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18 Water Conservation District, and  
19 Mokelumne River Water and Power Authority

20 [ADDITIONAL COUNSEL LISTED ON FOLLOWING PAGE]

21 **BEFORE THE**  
22 **CALIFORNIA STATE WATER RESOURCES CONTROL BOARD**

23 HEARING IN THE MATTER OF  
24 CALIFORNIA DEPARTMENT OF WATER  
25 RESOURCES AND UNITED STATES  
26 BUREAU OF RECLAMATION  
27 REQUEST FOR A CHANGE IN POINT OF  
28 DIVERSION FOR CALIFORNIA WATER  
FIX

**WRITTEN TESTIMONY OF KRIS BALAJI,  
PMP, P.E.**

**PART 2 CASE IN CHIEF**

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Attorneys for Protestants County of San Joaquin,  
San Joaquin County Flood Control and  
Water Conservation District, and  
Mokelumne River Water and Power Authority

**WRITTEN TESTIMONY OF KRIS BALAJI**

1  
2 I am a licensed Professional Civil Engineer in California. I have over 25 years of  
3 experience in managing and delivering public infrastructure projects. Currently, I serve as the  
4 Director of Public Works for San Joaquin County, managing diverse programs and overseeing  
5 a staff of approximately 350 engineers, planners, administrators, and maintenance  
6 professionals. We provide services to San Joaquin County residents in over twenty different  
7 functional areas, including highways, bridges, water resources, flood control, water quality,  
8 solid waste, fleet, development services, environmental services, and utilities. My prior  
9 assignments include managing Transportation Operations for two global Architecture &  
10 Engineering firms and serving in various capacities at Caltrans.

11 I hold a Master's Degree and a Bachelor's Degree in Civil Engineering and is a Certified  
12 Project Management Professional. My expertise in transportation includes work as a highway  
13 designer, construction resident engineer, bridge designer, transportation funding and policy  
14 strategist, and transportation program manager. I worked with Caltrans for over fifteen years,  
15 advancing from a highway and bridge design engineer to Caltrans' Chief of Traffic Operations.  
16 Additional information about my professional activities is set forth in my Statement of  
17 Qualifications (Exh. SJC-322.)

18 My testimony is submitted to provide information and opinions on safety, operational,  
19 and other impacts to roadways within San Joaquin County arising from the proposed WaterFix  
20 construction. The opinions provided herein are based on my professional experience and  
21 judgment, as well as my personal familiarity with the road segments referenced below.  
22 Publicly-available WaterFix documents are central to my testimony and are cited extensively.  
23 Those documents include the Final Recirculated Draft Environmental Impact  
24 Report/Environmental Impact Statement for the California WaterFix (the "RDEIR"), the  
25 Mitigation Monitoring and Reporting Program (the "MMRP") adopted by the California  
26 Department of Water Resources ("DWR"), and other documents cited herein.

## I. OVERVIEW OF TESTIMONY

As explained in further detail below, the RDEIR and MMRP documents (“Documents”) fail to adequately analyze the Waterfix construction-related impacts to roadways within San Joaquin County. More specifically, the Documents do not fully address safety, operational, or roadway condition impacts to various roadways within San Joaquin County. While the Documents generally acknowledge there will be operational and physical condition impacts to roadways, and identify some 114 road segments which will likely be utilized for construction related activities, they do not go beyond identifying Average Daily Traffic (ADT) volumes and Level of Service (LOS) designations. Further, the huge scale of construction which is estimated to extend over a period of approximately 14 years, concentrated in a relatively compact geographic area, is essentially unprecedented in the State of California. That extraordinary time frame for construction activities in this heart of the Delta necessitates analysis well beyond what DWR has provided.

My testimony will focus on the following issues:

1. Additional road segments impacted by Waterfix construction-related traffic not included or analyzed in the Waterfix Documents.
2. Additional construction traffic-related safety, operational, and physical condition analysis that should have been, but was not, included in the Documents.
3. Potential conflicts with San Joaquin County projects in proximity to the Waterfix construction activities.
4. Potential Waterfix construction traffic impacts to economic sectors of San Joaquin County, none of which were adequately addressed in the Documents.

## II. SETTING, FEATURES, AND CURRENT CONDITION OF AFFECTED ROAD SEGMENTS

The unincorporated area of San Joaquin County includes 1,660 miles of public roads, 265 bridges, another 350 minor structures, which are essentially bridges under twenty feet in length, along with roadside ditches, culverts, signs, guardrails, and other associated elements.

1 The Department of Public Works is responsible for the engineering, inspection, maintenance,  
2 permitting and administrative services required to maintain and improve these facilities.  
3 However, as in many other counties, San Joaquin County roads are generally in an “at risk”  
4 condition according to the *California Statewide Local Streets and Roads Needs Assessment*  
5 *2016* (available at <http://www.savecaliforniastreet.org>). Local conditions are representative of  
6 the statewide infrastructure crisis arising from various factors, including a lack of dedicated,  
7 stable funding for road maintenance and reconstruction. (*Id.* at p. 57.)

8 Exhibit SJC-324 is a map showing the proposed Waterfix alignment through San  
9 Joaquin County along with road segments identified in the Documents as impacted by the  
10 Waterfix project, as well as other road segments not identified which will also be impacted by  
11 the Waterfix project. It’s important to note here the Traffic Impact Analysis for the Waterfix  
12 identified only 114 road segments as being impacted by project construction. Of those 114  
13 segments, only 20 (shown in pink on Exhibit SJC-324) are located in San Joaquin County.  
14 However, I want to direct the Board’s attention to the additional segments shown in yellow that  
15 will also likely be impacted. These additional segments are not all-inclusive, and a thorough  
16 analysis needs to be done to identify other segments that may have been omitted in the  
17 WaterFix analysis. Further, these other segments are narrow, very low volume roads that are  
18 not designed to support the kind of sustained truck traffic the Waterfix construction operations  
19 will place on them. As others have observed, the Delta is not well suited for supporting  
20 roadways, especially roads subject to repeated heavy loads, due to the high groundwater table  
21 and poor soil conditions. The limited number of non-highway roads existing in the Delta are  
22 essentially floating on a mixture of decomposed vegetation and water, what some might call  
23 “muck.” Consequently, herculean efforts are required to maintain these roads in satisfactory  
24 condition for the limited existing traffic, primarily farming related, that uses them. Below are a  
25 few pictures showing the existing conditions of these roadways:  
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Note the narrow widths, tight turns, minimal shoulders, chip seal surfacing (and poor condition), settlement of concrete blocks, and other infrastructure such as pipelines and railroad crossings in these pictures.

### III. WATERFIX TRAFFIC ANALYSIS

The Introduction in the Construction Traffic Impact Analysis (Analysis) states: "...the analysis assumes a reasonable 'worst-case-scenario' of construction traffic that likely overstates construction traffic impacts regardless of changes that may be made to the underlying traffic assumptions for the project as a result of final engineering and design plans." Additionally, the Analysis states that it, "...identifies the potential traffic impacts associated with construction related activities, employees, and equipment, and recommends mitigation measures to avoid or reduce potential impacts."

However, as noted, the Analysis considers only 114 road segments. I want to refer back to Exhibit SJC-324, which shows additional road segments (shown in yellow) the project will presumably impact, but were not included. Considering the size of the project, how long it will take to construct, and all the materials, equipment, number of workers, and the fact that those workers coming from varying locations and distances, identifying and studying only 114

1 segments is surely irresponsible, perhaps negligent. Stated differently, in my opinion such a  
2 simplistic and incomplete approach to the issue falls below acceptable standards.

3 Also important, the Analysis is primarily focused on the Average Daily Traffic (ADT) and  
4 roadway Level of Service (LOS), both existing and with the project's construction traffic, for  
5 those 114 segments. While this data is important in determining some aspects of traffic  
6 operation and physical condition impacts, it does not address all aspects. Other aspects not  
7 addressed include: trip distribution; quantity of trucks vs. employee vehicles; any need for turn  
8 pockets, or temporary traffic signals; seasonal increase in traffic during harvest season;  
9 seasonal increases in traffic during hunting season and waterfowl migration season; the critical  
10 need for expedited transport of some harvested produce to the processing facilities; and slow-  
11 moving agriculture equipment that is common to the area and reduces LOS accordingly.

12 Despite the Analysis' Introduction noting that construction project employee impacts and  
13 mitigation measures were included, that does not appear to be the case. While the document  
14 identifies ranges of traffic volumes on the segments studied, it does not indicate how many  
15 trips involve heavy equipment or trucks, and how many are employee commuter trips. Further,  
16 the Analysis erroneously assumes the trips will be relatively consistent throughout the  
17 timeframe of 6AM to 7PM. However, the daily start and end of work periods should reflect  
18 higher volumes due to workers arriving/departing. In addition, some construction operations  
19 may have intensive traffic generation, while others less so. Typically, project traffic analyses  
20 include high intensity (peak hour/hours) traffic generation, which the Analysis does not include.

21 While LOS is a generally accepted analysis for volume-capacity computation for a  
22 freeway or a highway that has superior rights over secondary roads that cross these facilities,  
23 it is not a sufficient measure by itself when analyzing impacts to local roadway system. For the  
24 local roadway system, the operational success (or failure) also depends on how efficiently  
25 vehicles are processed at the intersections.

#### 26 **IV. ADDITIONAL SEGMENTS**

27 The Analysis appears to have excluded some key roadway segments, at least in San  
28 Joaquin County. I again want to refer to Exhibit SJC-324. For example, the Analysis includes



1 a portion of Eight Mile Road from Interstate 5 to the Stockton City Limit. However, it does not  
2 include the portion west of the Stockton City Limit. However, the Documents, including the  
3 Analysis, do not indicate that construction traffic will continue west to the Waterfix project  
4 alignment via watercraft or thru private property easements from the Stockton City Limit.  
5 Therefore, it appears construction traffic will almost certainly continue west on Eight Mile Road.

6 A second similar example is Blossom Road, north of Peltier Road. The Analysis  
7 includes the portion of Peltier Road from Interstate 5 west to Blossom Road. However, it gives  
8 no indication of construction traffic utilizing some combination of private property easement or  
9 watercraft from that point to the construction area(s). Thus, it seems the Analysis should  
10 include the portion of Blossom Road from Peltier Road to Walnut Grove Road. It does not.

11 Another example of a seemingly necessary road that wasn't included in the Analysis is  
12 Staten Island Road. Figure M3-4 (Sheet 6 of 15) in Exhibit SJC-325 clearly shows permanent  
13 access roads connecting to Staten Island Road, yet it is not one of the 114 segments included  
14 in the Analysis – despite its connection to Walnut Grove Road, which was included.  
15 Additionally, Figure M3-4 does not reflect any barge unloading locations for Staten Island, and  
16 the Documents do not indicate any use of watercraft or private property easements for access  
17 to work areas on Staten Island.

18 A fourth such example is Bacon Island Road. Again, I'll refer to Exhibit SJC-324.  
19 Bacon Island Road seems a key roadway relative to the Waterfix construction. It runs west  
20 and north from State Highway 4, and provides access to both Bacon Island and Mandeville  
21 Island. While Figure M3-4 shows barge unloading facilities for both of these islands, it also  
22 shows permanent access roads connecting to Bacon Island Road. In addition, it seems  
23 unrealistic that all construction materials, equipment, and employees will exclusively utilize the  
24 barge unloading facilities.

25 Again, these are but samples of omissions in the Analysis, by no means an exhaustive  
26 list of all the errors and omissions, and fundamental flaws, in the Analysis.

27 In addition to the failure to properly and accurately consider the full roadway links to  
28 complete the travel related to this project, the Documents do not indicate how materials,

1 equipment, and employees will access Venice Island, as there are no applicable road  
2 segments included in the Analysis or barge unloading facilities identified.

3         Given these examples, the Analysis is plainly incomplete and, if it is to meet the  
4 standards of work acceptable in this profession, the Analysis must be redone to address these  
5 shortcomings.

#### 6           **V. SAFETY, OPERATIONAL, AND PHYSICAL CONDITION**

7         The Analysis, incomplete and insufficient in its treatment of physical roadway conditions  
8 for the project construction traffic loading, is even more deficient with respect to safety and  
9 operational impacts. It includes little or no analysis of significant factors such as: foggy  
10 conditions during the fall and winter months throughout the Delta; limited or non-existent  
11 shoulders on the affected roads; slow-moving agricultural vehicles; tight turns; limited sight  
12 distance; narrow and sometimes winding roads; the need for temporary/supplemental lighting  
13 at permanent/temporary access road intersections with public roads; and other potential safety  
14 and/or operational mitigations.

15         As noted previously, our local roads in the Delta are an ongoing maintenance issue for  
16 the existing low traffic volumes. Given they are built on organic “muck,” essentially  
17 decomposed vegetation, and not typical load-bearing types of soils, coupled with a high  
18 groundwater level, they cannot withstand frequent heavy loading of the type most roads can  
19 withstand. Even under the existing low traffic volumes, these roads subside and heave with the  
20 fluctuating groundwater levels. When subjected to intensive heavy loading, the subsidence and  
21 heaving is greatly amplified, which manifests as very rough riding roads. Additionally, most of  
22 these roads are built on top of levees and have little to no shoulder to help keep the road  
23 intact. We have seen this first-hand when, for example, Reclamation Districts’ levee raising  
24 projects required soil truck traffic that made a good portion of Eight Mile Road nearly  
25 impassable by passenger vehicle and required extensive repairs at major cost. In addition,  
26 any bridges or culverts that would be subject to sustained heavy traffic loads require special  
27 analysis for accelerated deterioration. To that end, a strong monitoring program during  
28 construction is necessary. However, as San Joaquin County does not have sufficient staff or

1 equipment resources to take on additional monitoring or roadway repairs caused by the  
2 intense heavy hauling and other Waterfix related traffic impacts, all such monitoring and  
3 maintenance/repairs must be the responsibility of the Waterfix project, with oversight by the  
4 County to ensure proper procedures and standards are kept.

#### 5 **VI. CONFLICTS WITH SAN JOAQUIN COUNTY PROJECTS**

6 San Joaquin County has two major bridge projects that will also be in construction  
7 during the Waterfix construction. We are working jointly with Sacramento County to replace  
8 the Walnut Grove Road Bridge, located at our joint county line. The current bridge was  
9 constructed in 1955 and has been approved for replacement by the Federal Highway  
10 Administration. Construction is anticipated to begin in 2025, and take 3 years to complete.  
11 This bridge project will almost certainly have multiple work window restrictions relative to in-  
12 water work and special status fish and wildlife species, and could be hindered by Waterfix  
13 construction traffic. As this portion of Walnut Grove Road was included in the Analysis, it  
14 seems certain that the Waterfix construction traffic will need to cross this bridge. Therefore,  
15 more specific and detailed construction schedule information and analysis is needed to plan for  
16 Waterfix construction traffic impacts to the bridge project.

17 San Joaquin County currently operates a ferry to Woodward Island. The Federal  
18 Highway Administration has approved a project to construct a new bridge to replace the ferry.  
19 Consequently, San Joaquin County expects to start construction of the Woodward Island  
20 Bridge in Spring 2018. Construction is estimated to take approximately 2 years to complete.  
21 As noted above, it appears that Waterfix construction traffic will likely need to utilize the portion  
22 of Bacon Island Road where this new bridge will be under construction. This bridge project  
23 has multiple work window restrictions relative to in-water work and special status fish and  
24 wildlife species, and could be hindered by Waterfix construction traffic. Therefore, it is  
25 imperative the Analysis be revised to include Bacon Island Road to allow San Joaquin County  
26 to determine the potential impacts to the Woodward Island Bridge project.

27 The Documents do not provide any level of detail with regard to the project construction.  
28 More specifically, there is no discussion on the scope or timing of a given section or

1 construction element. Lacking any such detail, it is not possible to reasonably determine  
2 relative impacts to various aspects referenced in my testimony here.

### 3 **VII. ECONOMIC AND OTHER IMPACTS**

4 While the Analysis offers a limited quantitative picture of the potential construction traffic  
5 impacts, the Documents, including the Analysis, do not appear to address significant  
6 qualitative considerations. Examples include: agricultural crop harvests; flood fighting efforts  
7 by the Reclamation Districts; special events/festivals; and recreational tourism.

8 Some crops, such as wine grapes, require a very timely harvest and transport to  
9 production facilities. Delays or detours due to Waterfix construction could have moderate to  
10 significant economic impacts. For example, San Joaquin County has coordinated with  
11 Caltrans to schedule maintenance work on State Highway 12 around these time-sensitive  
12 harvests. DWR made no similar planning effort with respect to WaterFix.

13 The time it takes for the harvested grape to reach the processing facility and gets  
14 processed determines the quality and market value of the wine produced. For this reason,  
15 San Joaquin County carefully coordinates all its maintenance and construction operations with  
16 the local vineyards and the wineries to avoid economic impacts to their operation. It is  
17 apparent that the Analysis for WaterFix construction project did not take such factors into  
18 account.

19 With regard to flood fighting, the various Reclamation Districts are on a constant watch  
20 year-round for things such as water boils, seepage, rodent burrowing activity, slope erosion  
21 from wave action, and potential levee breaches. Additionally, they perform levee maintenance  
22 work including patching, grading, and vegetation trimming/removal. These efforts can become  
23 very timely to prevent major flood damage, so it is critical they have uninhibited access if and  
24 when the need arises. Waterfix construction traffic could significantly hinder these efforts. The  
25 Documents do not reflect any outreach to the various reclamation districts or any other effort to  
26 assess this issue. Nor do they propose mitigation to address these concerns.

27 The Delta plays host for many special events throughout the year. Examples of events  
28 include the Rio Vista Bass Festival and Derby, the Cajun and Blues Festival, Barron Hilton

1 Fireworks, Delta Reflections Lighted Boat Parade, and countless other smaller events hosted  
2 by the various marinas, yacht and hunting clubs, and others. Many of these events are a  
3 primary revenue source for the host entities and other Delta area businesses that benefit from  
4 the events. Such events are also a critical part of the cultural life of Delta communities.  
5 However, the Documents do not address how construction traffic may impact these types of  
6 events, or what can be done to mitigate any impacts.

7         Recreational Tourism in the Delta has become an important part of the region’s  
8 economy and continues to grow at a steady pace. Several marinas and restaurants have been  
9 well-established for many years and are well known to locals and tourists alike. As I touched  
10 on previously, the portion of Eight Mile Road that was all but destroyed by intensive soil  
11 hauling terminated at one of these long-standing marinas (Herman and Helen’s). San Joaquin  
12 County received many complaints about the poor condition of that roadway at the time, and  
13 about the detrimental impact to the marina’s business. Other roadways in the Delta have  
14 been similarly impacted by construction hauling. Below are pictures of Empire Tract Road  
15 during a construction project by the City of Stockton for a water intake facility:  
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These are but two small examples, compared to Waterfix. Given the intensity and extraordinary duration of the proposed WaterFix construction, we can expect many such situations to occur in the Delta if the project is approved. Again, the Analysis fails to address such concerns.

### VIII. SUMMARY

The Delta is unique in myriad ways, from its flora and fauna to its economic productivity, the cultural diversity and historical importance of its communities, its recreational opportunities, and the potential it holds for future generations. Without transportation access and vigilant maintenance of the local roads and highways that traverse it, and careful analysis of traffic impacts and thoughtful planning of the WaterFix construction project, that is all in jeopardy. The extraordinary scope, magnitude and duration of the WaterFix construction requires exhaustive specialized analyses that have not been done. Applying analytical principles developed for “run-of-the-mill” construction projects does not suffice for an approximately 14-year, multi-billion-dollar project that would create impacts akin to developing a small city. Therefore, it is critical that the Waterfix project recognize the special nature of the Delta and consider other options to address California’s water resource needs and how best to manage them.

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Executed at Stockton, California, on November 29, 2017.



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KRIS BALAJI