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 8 **BEFORE THE**
 9 **CALIFORNIA STATE WATER RESOURCES CONTROL BOARD**

HEARING IN THE MATTER OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES AND
 UNITED STATES BUREAU OF RECLAMATION
 REQUEST FOR CHANGE IN POINT OF DIVERSION
 FOR CALIFORNIA WATERFIX

REVISED REBUTTAL
 TESTIMONY OF
 PROTESTANT
 NICOLE S SUARD, ESQ.

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11 SUMMARY OF PETITION: The Department of Water Resources (DWR) and the U.S. Bureau
 12 of Reclamation (USBR) have filed with the State Water Resources Control Board (Water
 13 Board) a petition to change their points of diversion (change petition) for the California
 14 WaterFix Project (WaterFix Project). The WaterFix Project proposes to construct and operate
 15 new water diversion facilities between the North Delta towns of Clarksburg and Walnut Grove,
 16 with the proposed intakes all located along the east side levees of the Sacramento. As
 17 described as the preferred alternative, the purpose of the intakes is to convey the fresher water
 18 from the Sacramento River through two tunnels to the existing State and Federal pumping
 19 facilities in the South Delta from the Clifton Court Forebay. As outlined by the Water Board,
 20 the State Water Board's order following the WaterFix Project filing, proceeding must be based
 21 upon evidence in the record developed at the hearing. Water Board directed that Parties to
 22 the hearing should submit exhibits and testimony responsive to the issues that are to be
 23 considered during the hearing, as out lined below. Petitioners have claimed that there will be
 24 no injury to users of surface and groundwater in the North Delta down river from proposed
 25 intakes, except for the specific agricultural intakes and wells specified and listed in Petitioner's
 26 documents. Petitioners have also provided testimony indicating that when operational, the
 27 intakes, tunnels and pumps would combine to divert the majority of Sacramento River flows
 28 into the proposed tunnels for delivery to other areas of the state, leaving as little as 6000 cubic
 29 feet per second (cfs) of flow¹ to be split between the five down river channels and tributaries
 30 below the proposed tunnel intakes, leaving less than the historical lowest flows recorded for

¹ SHR-350, DWR chart of flows downstream of proposed intakes, for a dry year for the months of July, August, September and October, and SHR-352, DWR chart of flows downstream of proposed intakes, for a dry and critical water year, for the months of July, August, September and October, and including the flows diverted into the Delta Cross Channel.

1 Steamboat Slough from before either CVP or SWP were built². Please keep in mind it is the
 2 Petitioners who have the burden of proof of no injury to legal users of water in affected area.
 3 To meet that burden of proof, Petitioners provided computer modeling, written and oral
 4 testimony of impacts to legal users of water in only the footprint of the proposed physical
 5 project location, and within a few thousand feet of the proposed physical project. Petitioners
 6 provided no evidence of specific analysis validating the assumption of Petitioners witnesses
 7 that there would be no injury to all the other legal users of surface water and ground water
 8 nearby or downriver of proposed intakes, and specifically no evidence of any specific analysis
 9 of impact to Protestant Snug Harbor Resorts, LLC, a legal user of surface flows and
 10 groundwater located on a peninsula on Steamboat Slough, off Ryer Island³. Rebuttal
 11 testimony by Protestant Snug Harbor Resorts, LLC (SHR) can be assumed to apply to not only
 12 its own property but also all the other waterside water users along Steamboat Slough, as well
 13 as those water users located between Rio Vista to the Isleton bridge area along the
 14 Sacramento River⁴. However, SHR does not represent any other water right holder in this
 15 hearing.

16 **Part 1 – Effects of the Petition on Municipal, Industrial and Agricultural Uses of Water,**
 17 **Including Associated Legal Users of Water**

18 **1. Will the changes proposed in the Petition in effect initiate a new water right?** SHR did
 19 not provide testimony regarding Petitioner’s actual or claimed current water rights, but did
 20 provide documentation indicating any water rights granted by Water Board to Petitioners are to
 21 be based upon the availability of surplus flows⁵, and given the degradation of surface and
 22 groundwater in the Delta over the last ten years, it appears to much fresh water has been
 23 allowed to be diverted away from the Delta region⁶, and that Water Board has granted
 24 provisional water use rights well in excess of what is available in any water year⁷. SHR did
 25 provide testimony indicating that Petitioner DWR, in particular, has not been consistent and
 26 forthright in disclosing to the public actual amounts of diverted flows from the Delta since
 27 2005⁸, and when questioned by SHR in the past about published Delta water diversion charts,
 28 DWR does not disclose the flows and simply changes the data⁹. SHR provided graphics and
 29 testimony regarding the inconsistency of DWR disclosure of diversions from the Delta, in an
 30 effort to point out that what is claimed on paper and what happens in real life may be two very
 31 different flow and diversion totals resulting in water quality less than historic records from

² SHR-6 1908 description of flows on Steamboat Slough and the Sacramento River in a dry year, highlighted. And SHR-6f, the full description to accompany Survey of the Sacramento River submitted to US House of Representatives: Letter from the Secretary of War, Plus maps.

³ SHR-360, screen print of CDEC water monitoring stations modified by SHR by adding SHR location on Steamboat Slough as well at the locations of some of the other surface and groundwater users along Steamboat Slough.

⁴ SHR-359, page 1, Screen prints of water rights holders and diversion locations along Steamboat Slough

⁵ SHR-5, page 12, 1960 Dept of Water Resources Water Bulletin no.76 titled Delta Water Facilities.

⁶ SHR-16, Resolution No 68-16 SWRCB Statement of Policy with Respect to Maintaining High Quality of Waters in California

⁷ SHR-32 Screen print showing over-allocation of flows from the Sacramento River

⁸ SHR-11, Data gaps studies by SHR 2014 Steamboat Slough

⁹SHR-390 original poster from January 2014 and SHR-7.pdf and SHR-7largeposter.pdf providing follow up response and information related to DWR response to SHR-390.

1 before Water Board approved more than surplus flows to be exported¹⁰. Does DWR and
 2 USBR have the right to take out as much water as they have been taking since 2005? SHR
 3 has no testimony on that question. The testimony of SHR has simply attempted to point out
 4 that if Petitioners are not accurately reporting to the public in official legally required published
 5 reports the flows and diversions from the Delta, is the Water Board receiving accurate
 6 unpublished reports or is the Water Board also relying on inconsistent and inaccurate data?
 7 SHR has expressed ongoing concern that both CalSim and DSM2 models may have been
 8 updated to include incorrect flow data¹¹ and incorrect Delta bathymetry which are key factors
 9 that could inappropriately influence the computer modeling upon which Petitioners and Water
 10 Board appear to base all assumptions of “no injury” to others.

11 **2. Will the proposed changes cause injury to any municipal, industrial or agricultural**
 12 **uses of water, including associated legal users of water?** Yes, SHR provided evidence
 13 that it is highly more likely than not that SHR use of both surface fresh water and the drinking
 14 water aquifer could be severely negatively impacted by construction and operation of WaterFix
 15 Project as proposed in hearing process, at the locations proposed during hearing process, that
 16 is three to five intakes located along the Sacramento River north of the confluence of
 17 Steamboat Slough and Sacramento River by the Steamboat Slough bridge. Fresh water flows
 18 have been recorded historically as “PPT” or 1000 parts chloride per million parts water¹²,
 19 noting that drinking water according to online resources is .05 PPT¹³. SHR evidence
 20 demonstrates that despite the stated recognition by Petitioners that Steamboat Slough has
 21 seen fresh water flows historically¹⁴, and should remain fresh based upon WaterFix computer
 22 modeling for historical and future flows, SHR evidence has shown that in real life DWR and/or
 23 USBR management of flows in the North Delta on Steamboat Slough has resulted in increase
 24 in salinity of surface flows, increase of salinity in shallow groundwater, and increase in
 25 concentrations of harmful natural constituents in drinking water due to the low fresh water
 26 flows in the North Delta likely starting around 2005. Since historical records and DWR
 27 modeling uses different measurements for salinity modeling, please note the DWR-316 Salinity
 28 Conversion Table, edited by SHR with dotted line to show 1 ppt to EC relationship, and to note
 29 other flow conversion data¹⁵. Specifically, 2015 DWR/USBR-managed drought flows in the
 30 Delta resulted in an increase in surface water salinity in Steamboat Slough, using September
 31 2015 as an example¹⁶. Both surface water and groundwater salinity increased along lower
 32 Steamboat Slough from 2014 through to the end of 2016, using September 2015 as the

¹⁰ SHR-13, study of data gaps and flows with focus on Georgiana Slough 2014

¹¹ SHR-23b, information on flow data gaps for March 2014 meeting, sent to USACE by SHR and SHR-389 errata. And SHR-104 corrected, pages 17 through 22

¹² SHR-9, page 47, defining fresh water as less than 50 mg/L chloride. And SHR-9, page 119 showing map of Delta defining salinity encroachment pre-project days, using 1000 parts chloride per million parts water.

¹³ SHR-22 Drinking water and salinity

¹⁴ DWR-50, page 58 testimony of Dr. Nader-Tehrani “North Delta water quality upstream of Rio Vista (including areas around Ryer Island) should continue to remain fresh under WaterFix”.

¹⁵ SHR-368 DWR-316 Salinity Conversion Table with dotted line to show 1 ppt to EC relationship, plus other flow conversion data

¹⁶ SHR-367, 368

1 example¹⁷. The low flows of summer and fall during the 2015 drought happen to be similar to
 2 the projected flows for the same waterway if the WaterFix Project was operational, based upon
 3 DWR's own computer modeling¹⁸. In other words, WaterFix Project would suspend flows on
 4 Steamboat Slough into a worst-case drought flow pattern from June through October, based
 5 upon DWR's own flow charts. DWR's own computer modeling expert, Dr. Nader-Terani,
 6 acknowledged that Steamboat Slough and the other waterways around Ryer Island have
 7 historically remained "fresh"¹⁹, that EC below 300 was considered "fresh water"²⁰, and that
 8 "Water quality in and around Ryer Island has been fresh even during recent Droughts"²¹. Note
 9 that SHR-9, page 105 provides a conversion chart defining 50 mg/L chloride as 350 EC²². Yet
 10 low flows from September 2015 on lower Steamboat Slough showed EC could be between
 11 400 to 620 EC²³, and above the "fresh" level as described by DWR witness. During that
 12 timeframe, SHR found that increase in surface water salinity impacted irrigated sensitive fruit
 13 trees²⁴ along Snug Harbor Drive, including peaches, pomegranates, pears and cherries, and
 14 increased the salinity in one of the onsite public drinking water wells. Drinking water for the
 15 primary well utilized by the SHR facility declined substantially between 2010 to 2016,
 16 demonstrating what would be the long term effect if the North Delta waterways were
 17 suspended into low flows regime except for wet years. If flows in a critical dry year like 2015
 18 still were higher than what is proposed by the WaterFix Project for Steamboat Slough, isn't it
 19 logical to assume suspending Steamboat Slough into a similar low flow pattern from July
 20 through October every dry and critical year would result in continuous EC levels above 400 on
 21 lower Steamboat Slough? Isn't it logical to assume that even higher salinity encroachment on
 22 lower Sacramento River in September 2015 would result in even higher EC between Rio Vista
 23 and Isleton bridge²⁵, suspended over a period of July through October as well? Higher EC in
 24 the surface water affects the shallow drinking water wells, degrading the quality of water for
 25 human consumption. Yes, low flows on Steamboat Slough as projected by WaterFix Project
 26 would result in negative impacts to the municipal drinking water wells at the SHR facility²⁶, the
 27 private drinking water wells all along the banks of lower Steamboat Slough, and also
 28 negatively impact the water quality of anyone in the area who uses the surface water for
 29 irrigation of sensitive crops like cherry trees, pears, peaches and plums.

30 In addition, neither DWR or USBR provided any evidence to show that impacts to drinking
 31 water wells along Steamboat Slough in the long term were analyzed, and without that evidence
 32 there is no basis upon which DWR/USBR can validate its claim of "no impacts or injury" to
 33 SHR or other legal users of water in Steamboat Slough, lower Sacramento River and the North

¹⁷ SHR-367 focus on salinity on lower Steamboat Slough with flows similar to WaterFix projected flows

¹⁸ SHR-350, SHR-352 Flow charts provided to SHR during WaterFix hearing process

¹⁹ Nader-Terani response to SHR questions on 5/12/17

²⁰ Nader-Terani response to SHR questions on 5/12/17

²¹ SHR-50, page 41 regarding water quality in and around Ryer Island being fresh even during recent droughts.

²² SHR-9, page 105, Chloride to EC conversion Chart

²³ SHR-369

²⁴ SHR-365 Graphics compiled from online resources to determine sensitive crops

²⁵ SHR-370 CDEC and DWR monitoring stations for lower Sacramento River at SOI station showing EC September 2015.

²⁶ SHR-77 Graph of drinking water quality decline-SHR example

1 Delta Islands²⁷. SHR points out that DWR and USBR had full access to the computer
2 modeling and estimates related to impacts from proposed Bay Delta Conservation Plan
3 actions, and proposed North Delta barriers proposals of several years ago, and failed to
4 disclose to the board that both those proposals indicated increases in salinity on Steamboat
5 Slough directly related to the reduced flow of fresh water into this historic and natural
6 waterway.

7 SHR also asserts that Petitioners had full access to online resources regarding emerging
8 groundwater contamination constituents of concern²⁸, yet failed to even address the impacts to
9 local drinking water wells from construction and operation of proposed WaterFix Project. SHR
10 provided evidence that reduced flows and restoration actions managed by Petitioners over the
11 last eight (8) years most likely contributed to the degradation of groundwater in the North
12 Delta²⁹, resulting in the increase in arsenic in drinking water in public drinking water wells, SHR
13 included. Disturbance of soils, limiting of aquifer recharge and dumping of fouled waters from
14 the proposed WaterFix Project all could affect surface and groundwater quality down river from
15 proposed intakes. Petitions provided no evidence of even consideration of impacts to SHR
16 surface and groundwater drinking water rights, let along all the other wells and surface water
17 diverters along Steamboat Slough and lower Sacramento River down river from proposed
18 intakes. Petitioners had the burden of proof to show that there would be no injury to SHR from
19 proposed WaterFix actions. Petitioners did not meet that burden of proof and in fact failed to
20 provide the hearing officers with salinity impact evidence generated during BDCP planning
21 phase for Steamboat Slough which indicates an increase in salinity from lower flows³⁰.

22 SHR also wishes to point out that the computer modeling used to validate Petitioners
23 request is based upon CALSIM I and II data, which includes baseline flows that were
24 converted to acre feet and gallons depending on the particular modeling study. As noted
25 several years ago and brought to the attention of DWR modelers, DWR, USGS, USBR seem
26 to use different conversion charts to convert cubic feet per second of flows to either gallons or
27 acre feet. Specifically, does one acre foot of water equal 327,518 gallons of water³¹ or does
28 one acre foot of water equal 325,900 gallons of water?³² Which is the correct conversion
29 chart and which one was used to determine the baseline data for CALSIM I and II because if
30 the baseline data has inflated the available acre feet assumed left in the Delta, then the
31 computer modeling may also be inflating the assumed projected flow left in the Delta.

32 Finally, rebuttal testimony introduced by DWR witnesses analyzed Delta Temperature
33 effects analysis³³ and Delta Flow Velocity Effects Analysis³⁴ based upon DSM2 modeling.
34 However, any such analysis must be based upon correct bathymetry, as noted by DWR own

²⁷ SHR-17 also located at <http://www.snugharbor.net/images-2016/labeled/SHR-17.pdf>

²⁸ SHR-21 Slides related to arsenic in groundwater and SHR-22, salinity and drinking water

²⁹ SHR-319 Timeline of Actions Affecting Water Quality

³⁰ SHR-407 BDCP graphic of salinity impact from proposed reduced flows for BDCP conveyance plan.

³¹ SHR-368, page 1 and DWR-316

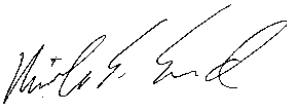
³² SHR-104, page 15 comparison of conversion charts and SHR-368, page 2

³³ DWR-8 slide 41 Delta temperature effects analysis

³⁴ DWR-8 slide 28 Delta flow velocity effects analysis

1 modeling reviewers³⁵. Specific to bathymetry on Steamboat Slough, DSM2 was not updated
2 to reflect correct bathymetry³⁶ and therefore any modeling assessing flow, velocity and salinity
3 would also not be updated to reflect actual and project velocity and temperature and salinity on
4 Steamboat Slough. It appears evidence of the location of a subsurface flow barrier at the north
5 end of Steamboat Slough, located ten to 20 feet east of the Steamboat Slough bridge, was not
6 used as a cross section for DSM2, which would have influenced DSM2 outcomes related to
7 water flow, velocity, temperature and quality if correct bathymetry had been used.

8 I myself, SHR witness Nicole S. Suard, Managing Member for Snug Harbor Resorts, LLC
9 certify that I myself compiled the screen prints of documents and graphics contained in the
10 documents submitted by Snug Harbor Resorts, LLC as evidence in Part 1 of the California
11 WaterFix Project hearing, and submit this rebuttal testimony on behalf of Snug Harbor Resorts,
12 LLC.

13 Signed: 

³⁵ SHR-104, page 2 Aron Blake USGS presentation graphic

³⁶ SHR-359