model results that include climate change indicate that during droughts, water in reservoirs is reduced to the minimum capacity possible. Reservoirs have not been operated like this in the past during extreme droughts and the current drought also provides evidence that adaptation measures are called for long in advanced to avoid draining the reservoirs. In this aspect, the BDCP Model simply does not reflect a real future condition. Foreseeable adaptations that the CVP and SWP could make in response to climate change include: (1) updating operational rules regarding water releases from reservoirs for flood protection; (2) during severe droughts, emergency drought declarations could call for mandatory conservation and changes in some regulatory criteria similar to what has been experienced in the current and previous droughts;[10] and (3) if droughts become more frequent, the CVP and SWP would likely revisit the rules by which they allocate water during shortages and operate more conservatively in wetter years. The modifications to CVP and SWP operations made during the winter and spring of 2014 in response to the drought supports the likelihood of future adaptations. The BDCP Model is, however, useful in that it reveals that difficult decisions must be made in response to climate change. But, in the absence of making those decisions, the BDCP Model results themselves are not informative, particularly during drought conditions. With future conditions projected to be so dire without the BDCP, the effects of the BDCP appear positive simply because it appears that conditions cannot get any worse (i.e., storage cannot be reduced below its minimum level). However, in reality, the future condition will not be as depicted in the BDCP Model. The Reviewers recommend that Reclamation and DWR develop more realistic operating rules for the hydrologic conditions expected over the next half-century and incorporate those operating rules into any CalSim II Model that includes climate change.

Description of the BDCP Project

The BDCP contemplates a dual conveyance system that would move water through the Delta's interior or around the Delta through an isolated conveyance facility. The BDCP CalSim II files contain a set of studies evaluating the projected operation of a specific version of such a facility. Each Alternative was

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[10] See www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp.shtml for information concerning the SWRCB's urgency drought orders for CVP/SWP operations this year.

imposed on two baselines: the NAA-ELT scenario and the NAA-LLT scenario. The BDCP Preferred Alternative, Alternative 4, has four possible sets of operational criteria, termed the Decision Tree. Key components of Alternative 4 ELT and Alternative 4 LLT are as follows:

> The same system demands and facilities as described in the NAA with the following primary changes: three proposed North Delta Diversion (NDD) intakes of 3,000 cfs each; NDD bypass flow requirements; additional positive OMR flow requirements and elimination of the San Joaquin River I/E ratio and the export restrictions during Vernalis Adaptive Management Program; modification to the Fremont Weir to allow additional seasonal inundation and fish passage; modified Delta outflow requirements in the spring and/or fall (defined in the Decision Tree discussed below); relocation of the Emmaton salinity standard; redefinition of the E/I ratio; and removal of current permit limitations for the south Delta export facilities. Set within the ELT environment.

The changes (benefits or impacts) of the operation due to Alternative 4 are highly dependent upon the assumed operation of not only the NDD and the changed regulatory requirements associated with those facilities, but also by the assumed integrated operation of existing CVP and SWP facilities. The modeling of the NAA Scenarios introduces significant changes in operating protocols suggested primarily to react to climate change. The extent of the reaction does not necessarily represent a likely outcome, and thus the Reviewers have little confidence that the NAA baselines are a valid representation of a baseline from which to compare an action Alternative. However, a comparison review of the Alt 4 to the NAA illuminates operational issues in the BDCP modeling and provides insight as to where benefits or impacts may occur.

BDCP Alternative 4 has four possible sets of operational criteria, termed the Decision Tree, that differ based on the "X2" standards that they contemplate:

- Low Outflow Scenario (LOS), otherwise known as operational scenario H1, assumes existing spring X2 standard and the removal of the existing fall X2 standard;
- High Outflow Scenario (HOS), otherwise known as H4, contemplates the existing fall X2 standard and providing additional outflow during the spring;
- Evaluated Starting Operations (ESO), otherwise known as H3, assumes continuation of the existing X2 spring and fall standards;
- Enhanced spring outflow only (not evaluated in the December 2013 Draft BDCP), scenario H2, assumes additional spring outflow and no fall X2 standards.

While it is not entirely clear how the Decision Tree would work in practice, the general concept is that, prior to operation of the NDD, implementing authorities would select the appropriate decision tree scenario (from amongst the four choices) based on their evaluation of targeted research and studies to be conducted during planning and construction of the facility.

For this analysis, the Reviewers analyzed the HOS (or H4) scenario because the BDCP[11] indicates the initial permit will include HOS operations that may be later modified at the conclusion of the targeted research studies. The HOS includes the existing fall X2 requirements but adds additional outflow

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[11] Draft BDCP, Chapter 3, Section 3.4.1.4.4

requirements in the spring. The model code was reviewed and discussed with DWR and Reclamation, who acknowledged that, although the SWP was bearing the majority of the responsibility for meeting the additional spring outflow in the modeling, the responsibility would need to be shared with the CVP under the CVP/SWP Coordinated Operations Agreement (COA)[12]. In subsequent discussions, DWR and Reclamation suggested the additional water for the HOS scenario may be purchased from other water users. However, the actual source of water for the additional outflow has not been defined. The actual source of the water will involve impacts that cannot be reflected in the modeling until the source is identified. While it is agreed that this is not how the projects would actually be operated, since the BDCP Model assumes that the SWP bears the majority of the responsibility for meeting the additional outflow, the Reviewers' analysis of the BDCP modeling results for HOS is limited to the evaluation of how the SWP reservoir releases on the Feather River translate into changes in Delta outflow and exports.

The Reviewers' remaining analysis examines the ESO (or H3) scenario (labeled Alt 4-ELT or Alt 4-LLT in this section) because it employs the same X2 standards as are implemented in the NAA-ELT and NAA-LLT. This allowed the Reviewers to focus the analysis on the effects of BDCP operations independent of the possible change in the X2 standard.

High Outflow Scenario (HOS or H4) Results

According to the Draft EIR/EIS[13], the HOS will reduce SWP south of Delta water deliveries for municipal and industrial (M&I) water users 7% below the level that they would receive without the BDCP (on average). During dry and critical years, SWP south of Delta water deliveries for M&I and agricultural water users will drop 17% below the level that they would receive without the BDCP. In other words, according to BDCP modeling, SWP contractors would get less water with BDCP than under the NAA.

The shared CVP and SWP obligation to provide flow to satisfy Delta outflow requirements is described in the COA. Because the CVP and SWP share responsibility for meeting required Delta outflow based on that specific sharing (rules under the COA), it is not reasonable to conclude that CVP water supplies would increase an average of 70 TAF while SWP water supplies decrease on average of 100 TAF under the HOS. These results, however, are what the BDCP modeling projects for the HOS-LLT scenario. The manner in which this alternative is modeled is inconsistent with existing agreements and operating criteria. If the increases in outflow were met based on COA, there would likely be reductions in Shasta and Folsom storage that would likely cause adverse environmental impacts, which have not been modeled or analyzed in the BDCP EIR/S.

Furthermore, there is no apparent source of water to satisfy the increased outflow requirements and pay back the COA debt that the CVP would incur if the SWP were used to meet HOS requirements. It appears, through recent public discussions regarding the High Outflow Scenario, that BDCP anticipates additional water to satisfy the increased Delta outflow requirement and to prevent the depletion of cold water pools will be acquired through water transfers from upstream water users. However, this approach is unrealistic. During most of the spring months, when BDCP proposes that Delta outflow be increased, agricultural water users are not irrigating. This means that there is not sufficient transfer

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[12] August 7, 2013 meeting with DWR, Reclamation, and CH2M HILL
[13] Draft EIR/EIS, Appendix 5A-C, Table C-13-20-2

water available to meet the increased Delta outflow requirements without releasing stored water from the reservoirs.

The overall effect of the HOS appears to be increases in Oroville releases to support both CVP and SWP exports in wetter years, with modest increases in Delta outflow. There is also a decrease in SWP reliability through large delivery reductions in drier years accompanied by Oroville storage increases. In addition to increases in dry and critical year storage in Oroville, total CVP dry and critical year carryover increases by 100 TAF and 380 TAF respectively with negligible reductions in wetter years types.

American River Changes with Proposed Project

The following section presents comparisons of model results and describes changes between the NAA-LLT and Alternative 4 H3 evaluated at LLT (referred to in this discussion as Alt 4-LLT) for key American River operations. These results focus on changes that directly impact American River water purveyors, flows, and temperatures in the American River downstream of Folsom Dam.

Based on a comparison of BDCP modeling of Alt4-LLT to NAA-LLT, there is a general trend for Folsom Reservoir to be drawn down more in Alt4-LLT during May and June and then remain lower until September. This change in storage is accompanied by increases in Lower American River flow in May and June and decreases from July through September. This shift in timing forms the basis of many concerns regarding impacts of BDCP on American River operations and environmental conditions.

BDCP modeling did not include a with-Project scenario without climate change. As a result of this omission it is impossible to clearly identify the effects of the Project separate from the effects of climate change.

Figure 5 is a comparison of simulated monthly Folsom Reservoir water surface elevations for the baseline and with-Project scenarios. A probability of exceedance chart for each month illustrates differences between the two model simulations and potential Project effects. Dashed horizontal lines indicate water surface elevations when groups of shutters on the intake device must be removed. For example, when the water surface elevation goes below approximately 430 feet, the first group of shutters must be removed. These lines are 30 feet above the top of shutter elevations for the three groups of shutters to account for water depth to prevent the formation of a vortex and cavitation at the intake which would prevent diversion.

Results presented in Figure 5 illustrate that Folsom Reservoir water surface elevation is lower under the with-Project scenario. The largest difference in Folsom elevation occurs from June through August and can affect temperature management by changing when shutters are removed. Shutters are removed from Folsom Dam's intakes in order to access colder water located lower in the reservoir. While removing shutters causes the temperature of water diverted and released from the reservoir to drop almost immediately, that effect does not cause release temperatures to remain cooler indefinitely. Accordingly shutters must be removed strategically.

The timing of shutter removal at Folsom Reservoir would change in the with-project condition. For example, in August the probability of all three shutters being in use is reduced from approximately 25 percent to 15 percent, and the probability of at least one shutter still in used is reduced from approximately 90 percent to 85 percent. Figure 6 is a comparison of simulated monthly Folsom

Reservoir storage for the baseline and with-Project scenarios. A probability of exceedance chart for each month illustrates differences between the two model simulations and potential Project effects. Dashed horizontal lines in Figure 6 represent storage levels below which M&I water purveyors cannot meet peak demands (322 TAF) with diversions from Folsom (illustrated for peak demand months only) or when M&I diversions are interrupted because water levels in Folsom are below the M&I intake (90 TAF). Results summarized in Figure 6 show that Folsom Reservoir storage is more likely to be lower under the BDCP Alt4-LLT than the NAA-LLT particularly in peak summer months. Lower storage impacts the ability of the water purveyors that divert directly from Folsom Reservoir, as well as downstream purveyors on the American River, to meet peak demands in the summer and increases the probability of M&I delivery interruptions.

Figure 5. NAA-LLT and Alt 4-LLT Simulated Folsom Reservoir Elevation

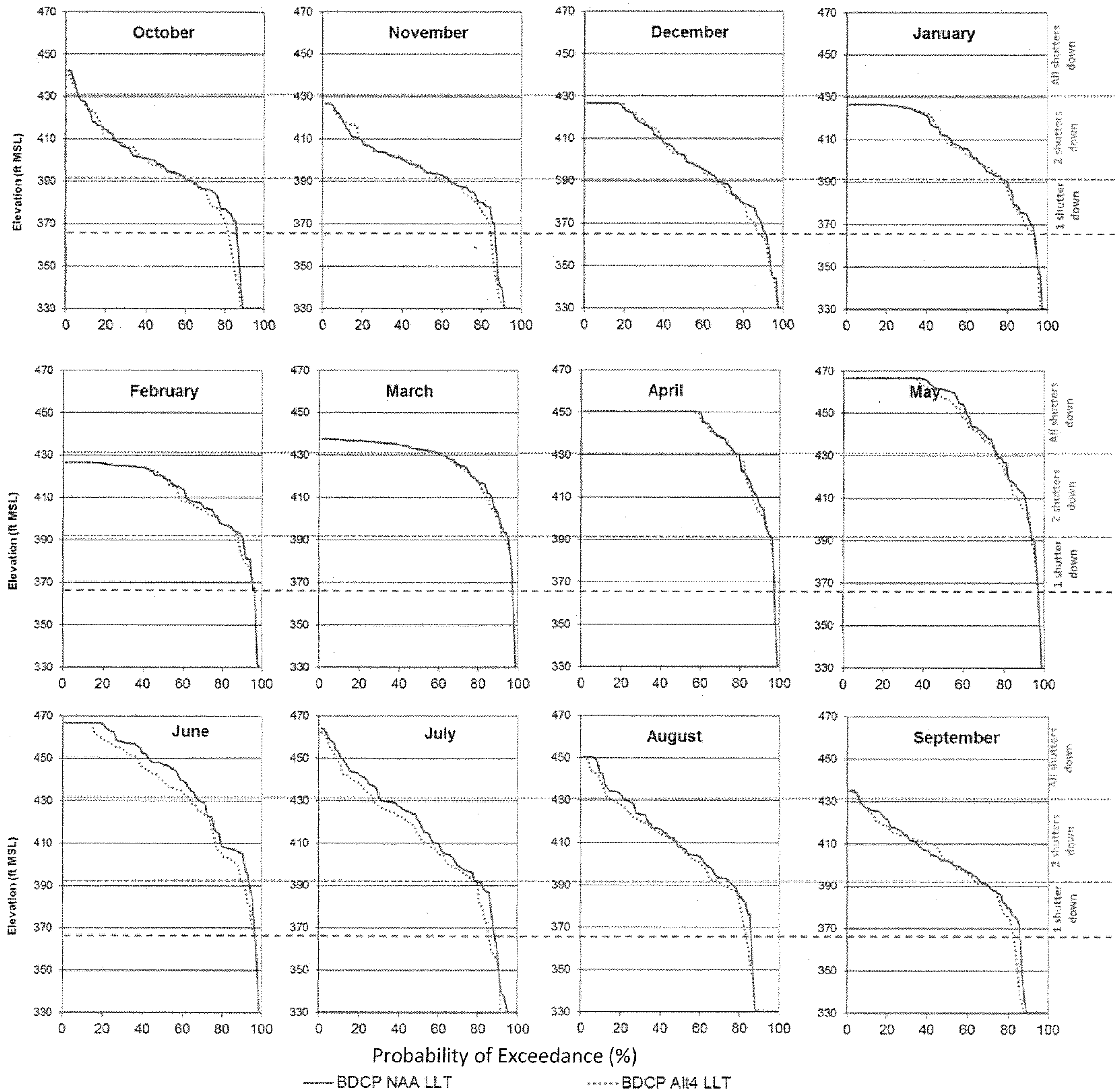

Figure 6. NAA-LLT and Alt 4-LLT Simulated Folsom Reservoir Storage

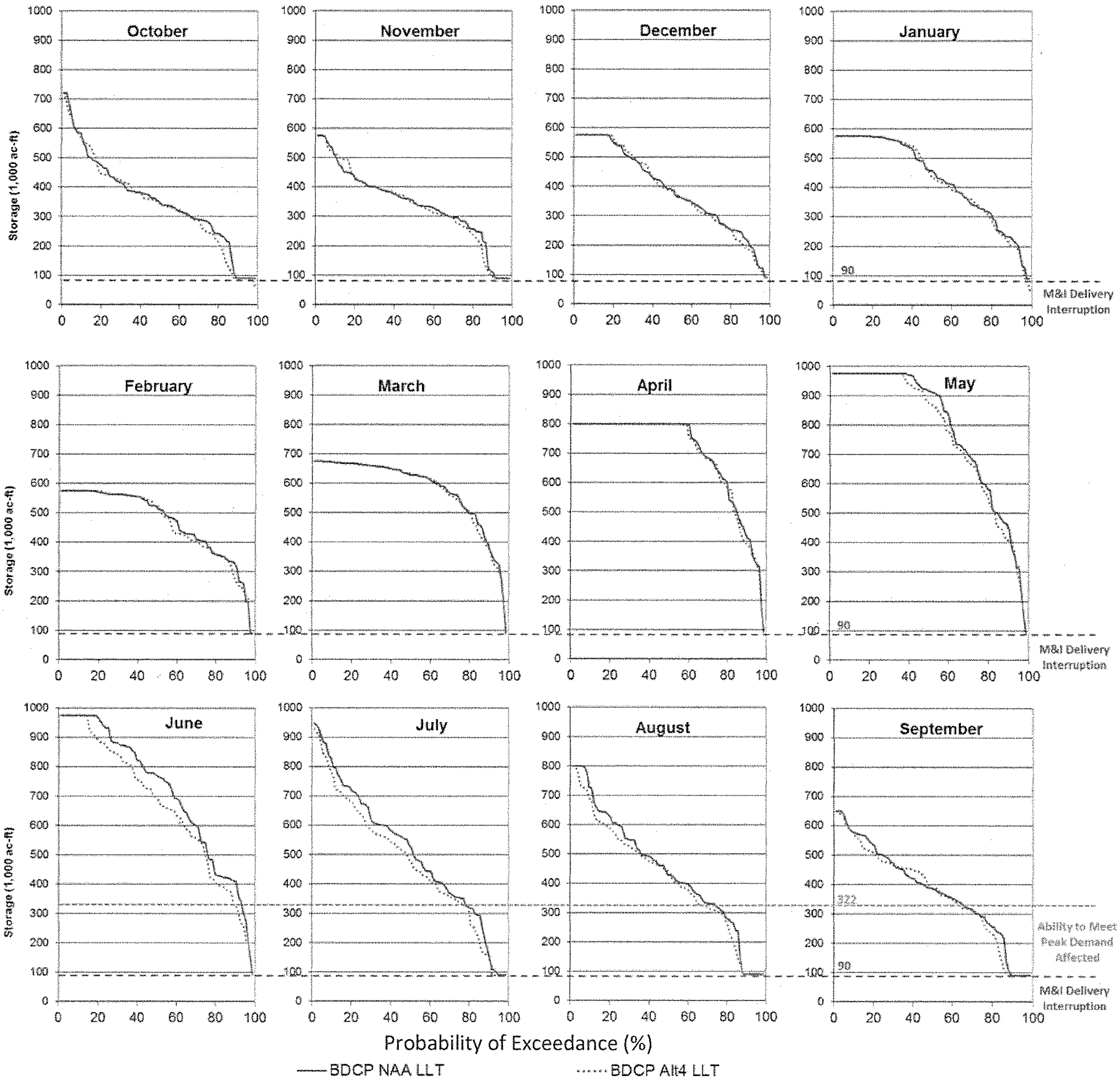

Figure 7 and Figure 8 contain comparisons of simulated monthly flow at Nimbus and H Street for the NAA-LLT and Alt4-LLT scenarios. Results show that under the Alt4-LLT American River flow is higher in the months of May and June, and lower in July, August, and September. Higher releases in May and June drive changes in Folsom storage and water surface elevation seen in previous figures. Likewise, lower releases from July through September bring simulated end-of-September storage between the baseline and with-Project scenarios closer. BDCP modeling shows a higher probability of Lower American River flows being above Hodge Flows in May and June and a higher probability of flows being below Hodge Flows in July, August, and September. When Nimbus releases are below Hodge Flows, diversion limitations under the City of Sacramento's American River water right permits for the Fairbarn Water Treatment Plant on the American River constrain the amount of water available to divert. The changes in American River flows will affect the location of the City of Sacramento's diversion, but this is not reflected in the BDCP modeling. There are also limitations on the City's Sacramento River diversion capability, which could interfere with any such shift in the location of diversions, and hence reduce the supply available to the City. This is not reflected in the BDCP modeling. In the Alt 4-LLT the City of Sacramento will be able to divert more water from the American River at Fairbairn during May and June and less during August and September.

Flow in the lower American River at H Street drops below 500 cfs in both the NAA-LLT and Alt4-LLT. This is critical for the City of Sacramento because their ability to divert water from the American River is affected when flow at H Street falls below 500 cfs due to the potential for pump cavitation. There are times when American River at H Street falls below 500 cfs more often in Alt 4-LLT than in the NAA-LLT. Water availability to the City of Sacramento, including under its settlement contract with Reclamation[14], would be curtailed or eliminated on the American River when water levels in Folsom Reservoir drop below to dead pool level of 90,000 AF.

Changes in Nimbus release under the Alt4-LLT would likely affect cold-water pool management and water temperatures downstream of Folsom Dam. Increased releases in May and June would reduce cold-water pool, lower reservoir water surface elevation, and require shutters to be removed earlier. Removing shutters earlier would drain Folsom Reservoir's limited cold-water pool more rapidly and potentially impact salmon and steelhead in the lower American River by resulting in warmer river temperatures. From July through September temperature management would be affected by the combination of a reduced cold-water pool and lower releases from Nimbus, i.e. lesser amounts of warmer water would be released and warm up quicker as it flows downstream.

The change in timing of release from Folsom Reservoir is caused in the Alt 4-LLT by BDCP using of different assumptions for balancing reservoirs upstream of the Delta with San Luis Reservoir in Alt 4-LLT relative to assumptions in the NAA. In other words, the BDCP operations triggered changes in the timing of Folsom Reservoir releases. These balancing rules attempt to move more water into San Luis Reservoir earlier in the year in the with-Project scenario. It is unclear why BDCP modeling changed these assumptions to simulate Project alternatives.

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[14] Operating Contract No.14-06-200-6497.

Figure 9 contains comparisons of simulated monthly flow in the Sacramento River at the confluence of the American River for the NAA-LLT and Alt4-LLT scenarios. When Sacramento River elevation falls below two feet above sea level (NGVD 1929) the City of Sacramento's intake structure capacity is reduced. Elevation 2.0 occurs when the flow rate is between approximately 5,000 cfs and 9,000 cfs and depends on tidal variation. Moreover, flow rates below 5,000 cfs may result in cavitation or vortexing, causing significant pump damage. Based on CalSim II modeling results, the frequency of the Sacramento River falling below 6,000 cfs is similar in the NAA-LLT and Alt4-LLT.

Figure 7. NAA-LLT and Alt 4-LLT Simulated Nimbus Release

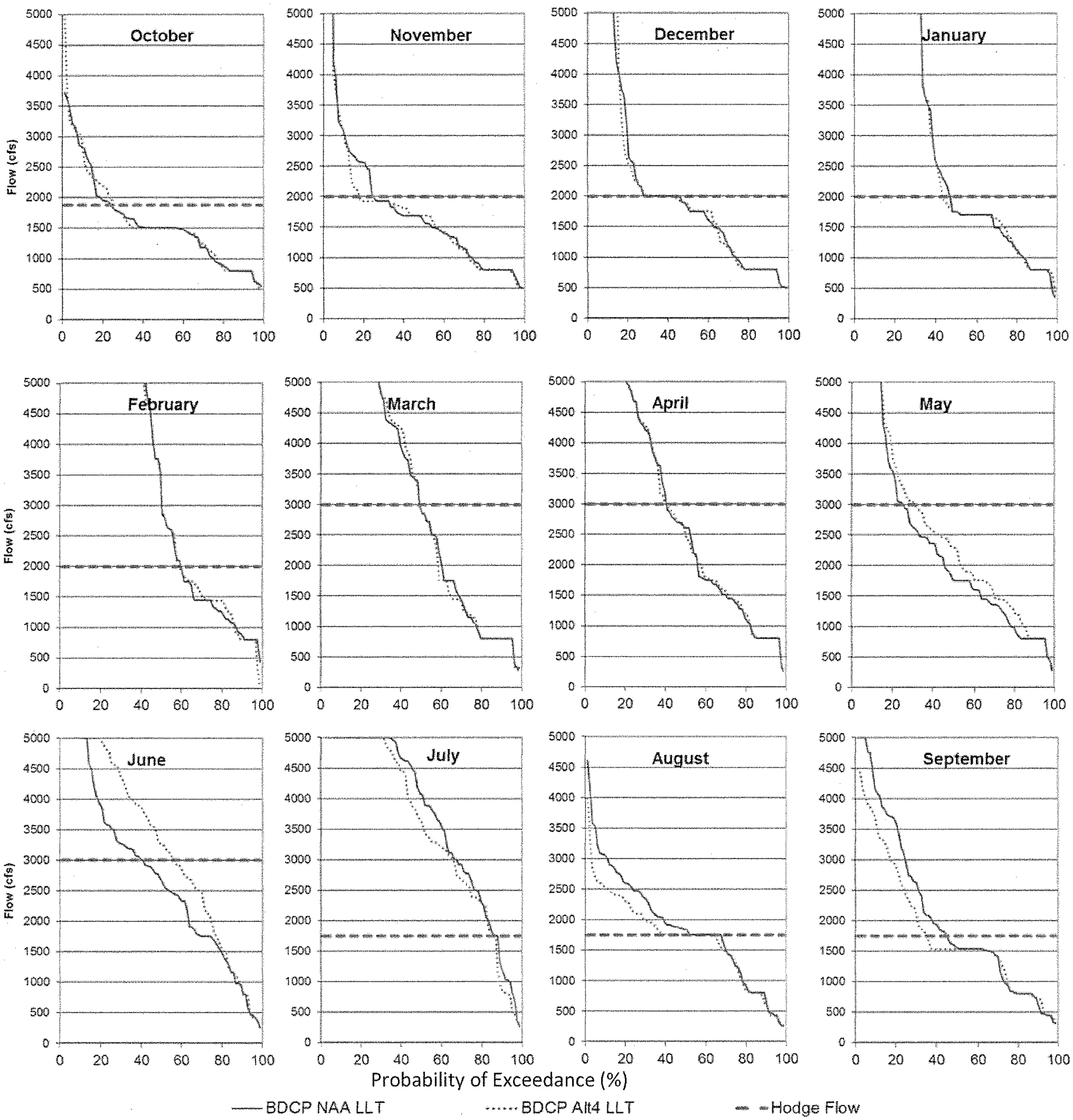


Figure 8. NAA-LLT and Alt 4-LLT Simulated H Street Flow

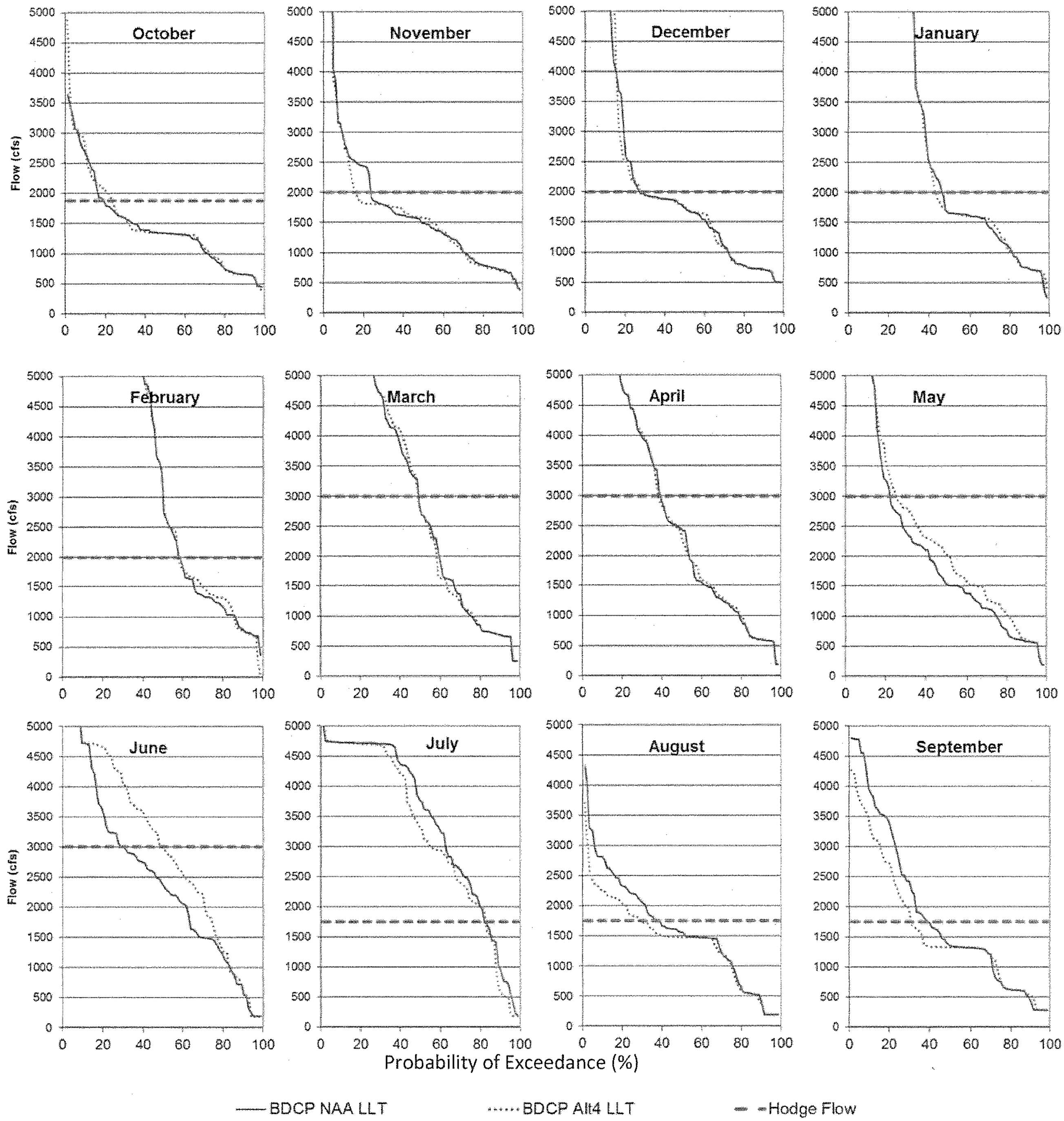


Figure 9. NAA-LLT and Alt 4-LLT Simulated Sacramento River Flow at the American River

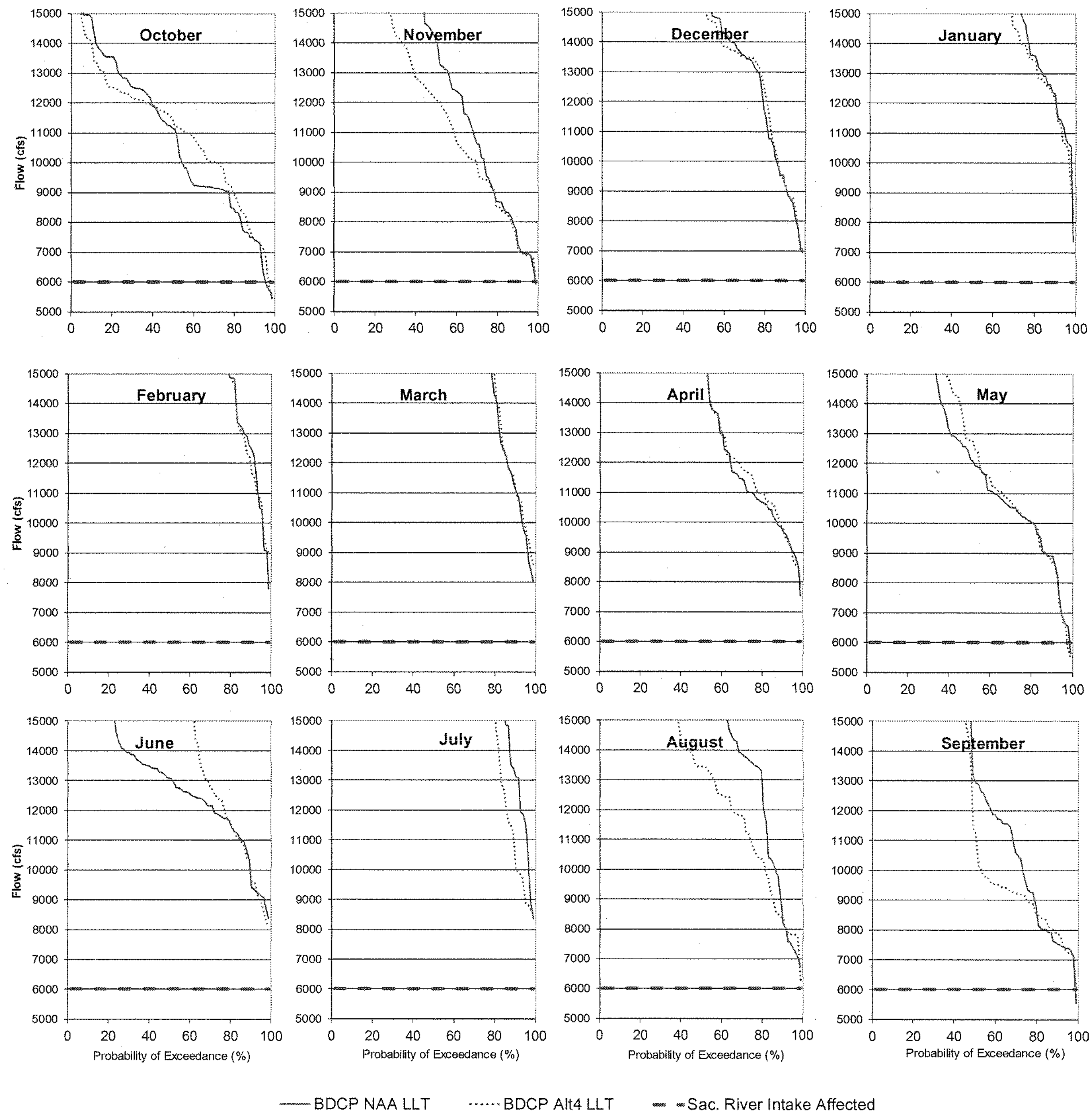
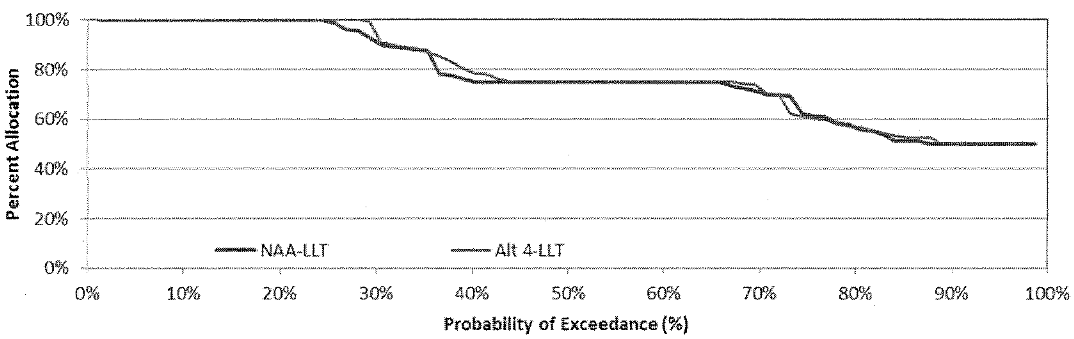


Figure 10 is an exceedance probability plot of CVP North of Delta M&I Water Service Contract Allocation for the NAA-LLT and Alt4-LLT. Changes in these allocations would affect the numerous CVP water-service contractors in the American River Basin, including the cities of Folsom and Roseville, Placer County Water Agency, SMUD and Sacramento County Water Agency. Average annual allocation to CVP M&I water service contractors is about 78% and increases by about one half of one percent in Alt 4-LLT compared to NAA-LLT. Although allocation never falls below 50%, deliveries are not always met due to low reservoir and river flows

Figure 10. CVP North of Delta M&I Water Service Contract Allocation



BDCP's "High Outflow Scenario" is not sufficiently defined for analysis.
The High Outflow Scenario (HOS) requires additional water (Delta outflow) during certain periods in the spring. The BDCP modeling places most of the responsibility for meeting this new additional outflow requirement on the SWP. However, the SWP may not actually be responsible for meeting this new additional outflow requirement. This is because COA would require a water allocation adjustment that would keep the SWP whole. Where one project (CVP or SWP) releases water to meet a regulatory requirement, the COA requires balancing to ensure the burden does not fall on only one of the projects. The BDCP modeling is misleading because it fails to adjust project operations, as required by the COA, to "pay back" the water "debt" to the SWP due to these additional Delta outflow requirements. Unless there is a significant revision to COA, the BDCP modeling overstates the impacts of increased Delta outflow on the SWP and understates the effects on the CVP, including Folsom Reservoir and the Lower American River.

Furthermore, based on the information made available from the BDCP environmental review process and after consulting with DWR and Reclamation project operators and managers, the Reviewers conclude that there is no apparent source of CVP or SWP water to satisfy both the increased Delta outflow requirements and pay back the COA "debt" to the SWP without substantially depleting upstream water storage. It appears, through recent public discussions regarding the High Outflow Scenario, that BDCP anticipates additional water to satisfy the increased Delta outflow requirement and to prevent the depletion of cold water pools will be acquired through water transfers from upstream water users. However, this approach may be unrealistic. During most of the spring, when BDCP proposes that Delta outflow be increased, agricultural water users, who are the only source of water in adequate volumes, are not irrigating. This means that they cannot transfer water during that time frame, and hence there is not sufficient transfer water available to meet the increased Delta outflow requirements without releasing stored water from the reservoirs. Releasing stored water to meet the increased Delta outflow requirements would deplete cold water pools and could potentially impact salmonids on the Sacramento and American River systems.

Technical Memo

Effects of Implementation of the Bay Delta Conservation Plan

As Evaluated in the Draft Environmental Impact Report/Environmental Impact Statement

on

Central Valley Steelhead and Fall-run Chinook Salmon in the Lower American River

Prepared for Placer County Water Agency

Prepared by Cardno ENTRIX

July 2014

Table of Contents

1.0 INTRODUCTION

This technical memo provides an evaluation of the effects of implementation of the Bay Delta Conservation Plan (BDCP), as evaluated in the December 2013 Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS), on Central Valley (CV) steelhead (*Onchorhynchus mykiss*) (Federally Threatened, 71 Federal Register [FR] 834) and fall-run Chinook salmon (*O. tshawytscha*) (Federal Species of Concern, 69 FR 19975) in the Lower American River (LAR). The evaluation focuses on Folsom Reservoir operations and resulting physical habitat/temperature conditions for CV steelhead and Chinook salmon in the LAR.

The effects analysis in the Draft EIR/EIS is fundamentally flawed and fails to disclose significant adverse impacts on CV steelhead and fall-run Chinook salmon and their habitat in the LAR (critical CV steelhead and non-natal spring-run Chinook salmon critical habitat, 70 FR 52488, Sept. 2, 2005, and Essential Fish Habitat for Chinook salmon, 73 FR 60987, Oct. 15, 2008). If properly evaluated, the information provided in the Draft EIR/EIS would result in National Marine Fisheries Service (NMFS) issuing a jeopardy opinion under the Federal Endangered Species Act (ESA) for the BDCP effects on CV steelhead in the LAR based on the modeled Folsom Reservoir and LAR operations. Similarly, significant unmitigated impacts under California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) would exist for both CV steelhead and fall-run Chinook salmon in the LAR.

By failing to disclose impacts from implementation of the BDCP on anadromous fish in the LAR, the Draft EIR/EIS does not comply with CEQA (California Public Resources Code §21000 et seq.), or NEPA (42 U.S.C. 4321 et seq.). To comply with CEQA and NEPA, the underlying modeling assumptions, alternatives analysis, and impact analysis in the Draft EIR/EIS requires substantial modification such that re-circulation of the document is necessary.

The following discussion identifies adverse impacts to CV steelhead and fall-run Chinook salmon in the LAR under future operations of the Central Valley Project (CVP)/State Water Project (SWP).

2.0 ADVERSE IMPACTS TO CENTRAL VALLEY STEELHEAD AND FALL-RUN CHINOOK SALMON IN THE LOWER AMERICAN RIVER

The following identifies impacts to CV steelhead and fall-run Chinook salmon in the LAR under operations of the CVP/SWP, as modeled in the Draft EIR/EIS. The impacts are based on comparing modeled existing and future BDCP habitat and water temperature conditions. The discussion first describes the LAR setting, summarizes the current status of CV steelhead and fall-run Chinook salmon, describes key life history information and temperature requirements, reviews existing habitat conditions in the LAR (including key environmental stressors), and discusses the BDCP temperature significance criteria in the Draft EIR/EIS. The discussion then characterizes habitat conditions in the LAR under future BDCP operations of the CVP/SWP compared to existing conditions and identifies the resulting adverse impacts to CV steelhead and fall-run Chinook salmon.

2.1. LOWER AMERICAN RIVER SETTING

The American River is a major tributary to the Sacramento River. Historically, it provided over 125 miles of anadromous salmonid habitat (CV steelhead, Chinook salmon). The majority of the historical spawning and rearing habitat existed upstream of present-day Nimbus and Folsom dams (NMFS 2009; Yoshiyama et al. 2001). Since 1955, after construction of Folsom and Nimbus dams, use of the American River by anadromous fish has been limited to the lowest 22.5 miles of river downstream of Nimbus Dam (LAR). The Nimbus Fish Hatchery was built immediately downstream of Nimbus Dam in 1955 to mitigate for lost anadromous fish habitat due to construction of the Folsom-Nimbus Project (the adjacent American River Trout Hatchery was constructed in 1968 to rear resident salmonids).

Historically, summer and early fall habitat conditions in the LAR were relatively unsuitable for cold water salmonids due to naturally low flows and high water temperatures in the summer – fall (as high as 75-80°F) (Gerstung 1971). The Folsom-Nimbus Project modified the hydrology of the LAR. Currently, winter/spring flows in the LAR are much lower than historical flows and summer – fall flows are much higher (NMFS 2009). Folsom Reservoir provides a source of summer cold water for the LAR from the hypolimnion of the reservoir. However, the LAR is on the Central Valley floor at an elevation of approximately 100 feet (ft) above sea level. Summer and early fall air temperatures are very warm, with peak daily temperatures frequently above 100°F. Under existing conditions, water temperature in the LAR is colder in the summer – early fall, but warmer in the late-fall – winter than historical water temperatures (Reclamation 2008; NMFS 2009).

Extensive effort has been made to provide and maintain water temperatures in the LAR suitable for the remaining CV steelhead and fall-run Chinook salmon habitat and the two cold water fish hatcheries. Most of the cold water rearing and spawning habitat in the LAR occurs in the upper 13-mile portion (Nimbus Dam downstream to Watt Avenue [River Mile (RM) 9.4]), because the downstream portion of the river is generally too warm, in spite of, the cold hypolimnetic releases from Folsom Reservoir. Selective withdrawal shutters have been installed on the three powerhouse intakes and the municipal water intake at Folsom Dam to provide cold water management capability for the LAR. Detailed temperature modeling and reservoir operations scheduling are performed each year to obtain the best summer temperature conditions for CV steelhead, fall temperature conditions for fall-run Chinook salmon, and summer/fall temperature conditions for the hatcheries.

Water temperature management of the LAR is challenging and water temperatures are impaired for cold water fish under existing conditions, particularly in drier/low storage years due to high summer/fall temperatures (NMFS 2009; Reclamation 2008; Water Forum 2005; CDFW 2001). In addition to management for LAR water temperature (salmonid species and the fish hatcheries), Folsom Reservoir storage is also managed to meet Delta water quality objectives and deliveries to municipal and industrial (M&I) and agricultural water users. LAR water temperature is severely constrained by the limited amount of storage available in Folsom Reservoir. The amount of cold water pool available for release to the LAR is directly related to the amount of storage in the reservoir at the beginning of the summer when reservoir stratification occurs. In drier years and/or when the storage in Folsom Reservoir is drawn down heavily to meet downstream demands (e.g., Delta water quality requirements, water exports, etc.), the cold water pool is not large enough to provide sufficient cold water releases for CV steelhead juvenile rearing (June – September), fall-run Chinook salmon spawning (October – December), and summer/fall hatchery operations. Water temperature management for both CV steelhead and fall-run Chinook salmon, particularly in low Folsom storage years, requires tradeoffs between releasing cool water in the summer for CV steelhead rearing or saving some cool water until the fall for fall-run Chinook spawning/incubation.

The Nimbus and American River fish hatcheries at the top of the LAR reach obtain their 20-60 cubic feet per second (cfs) water supply from the Nimbus Dam. Water temperatures are typically within the suitable range for Chinook salmon and CV steelhead, except in the summer – fall. When water temperatures exceed 60°F, fish are treated with chemicals to prevent disease. As temperatures continue to increase, treatment becomes difficult and water temperatures become increasingly dangerous to fish. Hatchery personnel and Reclamation routinely meet to determine a compromise for operations of Folsom Dam to release cooler water. If water temperatures exceed 70°F, the fish may have to be released or moved to another hatchery (Reclamation 2008). In an unprecedented operation this year, 2014, due to anticipated warm water temperatures, California Department of Fish and Wildlife (CDFW) determined in June that it was necessary to release all CV steelhead juveniles early from the Nimbus Fish Hatchery (released at a small size and much lower survival potential) and moved all trout from the American River Trout Hatchery rather than risk potential mortality to fish due to warm summer water temperatures.

Reclamation is required each year to prepare a draft Operations Forecast and Temperature Management Plan for Folsom Reservoir and the LAR and submit it to NMFS for review by May 1 and a final plan by May 15. The plan can be updated, but requires NMFS approval for deviations. The NMFS biological opinion temperature requirement is 65°F (daily average) in the LAR at Watt Avenue from May 15 through October 31 for CV juvenile steelhead rearing. If this temperature is exceeded for three consecutive days, or is exceeded by more than 3°F for a single day, Reclamation is required to notify NMFS in writing and convene the American River Group (ARG) to make recommendations regarding potential cold water management alternatives to improve water temperature, including potential power bypasses. If the May Operations Forecast and Temperature Management Plan identifies that Reclamation cannot meet the 65°F NMFS requirement because of insufficient cold water pool in the reservoir, after taking all actions within its authority, then the target daily average water temperature schedule[1] at Watt Avenue may be increased incrementally (i.e., no more than 1°F every 12 hours) to as high as 68°F. The priority for use of the temperature control shutters at Folsom Dam is to achieve the water temperature requirement for CV steelhead and, thereafter, may also be used to provide cold water for fall-run Chinook salmon spawning (RPA Action II.1, NMFS 2011).

[1] Automated temperature selection procedure schedules are identified in the LAR Flow Management Standard.

2.2. Status of Central Valley Steelhead

CV steelhead have been extirpated from most of their historical range and their numbers are a fraction of their historical abundance due to blockage of freshwater habitats (e.g., dams), habitat degradation/destruction, water allocation, and possibly genetic introgression with hatchery fish. It has been estimated that CV steelhead habitat has been reduced from 6,000 miles historically to 300 miles currently. In 1996, NMFS estimated that fewer than 10,000 CV steelhead existed throughout its present-day range (from a combination of dam counts, hatchery returns, and spawning surveys).

CV steelhead were listed as threatened in 1998 (reaffirmed in 2006), including naturally spawned CV steelhead in the American River. The Nimbus Fish Hatchery population in the American River was not listed because it was originally derived from out of basin fish, however, recent genetic information suggests that the status of the Nimbus Fish Hatchery population should be reconsidered (NMFS 2011). Critical CV steelhead habitat was designated in 2005, including all of the American River below Nimbus Dam.

One of the primary goals of the CV steelhead recovery plan (NMFS 2009) is to secure and improve all extant populations. In the American River, the extant CV steelhead population is confined to the LAR; however, 100% of the historical spawning habitat (located upstream of Nimbus Dam) is no longer accessible. Only a few hundred fish currently spawn naturally in the LAR (NMFS 2009). A relatively small percentage of CV steelhead redds are from natural spawned fish (i.e., non-hatchery fish without adipose clips) (Hannon and Deason 2008). In 2014, 112 CV steelhead redds were observed in the LAR (American River Group, Meeting Notes April 17, 2014). Currently, rearing and spawning habitat primarily exists in the upper 13 miles of the LAR. Ninety percent of spawning occurs above Watt Avenue (RM 9.4) (Hannon and Deason 2008). CV steelhead rearing habitat during the summer is particularly limited in the LAR due to warm summer water temperature (see below) and most juvenile rearing, similar to spawning habitat, occurs upstream of Watt Avenue.

Nimbus Fish Hatchery currently produces about 430,000 steelhead annually. The hatchery steelhead population is operated as a "segregated population" to mitigate for recreational fishery losses from the dam and is not used to enhance natural CV steelhead. The hatchery is operated to the extent possible to minimize effects on the limited natural population (California HSRG 2012).

2.3. Status of Fall-Run Chinook Salmon

Four seasonal runs of Chinook salmon occur in the Sacramento-San Joaquin River system. The runs are named after the upstream migration season – winter, spring, fall, and late-fall. Central Valley fall/late fall-run Chinook salmon were lumped together and jointly classified as a Federal Species of Concern in 2004. These two runs are separate runs, however, with the late-fall run occurring primarily only in the Sacramento River (Moyle et al. 2008), whereas, fall-run Chinook salmon occur throughout the Central Valley. Fall-run Chinook salmon are the only Chinook salmon run extant in the American River. Spring-run Chinook (listed as threatened 1996) were extirpated from the American River historically and it is uncertain whether or not a late fall-run existed in the American River (Yoshiyama et al. 2001). Approximately 70% of the historical spawning habitat used by Chinook salmon in the American River was blocked by the Folsom-Nimbus Project.

CV fall-run Chinook salmon are currently and were historically the most abundant Chinook salmon run in the Central Valley (Moyle 2002; Williamson 2006). Since the 1950's escapement has been relatively robust with various cycles of years with low escapement of <100,000 fish (e.g., 1990 and 2007-2009) and years with high escapement >400,000 fish (e.g., 1999-2005 and 2013). The CV fall-run Chinook salmon in the LAR have similar abundance cycles to those of the larger population in the Central Valley. On average 17% of the total Central Valley escapement (48,000 fish) occurs in the LAR and, on average, 75% of the LAR escapement occurs in-river and 25% enters Nimbus Fish Hatchery (CDFW GrandTab data, 1952-2013).

Similar to CV steelhead, the majority of CV fall-run Chinook salmon spawning occurs in the upper portion of the LAR. Both spawning gravels and suitable fall water temperature (<58 to 60°F) are most prevalent above Watt Avenue. Warm water temperature in the fall delays spawning and affects adult mortality and in-vivo egg mortality. For example, in 2001 due to warm fall water temperature, a large portion of fall-run Chinook salmon died before spawning (Water Forum 2005).

Nimbus Fish Hatchery currently produces about 4 million Chinook salmon annually. The hatchery production helps fulfill mitigation requirements for construction of the Folsom-Nimbus Project. However, hatchery production and release of fish in the Carquinez Straits (in the estuary) has been implicated as part of the cause of lack of genetic structure and prevalence of straying in CV fall-run Chinook salmon (California HSRG 2012).

2.4. Key Life History Information and Temperature Requirements

Adult CV steelhead generally migrate from the ocean from August through April and spawn from December through April, with a peak in the LAR from February to early March (Hannon and Deason 2008; OCAP pg 104). Egg incubation occurs between December and May. Most juvenile fish emigrate as fry or rear for approximately a year (through one summer) before emigrating. Emigration typically occurs January through June (SWRI 2001; Sogard et al. 2012). In the LAR, water temperature in the summer is the primary CV steelhead stressor. Marginally acceptable CV steelhead rearing water temperature for short duration (e.g., weeks) is <70°F, with an upper long-term tolerance temperature of approximately 68°F. The upper range of optimal rearing temperature is 65°F (e.g., Cech and Myrick 1999; Bratovich et al. 2011).

Adult fall-run Chinook salmon generally migrate from the ocean in late summer, with migration peaking mid-October through November. Spawning in the LAR occurs between October and December (peak spawning in November). Fry emergence usually begins in mid- to late-January, with peak emergence usually mid- to late-February. Juvenile emigration occurs after emergence from January through June (e.g., SWRI 2001). In the LAR, water temperature in the fall is a primary factor affecting migrating/spawning fall-run Chinook salmon. Spawning does not occur until temperatures are <58-60°F and delayed spawning and warm temperatures can result in adult and in-vivo egg mortality. Acceptable Chinook salmon spawning/incubation water temperature is <58°F (e.g., USFWS 1999; NMFS 2002; Reclamation 2008; Bratovich et al. 2011).

2.5. Existing Habitat Conditions

There are a number of potential environmental stressors for CV steelhead and fall-run Chinook salmon, however, the key environmental stressor in the LAR under existing conditions (and future conditions) is water temperature in drier years with low Folsom Reservoir storage. Water temperature in the summer (CV steelhead rearing) and fall (Chinook salmon spawning) currently exceeds threshold tolerances for critical life stages in drier years (Figure 1). Frequently, only the upper portion of the river provides suitable water temperatures for CV steelhead and Chinook salmon (Figures 2 and 3).

Over the 1922-2003 period of record analyzed in the effects analysis in the Draft EIR/EIS, water temperature at Watt Avenue in August under modeled existing conditions is 69-71°F; at the upper end of the acceptable range for CV steelhead rearing (Figures 4a and b). In drier years, daily measured water temperatures have reached 75°F at Watt Avenue in the summer (Reclamation 2008) (Figures 1 and 2). Water temperature at Watt Avenue in November under modeled existing conditions is 56-57°F (Figures 4a and b), at the upper end of the suitable range for Chinook salmon spawning temperatures.

The primary factor that is responsible for warm water temperature in the LAR is the limited storage/cold water pool in Folsom Reservoir in drier years. Any CVP/SWP operations (or BDCP operations) that reduce storage in drier years for whatever reason (sea level rise, climate change, Delta water quality standards, exports, etc.) directly and negatively impact water temperature conditions for CV steelhead and Chinook salmon in the LAR.

2.6. Habitat Conditions under BDCP Future Conditions

The Draft EIR/EIS attempts to use the NAA as the baseline for the analysis. Below we show that the NAA is a radical departure from existing habitat conditions and has large, significant, unmitigated impacts on anadromous fish in the LAR compared to existing conditions. The NAA would likely cause age class failures in drier years and eventual local extinction of the small natural rearing CV steelhead population in the LAR. The NAA would result in large scale fall-run Chinook salmon fish kills in the fall of the drier years.

The operation of the CVP/SWP as modeled in the NAA with the sea level rise, climate change, and future demand assumptions results in much lower Folsom Reservoir storage elevations compared to existing conditions (Figures 5a and b) and greatly increased LAR water temperature. The frequency of Folsom Reservoir being at low storage levels (e.g., <350 thousand acre-feet [TAF]) would increase substantially in July and August under the NAA compared to existing conditions (increases from about 10% of the time under existing conditions to about 30% of the time under the NAA) (Figure 5a). In critical years, mean monthly

Folsom Reservoir storage would be 119 TAF, 105 TAF, and 81 TAF lower in July, August, and September, respectively, than under existing conditions (down to 210 TAF, 165 TAF, and 159 TAF, respectively, under the NAA). Mean monthly storage in drier years would drop to less than 350 TAF in August and September under the NAA (>440 TAF under existing conditions) (Figure 5b). Further, the frequency of which Folsom Reservoir would be drained to dead pool storage would increase by about 10% (DWR et al. 2013; p. 5-61). This would result in greatly increased water temperatures in the LAR.

Higher American River summer temperature schedules occur when Folsom Reservoir storage drops, particularly as storage falls below 350 TAF in July. Figure 6 shows a relationship between the Folsom Reservoir storage in July and LAR water temperature schedules[2]. Figure 7 shows relatively large increases in fall water temperature below Nimbus Dam at low Folsom Reservoir water levels as reported in the BDCP EIR/EIS (and the associated Folsom Reservoir storage) under the NAA operations. These changes are most pronounced in drier years.

The marginally acceptable CV steelhead rearing water temperature is <70°F, with an upper long-term tolerance temperature of approximately 68°F (see above). Under the NAA, LAR water temperature increases during summer rearing would have a significant adverse impact on CV steelhead (Figures 4a and b). Mean monthly summer (August) water temperatures increase from the modeled existing condition of 69-71°F to 73-77°F (average and critical water years) under the NAA (Figures 4a and b). Over the 1922-2003 period of record, mean monthly water temperatures at Watt Avenue reach 70°F in 9% more of the July months, 13% more of the August months (90% of all August months), and 34% more of the September months (60% of all September months) under the NAA compared to existing conditions. The assumed CVP/SWP operations in the NAA would significantly impact CV steelhead and would result in take of CV steelhead in the LAR. More significantly, entire year classes of CV steelhead juveniles would be lost and, most likely, a complete loss of the LAR naturally spawning CV steelhead population would occur.

In the critically dry years, for example, average monthly August water temperatures under NAA (and the Proposed Action Alternative) for the entire LAR are ≥76°F (DWR et al. 2013; Appendix 11C). This would kill all over-summering juvenile CV steelhead. Critically dry years occur 15% of the time. Often critically dry years are sequenced back-to-back (e.g., 1976-1977) and sequenced with multiple dry years. Dry years (22% of the years) have entire LAR August water temperatures ≥72°F. Large scale mortality would occur in these years. It is easy to conceive of a sequence of years under NAA (and the Proposed Project) where the naturally occurring CV steelhead population sequential year mortality coupled with the current low abundance would result in the loss of the natural population. The historic sequence of years from 1987 to 1991 (dry, critically dry, dry, critically dry, critically dry, respectively) (DWR et al 2013; Section 5.5) would result in the loss of the LAR CV steelhead population.

Similarly, projected changes in water temperature under the NAA would have large adverse impacts on Chinook salmon spawning in the LAR. Mean monthly fall water temperature

[2] Automated temperature selection procedure schedules are identified in the LAR Flow Management Standard.

(November) in the LAR would increase from existing conditions (modeling) of 56-57°F to 60°F under the NAA. Acceptable Chinook salmon spawning/incubation water temperature is <58°F (see above). These assumed operations in the NAA would result in significant adverse impacts to Chinook salmon in the LAR (Figures 4a and b). Likely large fish kills of pre-spawning fall-run Chinook salmon would occur due to the extreme delays in spawning similar to pre-spawn mortality that happened in 2001 (Water Forum 2005). Monthly average November water temperatures in the NAA (and Proposed Action Alternative) are 3-4°F higher than the existing conditions that have caused mortality.

2.7. BDCP Temperature Significance Criteria

Under current CVP/SWP operations, LAR water temperatures exceed threshold tolerances for anadromous fish during critical life stages (as discussed in the preceding sections). Because the populations are already in stressful temperature conditions, even small increases in water temperature above the current CVP/SWP operations would result in adverse impacts to these species. The BDCP significance criterion do not consider the current condition of the sensitive species and habitat with respect to water temperature in the LAR. For example, significant impacts in the BDCP EIR/EIS were determined as follows:

> *"Physical modeling outputs each month and water year type were compared for between model scenarios at multiple locations to determine whether there were differences between scenarios at each location. A "difference" was defined as a >5% difference between the pair of model scenarios in at least one water year type in at least 1 month."* (DWR et al. 2013, p. 11-102).

The significance criteria in the Draft EIR/EIS are inadequate and incapable of identifying significant impacts. A <5% increase in mean monthly water temperature in the summer months (July-September) during CV steelhead rearing and/or in the fall during fall-run Chinook salmon spawning (primarily in November) would result in significant adverse impacts to these species. For example, a <5% water temperature change with existing summer temperatures at 68°F results in an increase of approximately 3.4°F, which would result in temperatures of approximately 71.4°F, well above the long-term upper tolerance limit for steelhead juvenile rearing (e.g., Cech and Myrick 1999; Bratovich et al. 2011). Similarly, a <5% temperature change in the existing fall-run Chinook salmon spawning temperature at 60°F results in an increase of approximately 3.0°F, which would result in temperatures of approximately 63.0°F, well above the spawning threshold and mortality water temperature threshold for incubating eggs (e.g., USFWS 1999; NMFS 2002; Reclamation 2008; Bratovich et al. 2011). Figures 4a and b shows the modeled 1922-2003 average monthly water temperatures. Under existing conditions, water temperatures are below 68°F in July and September, except in Critical years, and between 60-70°F in August of all water year types, except Critical years. Although the temperature significance criteria were not exceeded in the BDCP EIS/EIR analysis, water temperatures under the No Action Alternative (NAA) and Proposed Action Alternative are above the threshold criteria for CV steelhead and Chinook salmon survival, particularly in the drier years (>74°F in late summer months), and greatly exceed existing conditions.

3.0 CONCLUSION

The fatal flaw in the Draft EIR/EIS impact analysis is that under the NAA (which includes sea level rise, climate change, and future demand), the modeled CVP/SWP operations resulted in significant adverse effects to upstream resources, including CV steelhead and fall-run Chinook salmon in the LAR relative to the existing conditions (environment). These modeled operations are not reasonable or a proxy for future operations that would be allowed under the ESA.

The Draft EIR/EIS acknowledges that the CVP/SWP operations would need to change from those depicted. For example, on page 5-61 in DWR et al. (2013), the Draft EIR/EIS discusses operational changes that may need to occur to avoid dead pool conditions:

> *"Adaption measures would need to be implemented on upstream operations to manage coldwater pool storage levels under future sea level rise and climate change conditions. As described in the methods section, model results when storages are at or near dead pool may not be representative of actual future conditions because changes in assumed operations may be implemented to avoid these conditions."* (DWR et al. 2013; p. 5-61)

Further, the Draft EIR/EIS clearly states that future CVP/SWP operations would be different than the operations used for evaluating impacts of the BDCP:

> *"The CALSIM II simulations do not consider future climate change adaptation which may manage the SWP and CVP system in a different manner than today to reduce climate impacts. For example, future changes in reservoir flood control reservation to better accommodate a seasonally changing hydrograph may be considered under future programs, but are not considered under the BDCP. Thus, the CALSIM II BDCP results represent the risks to operations, water users, and the environment in the absence of dynamic adaptation for climate change."* (DWR et al. 2013; pg. 5A.A23)

The modeling developed for the Draft EIR/EIS, by their own admission, failed to address climate change and sea level rise in a manner that is reasonable, prudent, or representative of future hydrologic conditions in the upstream systems, including Folsom operations and resulting hydrology in the LAR. The Folsom operations in the NAA would jeopardize the continued existence of CV steelhead and fall-run Chinook salmon in the LAR. By comparing the environmental conditions in the Existing Condition and NAA, it is apparent that future CVP/SWP operations under climate change and sea level rise, as modeled, are unrealistic. Therefore, a revised operations model must be developed under the NAA that addresses climate change and sea level in a manner that is protective of upstream resources, including CV steelhead and Chinook salmon in the LAR.

The conclusions in the Draft EIR/EIS impact analysis are invalid because they are based on modeling that is not representative of future conditions and do not incorporate climate change adaptations in the CVP/SWP operations. The impact analysis was based on comparison of the NAA to Project alternatives under modeled operations that in all cases result in significant impacts to CV steelhead and Chinook salmon in the LAR compared to the existing condition. The fundamental error in the impact analysis is that it totally ignores these impacts. The analysis assumes that conditions in the NAA are representative of future conditions and compounds this error by modeling the Project alternatives using the same faulty operations. It is not surprising that the impact analysis concluded that there would be no significant impacts to CV steelhead and fall-run Chinook salmon in the LAR – the environmental conditions under the NAA have already jeopardized the continued existence of the species. The conclusions in the alternatives analysis do not disclose impacts of the Project as required under NEPA and CEQA. It is solely the responsibility of the lead agency to ensure that the basis for comparison in the impact analysis is reasonable and an accurate representation of future conditions. Basing the impact analysis on unrealistic modeling for the CVP/SWP and ignoring the associated adverse effects on CV steelhead and fall-run Chinook salmon in the LAR fails to inform the public of the BDCP's probable environmental impacts.

Further, the impact analysis fails to disclose the impacts of the Project because it co-mingles the effects of climate change, sea level rise, future demand, and implementation of the Project. In the analysis, the Draft EIR/EIS concludes:

> "*These results are primarily caused by four factors: differences in sea level rise, differences in climate change, future water demands, and implementation of the alternative. The analysis described above comparing Existing Conditions to Alternative 1A* [used for Alternative 4 as well] *does not partition the effect of implementation of the alternative from those of sea level rise, climate change and future water demands using the model simulation results presented in this chapte*r. " (DWR et al. 2013; pp. 11-405; 11-411; 11-445; 11-455; 11-518).

Therefore, the Draft EIR/EIS is inadequate and does not provide sufficient information to evaluate Project effects on CV steelhead and fall-run Chinook salmon in the LAR. To comply with NEPA and CEQA, the impacts analysis must be revised to disclose project impacts.

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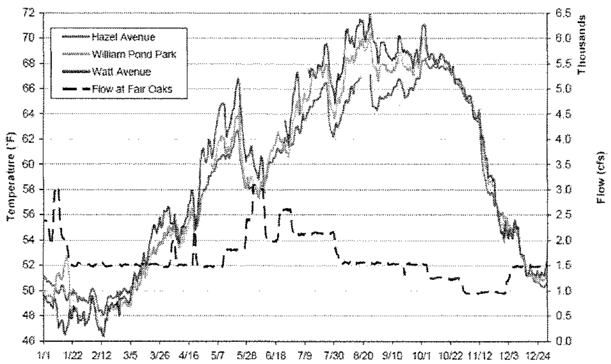
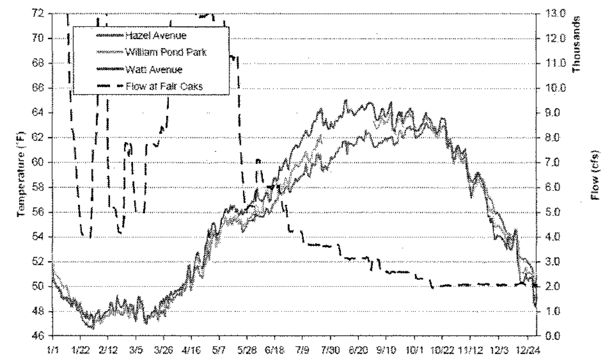
FIGURES

Figure 1. American River Water Temperature and Flow at Monitoring Sites on the Lower American River in Dry and Wet Years.

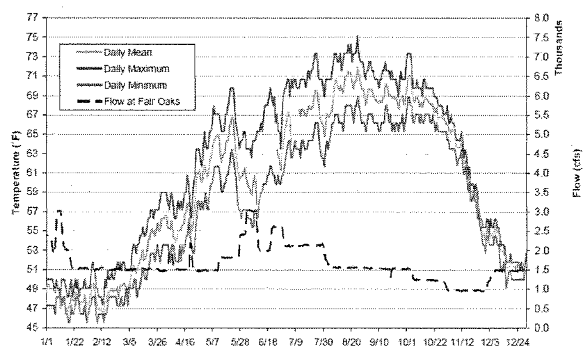
Dry year, measured daily average water temperatures (2001).



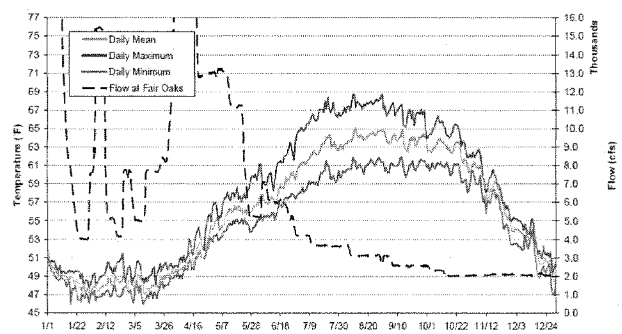
Wet year, measured daily average water temperatures (2006).



American River at Watt Avenue, Dry year, daily average minimum and maximum water temperatures (2001).



American River at Watt Avenue, Wet year, daily average minimum and maximum water temperatures (2006).



Source: Figures 11-16 to 11-19 in Reclamation 2008.

Figure 2. Measured Lower American River Daily Average Water Temperatures below Folsom Dam, at Hazel Avenue, William B. Pond Park, and Watt Avenue and Flow at Fair Oaks Avenue (1998-2012).

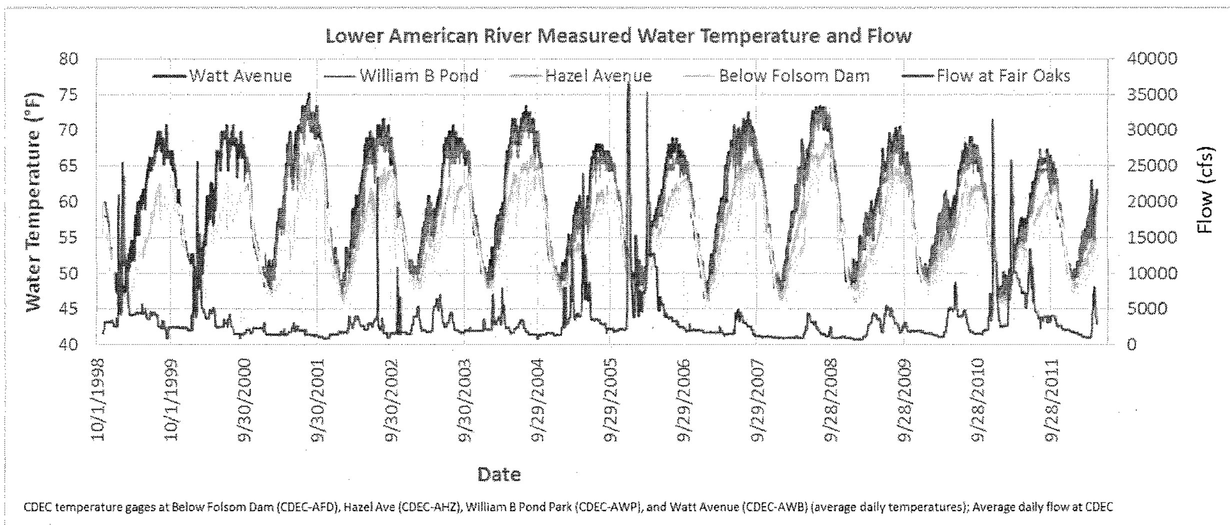


Figure 3. Measured Lower American River Monthly Average Water Temperatures below Folsom Dam, at Hazel Avenue, William B. Park, and Watt Avenue and Flow at Fair Oaks Avenue (1998-2012).

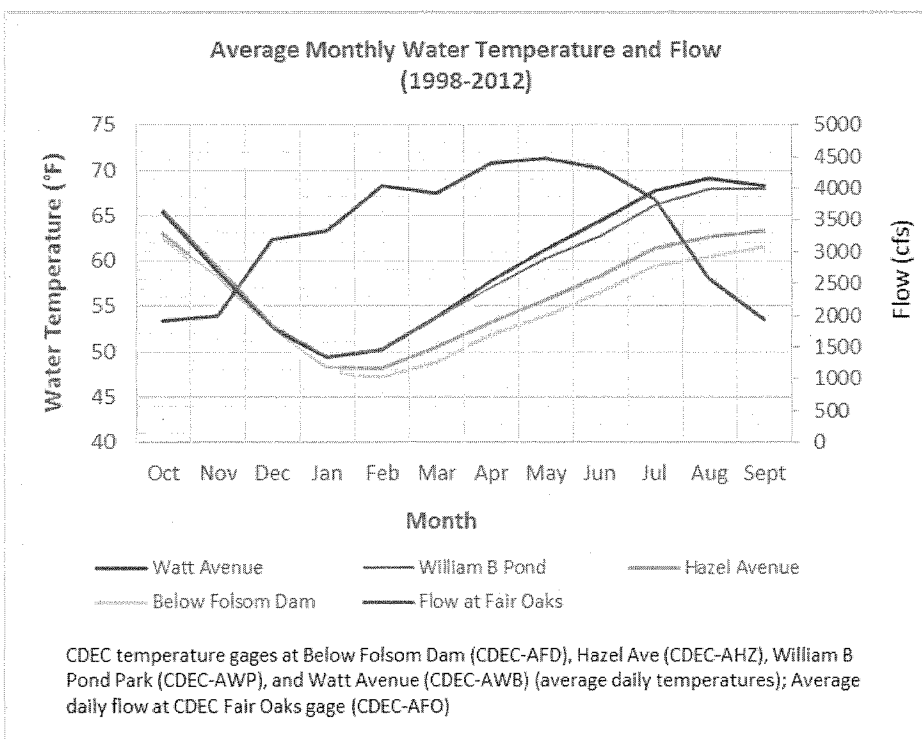
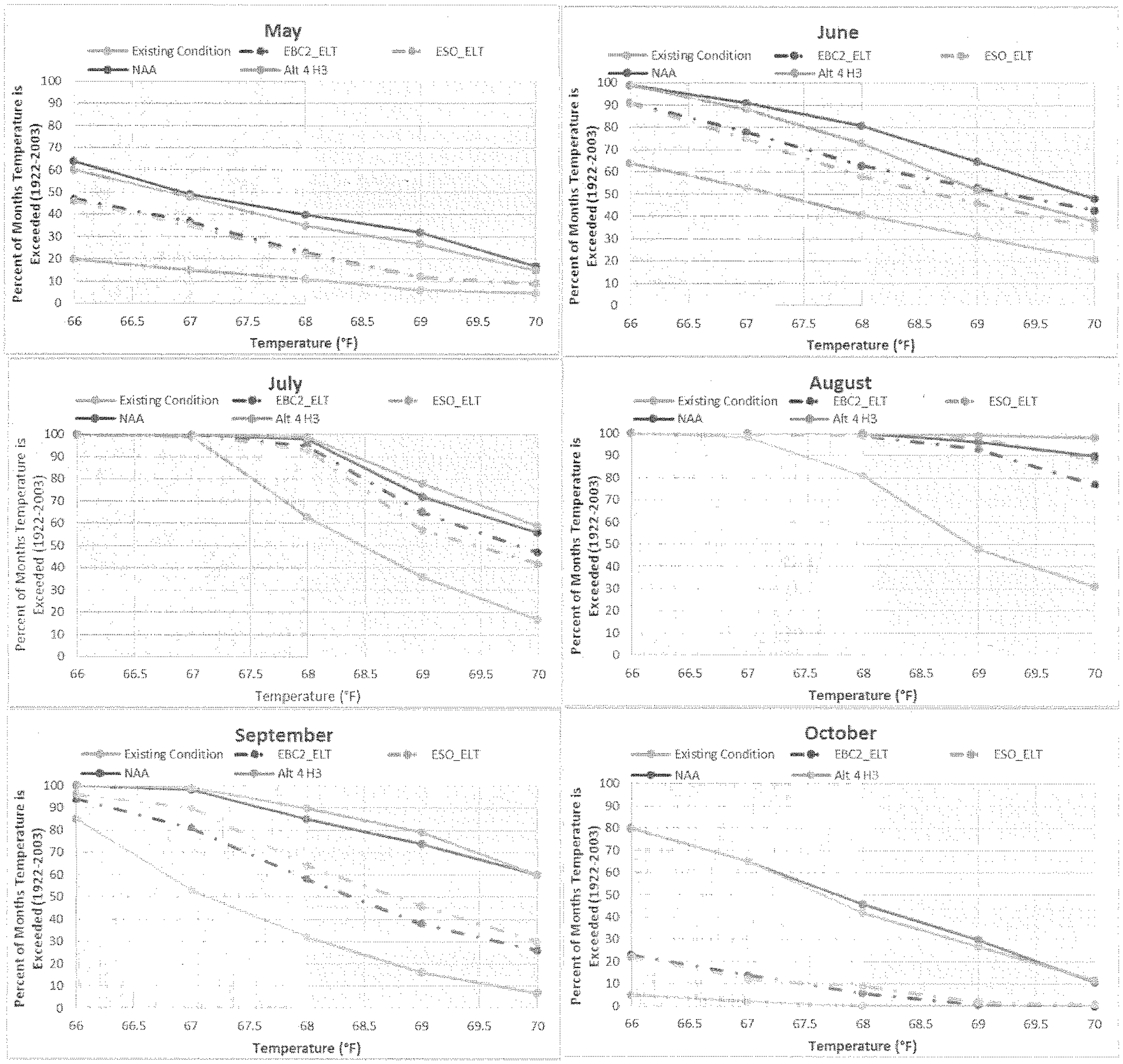
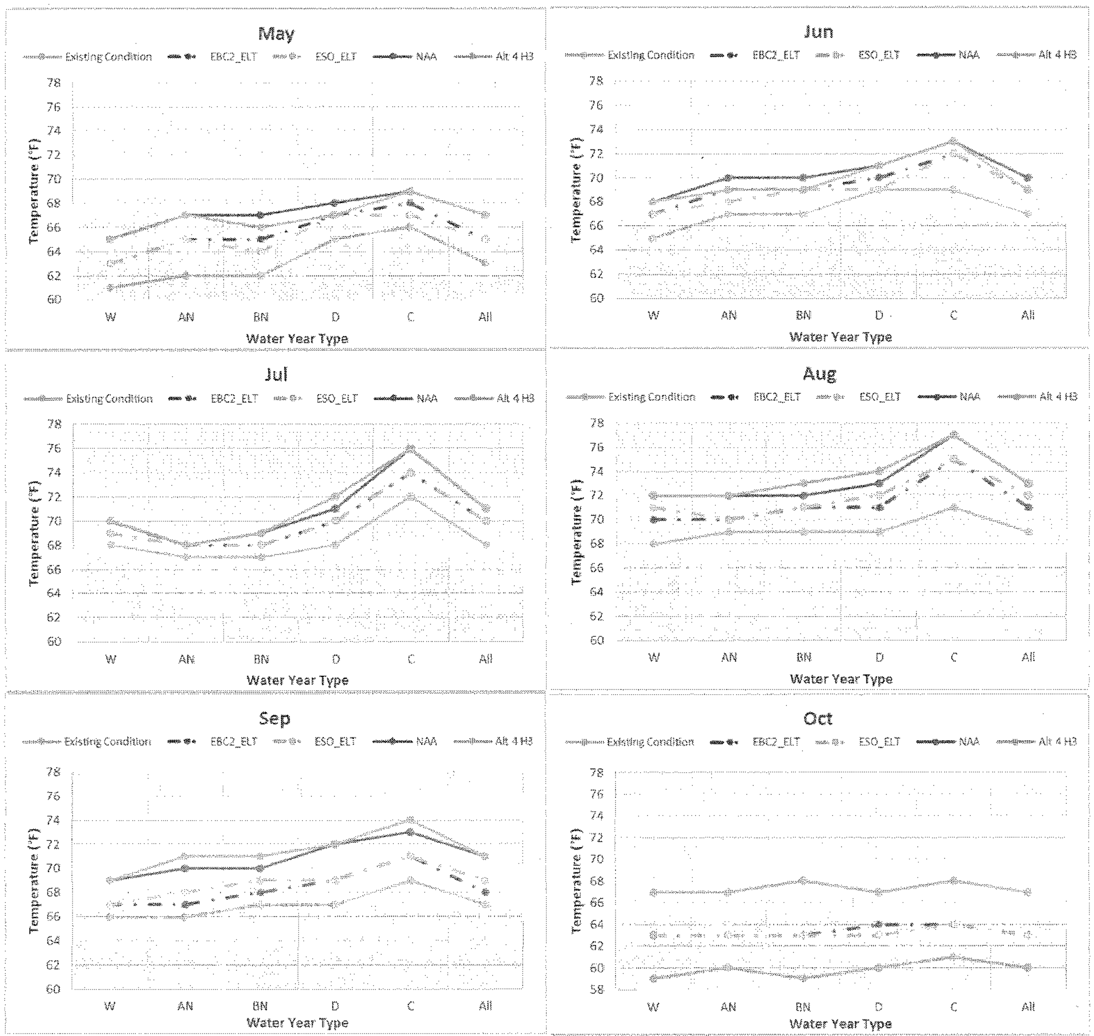


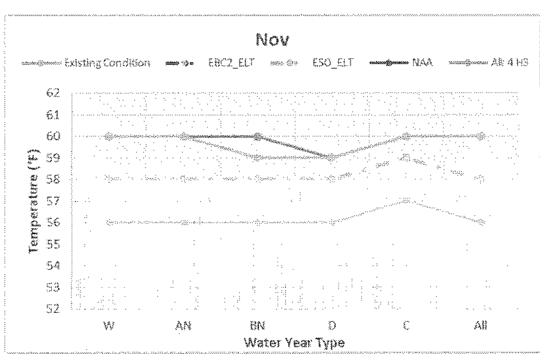
Figure 4a. Percent of Months during 1922-2003 Period during which Mean Monthly Water Temperatures under the Existing Condition, No Action Alternative, and Preferred Alternative (Alternative 4, H3) Scenarios (Early and Late Long-term) in the Lower American River at Watt Avenue Exceeded Temperature Thresholds, May through October.



Source: DWR 2013. Table 5C.5.2-237. Orange and yellow background colors in summer months show temperature threshold of 68°F for steelhead rearing.

Figure 4b. **Mean Monthly Water Temperature (°F) in the American River at Watt Avenue under the Existing Condition, No Action Alternative, and Preferred Alternative (Alternative 4, H3) (Early and Late Long-term).**

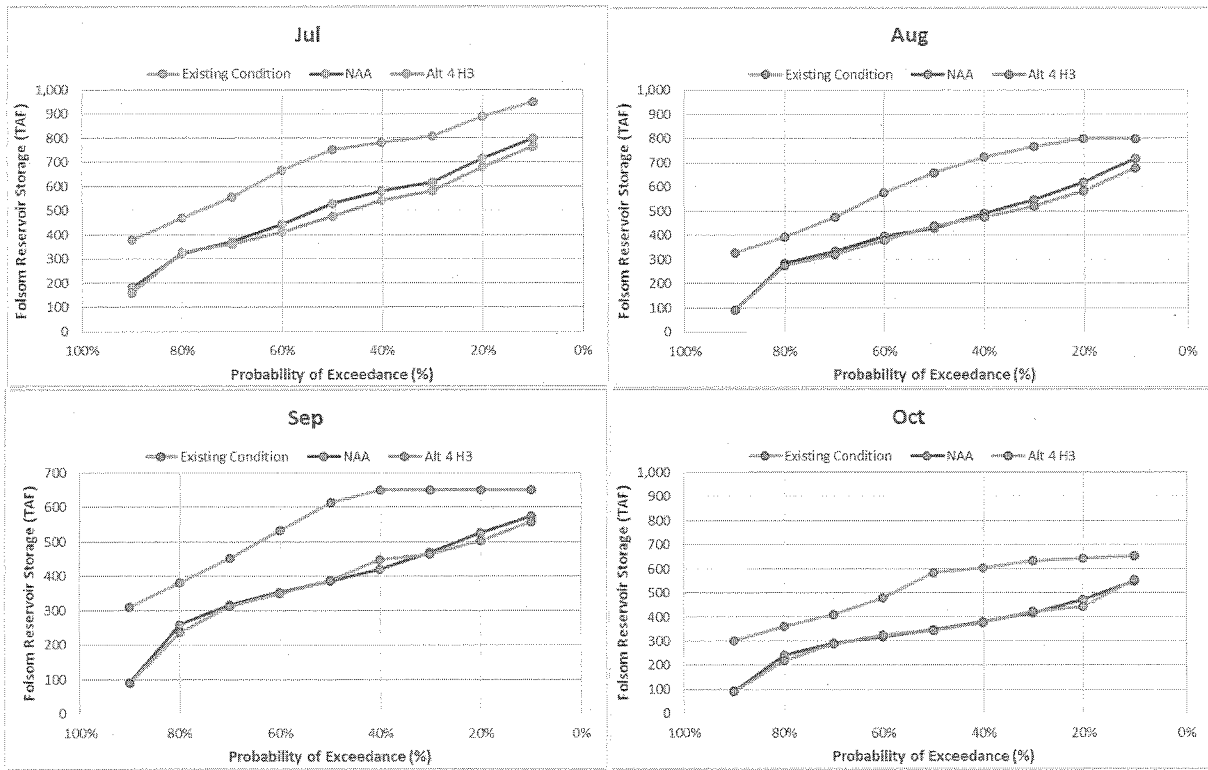




Orange and yellow background colors in summer months show temperature threshold of 68°F for steelhead rearing and in November a 58°F temperature threshold for Chinook salmon spawning.

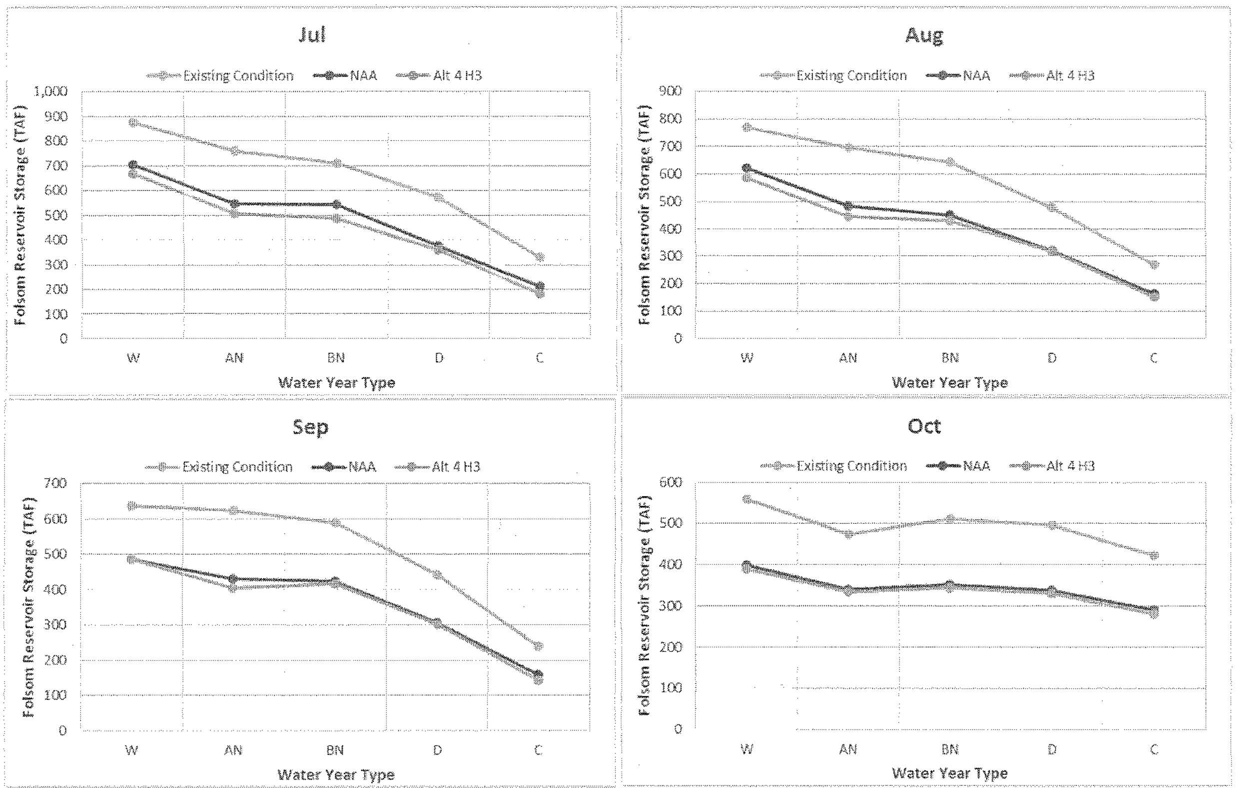
Source: DWR et al. 2013 BDCP Table 11D.4.16 and DWR et al. 2013 EIR/EIS Table 5C.5.2-224 (early long-term scenarios only).

Figure 5a. Summer (July - October) Monthly Mean End-of-Month of Storage Folsom Reservoir Storage (TAF) under the Existing Condition, No Action Alternative, and Preferred Alternative (Alternative 4).



Source: DWR 2013. Tables C-4-1 and 2 and 7; Bay-Delta Conservation Plan EIR/EIS Appendix 5A Section C: CALSIM II and DSM2 Modeling Results

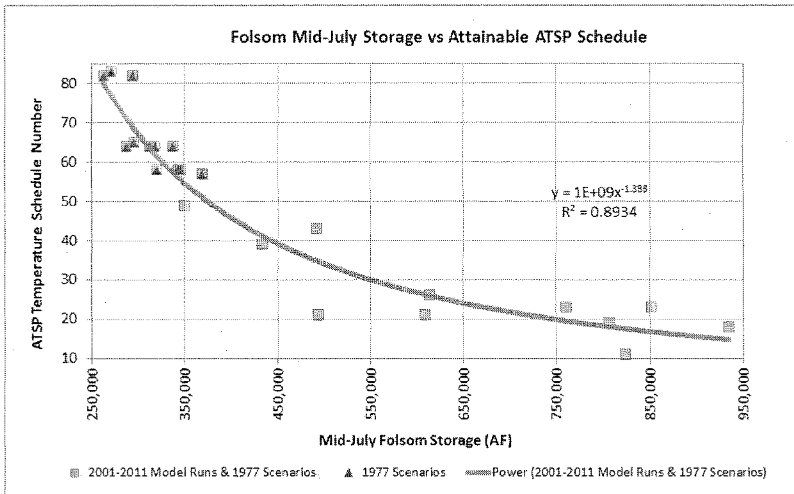
Figure 5b. Summer (July - October) Monthly Mean End-of-Month of Storage Folsom Reservoir Storage (TAF) under the Existing Condition, No Action Alternative, and Preferred Alternative (Alternative 4) by Water Year Type.



Source: DWR 2013. Tables C-4-1 and 2 and 7; Bay-Delta Conservation Plan EIR/EIS Appendix 5A Section C: CALSIM II and DSM2 Modeling Results

Figure 6. Folsom Reservoir Storage (TAF) in Relation to ATSP Temperature Schedule[1]. Higher ATSP Schedules Correspond to Warmer Summer Temperatures. All Schedules Larger than 55 Exceed Summer Temperatures of 70°F.

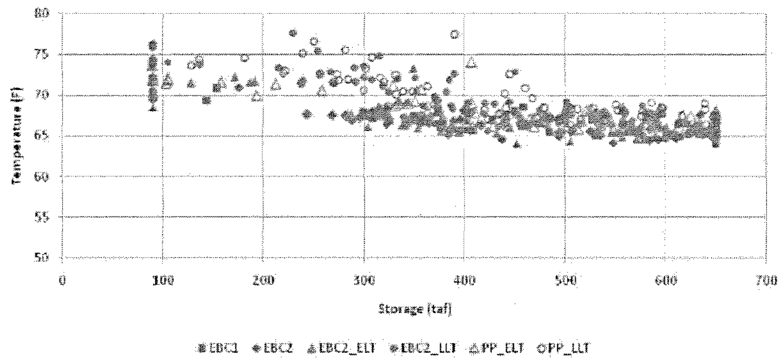
July



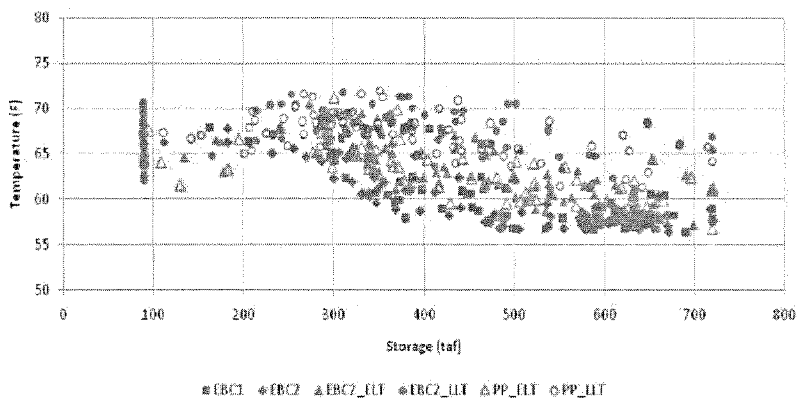
[1] *ATSP (Automated Temperature Selection Procedure); Lower ATSP schedules equal colder water temperatures; as identified in the lower American River Flow Management Standard*

Figure 7. Folsom Reservoir Storage (TAF) in Relation to Water Temperature (°F) at Nimbus Dam (September and October) under the Existing Condition (EBC1), No Action Alternative (EBC2_LLT), and Preferred Alternative 4, H3 (PP_LLT).

September



October



Source: Modified from: Reclamation et al. 2013; Figures Appendix 29C-17a and b. The same data are also included in Figures 5.A.2.5-24 and 25. 70°F red line added; acceptable rearing habitat is <70°F.

ELT = Early Long-term 2025; LLT = Late long-term (2060); EBC = Existing Biological Condition; PP = Proposed/Preferred Project as defined in DWR 2013.

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To: BDCPcomments
Cc: senator@feinstein.senate.gov; senator@boxer.senate.gov; Lisa M. Buescher (Lisa.Buescher@mail.house.gov); Horne, Jennifer; Kimberly.pruett@mail.house.gov; senator.gaines@senate.ca.gov; jwnielsen@att.net; dana.jorgensen@sen.ca.gov; assemblymember.dahle@assembly.ca.gov; assemblymember.gaines@assembly.ca.gov; assemblymember.logue@assembly.ca.gov; Nadine.Bailey@sbcglobal.net; dmurillo@usbr.gov; dlessard@usbr.gov; bos@placer.ca.gov; dboesch@placer.ca.gov; trundel@auburn.ca.gov; mark.miller@colfax-ca.gov; myasutake@folsom.ca.us; MBrower@lincolnca.gov; cparker@loomis.ca.gov; ricky.horst@rocklin.ca.us; citycouncil@roseville.ca.us; gm@foresthillpud.com; slorance@sjwd.org; sswd@hughes.net; RSB@bkslawfirm.com; TimQ@acwa.com; dlreyns@sso.org; daveb@acwa.com; DModisette@cmua.org; neilm@csda.net; johnkingsbury.mcwra@gmail.com; tdonnelly@nwra.org; dguy@norcalwater.org; jwoodling@rwah2o.org; mmckeever@sacog.org; rwniello@niello.com; tgohring@waterforum.org; glallen@surewest.net; jalpine@hotmail.com; mlee@twelvebridges.com; psantini@cornerstoneinsurance.net; robert.dugan@csus.edu; Robert.D.Dugan@gmail.com; Einar Maisch; Scott Morris; Brent Smith; Matt Young; Jay L'Estrange; Joe Parker; Andy Fecko; Michael A. Willihnganz; Ed.Bianchi@cardno.com; Lee Bergfeld; easton@mbkengineers.com; bourez@mbkengineers.com; Dan Kelly (dkelly@somachlaw.com); 'michael.r.finnegan@gmail.com'
Subject: Comments on BDCP/CalWaterFix RDEIR/SDEIS
Attachments: PCWA Comments on BDCP-California WaterFix RDEIR-SDEIS.pdf

Good Afternoon,

Please find the attached comments from PCWA on the Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS).

Sincerely,

Vibeke Figueroa
Administrative Aide
Placer County Water Agency
Resource Development
TEL: (530) 823-4973

PCWA
water • energy • stewardship

RECIRC LTR # 2632

- ☐ Unused
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- ☐ Other:

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