For over two years, thousands of hours of effort have been expended by myself and others to try to communicate to Waterboard hearing officers and others what the possible impacts would be from DWR and USBR proposed actions from construction and operation of proposed intakes and tunnels under any operation scheme. Per Waterboard instructions, hearing participants have been encouraged to propose Conditions of Permit which might help to mitigate some of the negative impacts to the Delta communities, farmers, landowners, businesses, recreation, residents and environment. I believe in order for the hearing board to understand the below proposed Conditions of Permit, evidence for the need of those conditions is appropriate to supply as well. The points and proposed Conditions of Permit were compiled by me and are/will be offered into evidence to help hearing board officers and all other California Waterfix participants who do not have opportunity to experience the Delta from the waterside perspective to see just a tiny fraction of what we see and experience here in the Delta in real life, not just on paper. My testimony and evidence does focus on the extremes of high flows and low flows as examples of impacts which are not reflected in the averaged computer modeling of CALSIM II and DSM2 often referred to during the course of the California Waterfix hearings Part 1 and Part 2. Proposed conditions of permit expressed in this testimony are in addition or further support previous testimony.

1. Proposed Condition of Permit: DWR-1143 chart of operations criteria for proposed H3+ operations does not provide sufficient written guarantee of flows, in each waterway to protect drinking water quality and surface flows and levels in the various natural waterways of the Delta.
Delta. However, the DWR computer modeling and testimony has clearly stated that fresh water flows will be sufficient to keep the fresh water fresh, or under 300 EC per DWR witnesses, in areas around Ryer Island, Steamboat Slough and other North Delta waterways. So simply add a new chart with required water flow, water level, and water quality criteria for each natural waterway of the Delta to assure no negative impacts from proposed new intakes and tunnels. Monitoring stations at each end of every waterway will also help to assure that diversion and discharges into each waterway do not result in unintended degradation of water quality due to insufficient flow required for dilution. This is a necessary added monitoring requirement because low freshwater inflows reduce the capacity of the waterway to dilute the discharges into the waterway from normal Delta farming and agricultural activities. North Delta waterways that would require additional monitoring stations are Steamboat Slough, Sutter Slough, Miner’s Slough, Georgiana Slough and the Sacramento River in several new locations between Freeport and Rio Vista. Monitoring stations for the West Delta and all other Delta regions would have additional monitoring stations, but the owners of lands in those areas should define the locations. Note that for all monitoring stations, water quality at the bottom of the waterway and also towards the surface of the water should be monitored continuously. See SHR-713, SHR-718 and SHR-719 are examples of other studies also reviewing monitoring of Delta water quality. Proof of continual compliance with new requirements to meet M&I standards, recreation and navigation requirements, and drinking water quality for humans and animals will be required for all locations within the waterways of the Delta. Compliance would be based upon real time data, not running averages or other convoluted, inconsistent computations or formulas. (SHR-717 example) Those monitoring stations must remain live and posting real time data a minimum of every 15 minutes online, in common readable format. Salinity must be reported in parts of chloride (ppt) and electroconductivity (EC). In addition, for
any conversions for reporting purposes, the exact data and conversion formula must be
provided for each data set, each time a report is provided. SHR-713 suggests proposed water
quality, water level, water flow, water temperature new monitoring stations for the North Delta,
and Waterboard should seek the advice of South and West Delta land and business owners for
the appropriate monitoring locations of those areas. Monitoring Stations would be paid for by
SWC through increasing per acre foot delivery charges to water recipients of diverted flows.,
but placement and monitoring of stations would be done by a water engineer firm approved by
North Delta land owners or NDWA. Based upon current negative impacts from DWR
management of Delta flows, Dwr-1031 range of alternatives would require modification:
require flow to increase in the Sacramento River, Steamboat Slough. Dwr-1071 water level
below intakes—what about Steamboat Slough levels? Page 18 and 19. Require water levels to
remain at navigable levels at all times including low tides. Navigable includes for power vessels
and ships with draft of a minimum of twelve feet in Steamboat Slough at lowest tides and flows,
and at deeper drafts for the larger vessels that are found on the Sacramento River between
Sacramento and Rio Vista Require fresh water to match pre-project water quality. SHR-722 There
video I made to show what navigation was like for a tall sailing ship with large keel, traveling up
Steamboat Slough and the Sacramento River to Sacramento prior to any flow modifications by
government agencies. The written description from 1850, Commander Ringgold, US Navy,
refers to natural waterway depts of eight (8) to twelve feet (12) with snags only along the rivers’
edge generally. Video is available at https://www.youtube.com/watch?v=kSZTiieucq4. At any
point in time where any monitoring station indicates violation of one of the water quality, water
level or water flow criteria, one, two or all three intakes must be shut down to the minimum
intake flow until such time as all monitoring stations show compliance. Repeated failure to
reduce diversion when violations are indicated will result in loss of right to operate the intakes
and a fine equal to three times the value of water that continued to be diverted into tunnels despite shown monitoring station violations. Assessed violation funds will be paid into a fund to cover damages, loss of income or other impacts from DWR/MWD excessive diversions which caused the violations. \textbf{Low flow impacts that can result in damages and cost: SHR-702.}

2. Suggestion for Waterboard: Waterboard should require that accurate water conversion tables be utilized for all computer modeling and reports submitted to Waterboard: See \textbf{SHR-717}

Does one acre foot of water equal 324,900 or 325,900 gallons of water? Does one cubic foot per second of flow equal 646,320 or 646,272 gallons per day? In 2009, 2011, 2014 I brought this issue to various DWR-Resources representatives, as I was trying to determine what is the correct formula for converting cfs flow into gallons and acre-feet. This question was asked because it was noticed that the formulas used by DWR were different than what USGS and other government agencies use. DWR documents from 2000 to 2010 published conversion charts, and one from 2001 related to model results, such as CalSim 1 (at that time) provide conversion charts. Using an incorrect formula can result in an assumption of too much flow or too little flow, depending on which conversion table was used. Considering how much each acre-foot makes for water contractors, use of correct formulas would be important, one would think. As an example, if DWR and SWC were underreporting diversions because of use of an incorrect conversion formula when converting cfs to gallons to acre feet, the result would be additional acre feet available for sale. Based on the chart shown in \textbf{SHR-717} (poster format), each additional acre foot available for sale would generate approximate $600 more income for SWC. Multiply that by the number of cfs being underreported and it can equate to millions of acre feet per year and hundreds of millions of dollars of additional income for DWR/SWC as the Delta environment continues to decline in part due to the same underreporting or incorrect calculating of diversions and flows remaining in the Delta. It is noted that for CalSim 3 DWR has
recently updated the conversion formulas, which may explain the differences shown in the flow chart comparisons for that report. Perhaps California Waterboard should itself has published its water-related conversion chart, and so direct that all computer modeling and reports submitted to Waterboard be certified by the report author and computer modeler(s) that the conversion formulas used match exactly the conversion formula published by Waterboard. Slide and video questioning flow data of DWR: https://www.youtube.com/watch?v=VhSqjHt6CEw but not offered into evidence in entirety. That video just shows the calculation issues have remained unaddressed for years. In any case, it seems reasonable that for Waterboard to do its job, Waterboard should require full disclosure statewide for all diverters. Waterboard could publish by map and count the diversion locations off every lake, river and stream so that concerned citizens might be able to help monitor this important function of Waterboard.

3. Proposed Condition of Permit: Prohibited use of specific roads and waterways for construction traffic for specific times of the year: California WaterFix revised eir/eis indicates Snudgrass Slough will not be used for barge travel, but also does not provide enough description to indicate how tunnel boring equipment, tunnel sections and the materials for tunnel sections will be delivered to areas north of Highway 12. Mr. Bernarski testimony indicated that DWR and MWD would leave it up to the Contractors to determine the best way to transport necessary equipment and supplies. (Summary of what was said-not exact words) This is insufficient description to assess impact, so I request that the transportation routes and travel methods as shown on the map labeled SHR-714 be expressly prohibited for construction of intakes and tunnels: To avoid negative impacts from water transport, water impact, Steamboat Slough, Sutter Slough Elk Slough and the Sacramento River between Sacramento to below or south of Rio Vista may not be utilized for Waterfix intake or tunnel equipment or supplies transport during the months of April through October, which are prime recreation boating and agricultural
activity months. Roads as highlighted on SHR-714 may not be utilized by intake or tunnel
construction transport trucks larger than one ton, anytime during the year when it is normal
harvest time for local farmers or it is prime recreation travel time, such as April through
November. DWR/MWD/USBR will be held liable for damages to all boats and docks along the
water rout if wakes or accidents occur and marinas or land owners with docks along the barge
traffic route will be entitled to loss of income based upon posted rates of Sacramento Marina
(City) dockage for all months of barge traffic. Since large and loud helicopters have already
been used to begin changes to electrical services in the North Delta, noise impacts to recreation
customers have already been experienced on Ryer and Grand Islands in spring 2018. Therefore,
it is proposed that if any helicopters or other form of loud flying vehicles is use to transports
intake or tunnel construction equipment or parts, that such delivery flights may not fly over any
Delta towns or communities, marinas or RV parks or housing communities at any time. Waterfix
contractors must be instructed to design flight patterns that avoid creating risk to persons on
the ground and also avoid creating noise due to the aviary vehicles or equipment. SHR-724 and
SHR-711 should be viewed as part of this testimony if needed to show examples.

4. Proposed Condition of Permit: Require study and peer reviewed report to verify intakes of the
size and capacity of those proposed by California WaterFix proponents will be safe for humans:

There is no description of any safety feature in case there is intake malfunction. For example,
recently a man died because he was sucked into an intake at “Empire Cut” off the San Joaquin
River near Lower Jones Tract. Please see SHR-712. Imagine if the proposed intakes in the North
Delta malfunctioned and started sucking people against the screens holding them there until the
screen clearing wipers moved them off. Witnesses for proposed intake facilities have described
low velocity of flow into the intakes but have not provided any details of safety precautions if
pumping would cause higher velocities that could harm fish and humans. For example Dwr-1035
modeling velocities do not make sense if one refers to the map. How do the water engineers regulate velocity past the fish screens? Withhold flow? What happens where there is a conflict between need to freshen the Delta and keep velocity low? Waterboard and/or US Coast Guard could require clear marking at every intake statewide that could pose risk to humans on the watersitde. Markers on the waterside should indicate the end of the pipe or intake in the water where suction might happen. SHR-712 last page of pdf suggests state-wide approach to protecting humans from risk of malfunctioning intakes and also sink holes created when a construction project does not go as planned, as could easily be assumed for a tunnel projected expected to last up to eleven years in the Delta! To protect the cornerstone of California’s drinking water system, common sense says any mining activity that could create sink holes in the Delta should be permanently prohibited. SHR-704.

5. Additional information offered in order to fully understand possible negative impacts to the North Delta waterways: During Part 1 of California Waterfix hearing, DWR provided SHR with two chart series which indicate what flows would remain on the North Delta waterways if proposed intakes were operational. See SHR 350 and 352. DWR computer modeling witness Tara Smith and DWR attorneys confirmed during Part 2 that despite the revised operations referred to as H3+ the modeling indicated the flows and splits between the North Delta waterways would be the same as what is shown in SHR-350 and SHR-352. (Paraphrased) However, since DWR in 2014 through to current dates has been withholding flows into the North Delta, suspending the North Delta into drought flow status it appears, it can be shown that the flow splits do not match the computer modeling provided by DWR. SHR-253 is an example of impacts from low flows in drought time, of the level of flow proposed by DWR for summer months. Compare SHR-352 to SHR-703. SHR-703 is a video showing the flow splits with Freeport flow at historic lows, in 2018. SHR-702 shows low flow impacts on Steamboat...
Slough and Sacramento River, including the increase of invasive water weeds, degradation of restoration sites claimed by DWR

6. Proposed Condition of Permit: DWR revised its data to recognize more wells and gas or oil wells within the footprint of the proposed tunnels and intakes. However, it appears the existence of additional gas wells, in particular, have continued to be ignored by the drafters of proposed intakes and tunnels. As a condition of permit, complete survey and report of all known and unknown drinking water wells, natural gas wells, wastewater wells and oil wells within the footprint and within vibration-range of the tunnel footprint should be required to adequately assess potential risk and damage. As a start, please see SHR-704, a 2018 new application for Staten Island. It should be a requirement that DWR and/or SWC be financially liable for all damages to all water, oil and gas wells within vibration range of tunnel and intake footprints. This requires that the locations of all such wells and owners be known, that the current condition be known and documented, and that there be an agency or representative with funding available to quickly resolve claims of damage. In addition, if tunneling causes rupture of a gas well, tunneling operations must be shut down until such time as new evidence would be presented to Waterboard to verify no additional rupture will occur. Please see SHR-705, SHR-706, SHR-707 and SHR-708, all of which are public maps or records found online through State of California online resources which could have been accessed by California Waterfix drafters, had those drafters desired to provide full disclosure of potential impacts.

7. Proposed condition of Permit: Establish and maintain fund to reimburse Delta Land owners for damages caused by DWR managements of high flows and low flows through the Delta. Cost of Water deliveries to State Water Contractors would include at least a ten percent (10%) increase per acre foot sold and delivered to water contractors in other areas of the state so that a fund could be created and maintained from which damages to Delta area lands, businesses and
persons could be paid. Fund could be managed by designated county persons in each Delta-area county, or by another local Delta entity dedicated to protecting the Sacramento San Joaquin Delta humans, lands, waterways and businesses as well as aquatic and natural environment. It seems DWR rarely reports to the media or any controlling or oversite agencies or legislature the real impacts of DWR actions, and rarely acknowledges failures to comply with diversion restrictions, as exemplified by Mr. Porgans testimony and evidence. The Womack family also has provided examples from down by Clifton Court Forebay. I am providing real-life examples of impacts from DWR actions in just the last few years. SHR example is the cost to resolve degradation of the local drinking water which records show were excellent until sometime around 2010. SHR-709 These examples are intended to demonstrate for the Waterboard how decisions by the Waterboard and actions by DWR and USBR impact the Delta people and businesses and agriculture, and so far DWR fails to recognize such impacts in reports or assessments when planning changes such as proposed Waterfix tunnels. Please see SHR-720, SHR-721, SHR-722.

Finally, I wish to declare that I personally prepared the evidence to support my testimony, but that most of the evidence consists of screen prints and downloads of data and records which I collected and compiled over a number of years. The videos were made by recording live internet connections to the websites shown on the screen. Other video or photos were shot by me at the times referenced in the video or photos.

I declare under penalty of perjury the above is true and correct to the best of my knowledge.

Submitted by

Nicole S. Suard, Esq
Managing Member, Snug Harbor Resorts, LLC 7/11/2018