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BEFORE THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

IN THE MATTER OF

CALIFORNIA DEPARTMENT OF WATER RESOURCES AND UNITED STATES BUREAU OF RECLAMATION FOR A PETITION FOR CHANGE FOR CALIFORNIA WATERFIX	TESTIMONY OF JAMES PEIFER (EXHIBIT CITY SAC - 1)

I, James Peifer, do hereby declare:

INTRODUCTION

1. I am a registered civil engineer in the State of California.

2. I have been employed by the Department of Utilities for the City of Sacramento (Sacramento) since June 2003. I currently am a Principal Engineer and Policy and Legislation Manager. My responsibilities as Policy and Legislation Manager consist, among other things, of analyzing legislative and regulatory proposals and coordinating input from others; coordinating with City personnel and others (including outside legal counsel) on matters affecting Sacramento's water rights and water supplies; and serving as a Sacramento representative for the Water Forum, Regional Water Authority, and Sacramento Groundwater Authority.

3. I have worked as a civil engineer in various positions for Sacramento continuously since 2003. A true and correct copy of my resume is included with this written testimony as

Exhibit City Sac - 2. My resume accurately describes my education, professional registration, and work experience.

4. My testimony provides background on Sacramento's water rights and entitlements exercised for the benefit of Sacramento and its residents, and Sacramento's water supply facilities, operations, and constraints. My testimony identifies the water sources and facility capacities for Sacramento's drinking water supply, and describes the potential for California WaterFix to cause injury to Sacramento, as a legal user of water.

5. When I refer to the California WaterFix, I am referring to the project set forth in this proceeding arising from the Petition for Change submitted on or about August 25, 2015 by the California Department of Water Resources (DWR) and the United States Bureau of Reclamation (Reclamation).

SACRAMENTO'S WATER USE

6. Sacramento is a legal user of both surface water and groundwater.

Surface Water Rights

7. Sacramento's surface water diversions from the American River and Sacramento River are authorized under a pre-1914 water right, and five appropriative water right permits, coupled with a water rights settlement contract. Each is described in more detail below:

- *Pre-1914 right (Statement S014834):* Sacramento has a pre-1914 right to divert Sacramento River water at a rate up to 75 cubic feet per second (cfs). This right is based on Sacramento River diversions that began when Sacramento's first pumping plant was constructed in the early 1850s. Sacramento's publicly owned water supply is reported to be among the oldest in the State.
- *Sacramento River Permit No. 992 (A001743):* This permit authorizes Sacramento to divert Sacramento River water at a rate up to 225 cfs, in an amount up to 81,800 acre feet annually (afa). This permit has a priority date of 1920. Water diverted under this permit can be served within Sacramento's city limits. The current points of diversion are located

at the Sacramento River Water Treatment Plant (SRWTP), and at the Pioneer Reservoir, which is a component of Sacramento's combined sewer system.

- *American River Permits:* Sacramento has four state-issued permits to divert American River water.
    - *Permit Nos. 11358 (A012140) and 11361 (A016060)*: These two permits authorize Sacramento to divert water directly from the American River at Sacramento's E.A. Fairbairn Water Treatment Plant (EAFWTP). For these two permits, the combined maximum allowable rate of diversion is 675 cfs. The Permit 11358 priority date is October 29, 1947, and the Permit 11361 priority date is September 22, 1954.
    - *Permit Nos. 11359 (A012321) and 11360 (AO12622)*: These two permits are based on water right applications originally filed by the Sacramento Municipal Utility District (SMUD) and then assigned to Sacramento. In the 1957 "Agreement of Assignment" between SMUD and Sacramento, this assignment was declared to be for the benefit of Sacramento's "Potential Water Service Area," which includes Sacramento and designated areas adjacent to Sacramento, some of which are supplied retail water service by other water purveyors. These permits authorize Sacramento to redivert American River water previously utilized for non-consumptive purposes by SMUD's Upper American River power generation project (UARP), which is located in the American River basin upstream of Folsom Reservoir. These re-diversions of American River water can be made at the EAFWTP, and at Sacramento's SRWTP located just below the confluence of the American River and Sacramento River. The combined maximum allowable diversion under these two permits includes rediversion of up to 1510 cfs of water diverted, but not stored, by the UARP, and up to 589,000 acre feet per year of stored water. The Permit 11359 priority date is February 13, 1948, and the Permit 11360 priority date is July 29, 1948.

- Water diverted under Sacramento's four American River permits can be served within Sacramento and within specified areas adjacent to Sacramento (collectively referred to as Sacramento's American River Place of Use).[1]
- Pursuant to the Water Forum Agreement, Sacramento agreed to add conditions to its four American River water right permits that became effective after expansion of Sacramento's EAFWTP, limiting Sacramento's use of the EAFWTP diversion capacity when American River flows at the EAFWTP fall below specified thresholds, referred to as the "Hodge Flow Conditions," which are described below.
- In addition, the State Water Resources Control Board's Decision 893 (D-893), which issued the City's four American River water right permits, mandates that Sacramento bypass flows (i.e., not divert) on the American River when the flowrate of the American River is less than 250 cfs from January 1 through September 14, and less than 500 cfs from September 15 to December 31 (with relaxation of these thresholds during specified dry periods).

- *Settlement Contract:*
  - On June 28, 1957, Sacramento entered into a permanent water rights settlement contract with Reclamation, titled "Operating Contract Relating to Folsom and Nimbus Dams and their Related Works and to Diversion of Water by the City of Sacramento," Contract Number 14-06-200-6497. The State Water Rights Board was at the time deciding how to allocate water rights on the American River among numerous competing applicants, including Sacramento and Reclamation. It is my understanding that this contract settled the protests filed by Sacramento and Reclamation, and that, as part of this settlement, Sacramento dropped its own plans for construction of a reservoir on the upper American River near Coloma, in favor of Reclamation's plan to construct Folsom Reservoir. Sacramento also agreed to

[1] Included with this testimony as Exhibit City Sac - 18 is a map illustrating Sacramento's American River and Sacramento River Places of Use.

limit its total diversions of American River water under its American River water right permits to a maximum of 675 cfs, up to a maximum amount of 245,000 afa in the year 2030 – this was less than the total face value of Sacramento's American River water right permits. Sacramento agreed to limit its diversions of Sacramento River water under permit 992 to a maximum of 225 cfs and a maximum amount of 81,800 afa. The contract's total annual diversion limit from both rivers in the year 2030 is 326,800 acre feet.

- In return, Reclamation agreed to operate its American River storage facilities so as to make available in the American River sufficient water for Sacramento's diversions up to the amounts specified in the settlement contract, and to operate its Sacramento River storage facilities so as not to interfere with Sacramento's diversions up to the amounts specified in the settlement contract. The contract requires an annual payment to Reclamation for Folsom Reservoir storage capacity used to meet Reclamation's obligations under the contract, beginning with payment of $9 per acre foot for 8,000 acre feet of storage capacity in 1963, and incrementally building up to payment of $9 per acre foot for the use of 90,000 acre feet of storage capacity in 2030.
- The settlement contract is permanent and not subject to any pro-rata deficiencies of American River water, and requires Reclamation to recognize all priorities accorded to Sacramento's municipal water uses under State law.
- Sacramento's American River water made available for diversion under the water rights settlement contract can be diverted at either the EAFWTP or the SRWTP, under Permit Nos. 11359 and 11360.

Groundwater Use

8. Sacramento overlies two subbasins of the Sacramento Valley Groundwater Basin (the North American Subbasin, located north of the American River, and the South American Subbasin, located south of the American River).

9. Sacramento operates 22 municipal supply wells and 5 irrigation wells north of the American River, and operates 2 municipal supply wells and 9 irrigation wells south of the American River.

10. Sacramento extracts groundwater from both subbasins, although approximately 95 percent of the amount produced by Sacramento is from the North American subbasin.

11. Currently, some of Sacramento's groundwater wells are being rehabilitated, and upon rehabilitation being completed, reliable supply capacity will be approximately 25 mgd.

12. Sacramento has historically pumped approximately 11,000 to 23,000 acre feet annually from the North Basin and approximately 600 to 1,200 acre feet annually from the South Basin.

SACRAMENTO'S WATER SUPPLY OPERATIONS

Sacramento's Water Supply Facilities

13. The SRWTP began operation in 1924 and treats water diverted approximately one-half mile downstream of the American River confluence. Expansions and modifications completed by Sacramento since the 1920's have increased the plant's design capacity to 160 mgd. Construction is nearing completion for a project to rehabilitate the older facilities at the SRWTP.

14. The EAFWTP is located approximately seven miles upstream of the American and Sacramento River confluence. The EAFWTP began operation in 1964 and has a current design capacity of 200 mgd following the expansion completed in late 2005. Currently, the State Water Resources Control Board has permitted a treatment capacity of 160 mgd[2]. Sacramento's use of the EAFWTP to divert American River water also is subject to the Hodge Flow Conditions described below.

15. Sacramento relies on surface water for the majority of its water demand and roughly balances the supply between diversions at the SRWTP and EAFWTP. Both of these facilities are conventional filtration drinking water treatment plants.

[2] Sacramento's 2015 Urban Water Management Plan, page 4-1 available at http://www.cityofsacramento.org/Utilities/Resources/Reports.

Retail and Wholesale Services

16. Sacramento exercises its water rights to serve water to a retail population of 485,000 residents as well as commercial and industrial customers.

17. Sacramento also provides wholesale water service within the region under wholesale water supply agreements with the Sacramento Suburban Water District (SSWD), Fruitridge Vista Water Company, California American Water Company (CalAm), and Sacramento County Water Agency. Deliveries of water diverted at the EAFWTP to the SSWD under Sacramento's wholesale water supply agreement with the SSWD are cut off when American River flow at the EAFWTP falls below the Hodge Flow Conditions, consistent with limitations specified in the Water Forum Agreement. Water deliveries from the EAFWTP to CalAm under Sacramento's wholesale water supply agreement with CalAm also are limited when American River flow at the EAFWTP falls below the Hodge Flow Conditions.

Operational Summary of Demand

18. Sacramento's historical maximum daily demand for retail and wholesale water demands is 239 mgd. Water demands are projected to rise to approximately 300 to 400 mgd after the year 2030.

19. Water demands fluctuate throughout the year, increasing significantly during the summer and typically are highest in July. Demands slowly taper off after July and steadily decrease in late summer and early fall until reaching minimum demands in December, January and February. Demands begin to start increasing beginning March. To meet maximum daily demands during the summer the City uses the SRWTP, EAFWTP, and groundwater supply interchangeably.

Water Forum Agreement

20. In 2000, the City of Sacramento signed the Water Forum Agreement (WFA).[3] The Water Forum was started in 1993 by a group of regional water managers, local governments, business leaders, agricultural leaders, environmentalists, and citizen groups with two "co-equal"

[3] http://www.waterforum.org/wp-content/uploads/2015/09/WF_Agreement_Compiled.pdf

goals: to provide a reliable and safe water supply, and to preserve the wildlife, fishery, recreational, and aesthetic values of the Lower American River. As part of the WFA, Sacramento agreed to limit its diversion from the American River at the EAFWTP when river flows are below the Hodge Flow Conditions, described below. To implement the WFA, this limitation was added to the City's four American River water right permits.

Hodge Flow Conditions

21. The Hodge Flow Conditions used in the WFA were originally established in a judicial judgment issued in 1990 by Judge Richard A. Hodge in the *Environmental Defense Fund, Inc. et al. v. East Bay Municipal Utility District, Inc.* litigation, in the California Superior Court in Alameda County (Case No. 425955), which I refer to as the Hodge Decision. As discussed above, as part of the WFA Sacramento agreed to limit its diversions at the EAFWTP when river flows are below the Hodge Flow Conditions.

22. I have read the Water Forum Agreement at various times over the years and consulted with colleagues and other professionals to gain strong working knowledge of the Hodge Flow Conditions and their impact, or potential impact, on Sacramento's water supplies and how Sacramento can operate when Hodge Flow Conditions are triggered.

23. Below in Table 1 prepared by and at my direction is a summary of how the Hodge Flow Conditions limit Sacramento's diversions at the EAFWTP.

Table 1 Hodge Flow Conditions for EAFWTP Defined City of Sacramento Department of Utilities

River Flow at the Intake (cfs)	<2,000	<3,000		<1,750			<2,000
Time of Year	Jan Feb	Mar Apr May	Jun	Jul Aug	Sep	Oct 14th	Oct 15th Nov Dec
Max Diversion at EAFWTP (mgd)	77	77	100	100	77	65	65

Source: Water Forum Agreement January 2000 Appendix C.

When Hodge Flow Conditions are triggered, Sacramento limits EAFWTP diversions as necessary to comply with the above limits, and shifts any water production needs in excess of the above limits at EAFWTP to either the SRWTP or groundwater wells.

INJURY TO SACRAMENTO FROM CALIFORNIA WATER FIX

24. Sacramento is a legal user of water that provides local and regional benefits by supplying potable water for municipal uses on a retail and wholesale basis.

25. I have utilized my training and experience to evaluate the pending Petition for Change to implement the California WaterFix (CWF) in this proceeding. Based upon my training and experience, coupled with my review of material related to this proceeding, I am concerned that implementation and operation of the CWF will injure Sacramento in one or more ways, including the following:

Decreased Reliability of Sacramento's Water Supply

26. I understand that DWR and Reclamation indicate in their testimony that no changes in Central Valley Project (CVP) and State Water Project (SWP) operational criteria are proposed as part of this CWF proceeding, including for CVP and SWP reservoirs at Shasta, Oroville and Folsom (collectively, the Projects). However, my understanding is that even if operational criteria remain unchanged at this time, according to the testimony of highly-credible experts submitted in this proceeding, the CWF is very likely to cause the Projects to be operated differently than existing and historical practices in order to meet a central CWF objective of increasing capacity for exports south of the Delta.

27. Specifically, Sacramento is concerned that after completion of the CWF Folsom and Nimbus Dams will be operated in a way that reduces the amount of American River water available for diversion by Sacramento pursuant to its water rights and water rights settlement contract, particularly during dry periods when inflow into the reservoirs is reduced. This would occur if CWF facilities are used to facilitate increased annual releases from Folsom and Nimbus Dams for export south of the Delta, which also would reduce year-end carryover storage; and also

could occur if CWF facilities are used to change the timing of Folsom and Nimbus Dam releases, even if the annual release volume is not increased.

28. Without any durable and enforceable commitment to a specific operational plan that mitigates this potential reduction of American River water supply availability for Sacramento and other regional water users, Sacramento is concerned that implementation and operation of the CWF is likely to injure Sacramento by facilitating the export of American River water that Sacramento otherwise would be able to divert and supply to its retail and wholesale customers.

Damage to Sacramento's Intake Infrastructure

29. Sacramento's intake structures on the American River and Sacramento River are at risk of significant damage when the water surface elevations drop as a result of low river flowrates, because lowered water surface elevations can damage the pumps from cavitation and vibration.

30. While the Projects' operations to date have not resulted in flow rates low enough to cause pump damage, Sacramento has prepared an analysis that identified the minimum river water surface elevations needed for safe, non-damaging operation of Sacramento's intake pumps.

31. This analysis identified that the SRWTP intake begins losing its peak pumping capacity of 160 mgd when the Sacramento River drops below elevation 8.0-ft, and that pumping capacity is reduced to 140 mgd when the river elevation reaches a minimum river elevation of 1.5-ft at the I Street gauge. Elevation 1.5 is correlated with a flow of approximately 6,000 to 6,500 cfs passing the flow monitoring gauge located on the Sacramento River approximately at the western end of I Street (the I St station). It is my understanding, based on my training and experience, that operation of the SRWTP intake below river elevation 1.5-ft further reduces the reliable capacity of the SRWTP intake pumps, and progressively reduces the safety factor for pump operation at lower river levels. Consultation with the pump manufacturer indicated the SRWTP intake facility, as designed, would be at risk of damage if operated below river elevation 0.8 ft, which is correlated with a flow of approximately 3,600 cfs passing the I Street station during low tidal periods.

32. The American River intake at the EAFWTP has a greater variety of pumps and is a more hydraulically complex facility. Approximately half of the station has a minimum intake design level of 14.1-ft (correlated with a passing flow of approximately 3,000 cfs), with the other half designed for a minimum intake level of 12.0 ft (correlated with a passing flow of approximately 500 cfs).

33. Sacramento has constructed improvements to reduce the potential for vibration by installing vortex baffles in the intake structures, as well as monitoring systems to detect pump vibration However, despite Sacramento's efforts to protect its intake structures, the potential for lower river flows resulting from operations of the Projects after the completion of CFW presents a risk of damage to Sacramento's intakes if the Sacramento or American River flows drop below the minimum flowrates described above. In addition, if low flows compel Sacramento to shut off pumps to avoid such damage, Sacramento will be injured by the diminishment of its surface water supply due to the pumps being rendered nonoperational while the low flows persist.

34. Given my professional judgment that the Projects, and specifically Folsom Reservoir, can, and according to the testimony of highly-credible experts submitted in this proceeding likely will, be operated in a manner that is different than current operations if CWF is implemented, Sacramento is concerned that future operations of the projects will result in decreased river flows that could damage Sacramento's intake pumps or render them nonoperational for certain periods of time.

Reduced Water Supply for Wholesale Water Service to SSWD and Other Wholesale Customers

35. Implementation of the CWF could reduce the water available for Sacramento's wholesale water supply customers, most notably the Sacramento Suburban Water District (SSWD), because the Projects, and specifically Folsom Reservoir, might be operated to drawdown storage and otherwise reduce lower American River flows so as to change the timing and volume of releases and trigger Hodge Flow Conditions more frequently.

36. I understand that this has been analyzed by highly-credible experts in this proceeding, who conclude through written testimony, exhibits and/or otherwise that the frequency of Hodge Flow Conditions is likely to increase with CWF implementation.

37. The increased frequency of Hodge Flow Conditions as forecasted by these experts causes me concern that Sacramento's ability to divert, treat, and deliver water to provide wholesale water service to Sacramento's largest wholesale customer, the SSWD, will be impeded if not precluded due to the cut-off of wholesale water deliveries from the EAFWTP to SSWD when flows drop below the Hodge Flow Conditions. In addition, because the Water Forum Agreement does not allow Sacramento to wholesale water diverted at the EAFWTP to most other regional water purveyors during Hodge Flow Conditions, an increased frequency of Hodge Flow Conditions will reduce the amount of surface water the City can supply on a wholesale basis from the EAFWTP to other purveyors.

38. These reductions in Sacramento's ability to wholesale water from the EAFWTP due to the likely increased frequency of Hodge Flow Conditions following CWF implementation jeopardizes the effectiveness of regional conjunctive use programs by decreasing the quantity of surface water available for wholesale customers to balance surface and groundwater use.

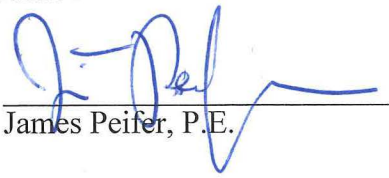
Economic Injury from Reduced Water Sales Revenue

39. As discussed above, reductions in water supply availability and American River flow levels resulting from implementation of the CWF could reduce the ability for Sacramento to divert water for service to both retail and wholesale customers. This would also result in reduced water sales and revenue to Sacramento's water utility, which results in economic injury because Sacramento's operating and maintenance (O&M) costs for its water supply and distribution system consist primarily of fixed costs that do not decrease in direct proportion to decreased water sales.

40. To protect Sacramento, as a legal user of water, from injury resulting from implementation of the CWF, the Petition for Change for the CWF should be denied, or if

approved, only be approved with conditions that protect regional water supply reliability and prevent future injury to Sacramento.

Executed on this 31st day of August, 2016 in Sacramento, California.



James Peifer, P.E.