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FRIENDS OF YOSEMITE VALLEY and
MARIPOSANS FOR THE ENVIRONMENT
AND RESPONSIBLE GOVERNMENT

IN THE UNITED STATES DISTRICT COURT

FOR THE EASTERN DISTRICT OF CALIFORNIA

FRIENDS OF YOSEMITE VALLEY, a non-profit corporation; and Mariposans for the Environment and Responsible Government ("MERG"), a non-profit corporation, Plaintiffs, v. GALE NORTON, *et al.*, Defendants.	Case No. 00-6191 AWI DLB SECOND DECLARATION OF ROBERT CURRY IN SUPPORT OF PLAINTIFFS' REPLY MEMORANDUM ON REQUEST FOR RELIEF DATE: 10/16/06 TIME: 1:30 p.m COURTROOM: 3

I, Robert R. Curry, declare:

1. I am a registered California professional geologist and hydrologist, residing at 600 Twin Lanes, Soquel, California. I have been retained by plaintiffs as a consultant in the above-captioned case. The matters stated in this declaration are true of my own personal knowledge or from my own personal review of the case files in this matter, except as to those matters stated on information and belief, which matters I am informed and believe to be true.

2. I am an emeritus professor of Geology at the University of California Santa Cruz, and an adjunct professor of Earth Systems Science at California State University Monterey Bay. I specialize in water resource assessment, hydrology, and fluvial geomorphology. My doctoral dissertation at University of California - Berkeley was completed in 1967 and I have subsequently been employed as a university professor continuously until my retirement in 2006. I remain an emeritus professor at the University of California Santa Cruz and from 1995 to the present have helped develop and participated in a Watershed Science academic program at California State University. My consulting rubric is Watershed Systems. My curriculum vita is attached as Exhibit A to my September 2006 declaration (Document No.315.)

3. My doctoral dissertation at University of California Berkeley was completed in 1967 and focused on the Rates and Forms of Mass Wasting in the Yosemite area using historical photography of the Valley dating back to the 1850's and '60's. In the 1980's I worked as a geologist and/or as a contract consultant to the National Park Service in the Sierra. I am the coauthor of the National Park Service's Natural Regions Survey for the Sierra Nevada of 1982.

4. I have specialized in fluvial geomorphology, which is the study and understanding

of the transport of sediment by rivers and the interactions between erosion and sedimentation. I have conducted research and published over 100 papers on land stability, erosion, sedimentation, river landscape stability and wetlands, primarily focusing on environments in the Sierra Nevada of California, the Rockies and the Pacific Northwest.

5. Defendants respond to my declaration with submission of two declarants, respondents C. Scott Frazier and Joel Wagner. Of my 23 paragraphs, they find fault with only one non-substantive point, which is a matter of opinion and interpretation of the regulations. Their responses are provided to "clarify NPS policy and guidance.. ." (Joel Wagner ¶ 2.) The specific guidance given them by the NPS was informative, and while the Lodge EA referenced these documents at page G-3, the policies and procedures were not provided. It would have been helpful if it had been included in their initial reports or the EA.

6. The Defendants do not respond to the primary points of my declaration, such as my paragraphs 14, 15 and 21 that outline how specific wetland impacts that were not addressed in the Yosemite Lodge EA and wetland consultants report. I did not find fault with Defendants' methods of analysis or mapping of wetlands related to the Merced River and its tributaries. I concur with the responsive declarations that their work was conservative and fully in accord with regulatory procedures. However, my comments addressed the analysis of upland meadow sites separated from the Merced River banks and their alluvial deposits. I am concerned about the failure to accurately consider impacts to these important open-meadow attributes of the floor of Yosemite Valley. The declarations do not dispute these concerns.

7. As I explained in ¶15 of my declaration, the sources of water that create seasonal wetlands are not just the Merced River and its tributaries. They also include direct precipitation and snowmelt from the valley walls. These interior wetlands and source hydrologic conditions need to be assessed in the early spring, when no reported evaluations were conducted. While Defendants documented wetlands along the Merced River, they did not conduct the correct level of analysis for wetlands that are away from the Merced River, which are not so controlled by the hydrograph of the Merced but more so by the snowmelt on the Valley floor.

8. All of the Yosemite Valley floor drains to the Merced River. Snowmelt from the high country surrounding the Valley reaches the valley floor via the Merced River and its tributaries. Other rainfall and snowmelt on the valley floor and within the valley walls soaks into the talus slopes and directly into the valley floor soils. This water creates statutory wetlands within the Valley that are not related to water derived from the Merced River and its tributaries. This water that is not derived from the Merced but that saturates soils in parts of the Valley ultimately is either transpired by meadow vegetation or flows laterally to the Merced River. This water is very important for the Merced River because it carries nutrients to the benthic biota along the bed of the Merced River in late summer and fall, long after snow has melted and peak flows have subsided. In 1996 I evaluated this late season biotic support system in the Merced River at the site of the Jones and Stokes wetland report, under the direction of Jim Harrington from the California Department of Fish and Game's Aquatic Bioassessment Laboratory. This was part of a training session for professionals, including several NPS staff, to learn how to assess the health of a watercourse by evaluating its macrobenthic organisms. The importance of

this hyporheic flow and the organisms of the hyporheic zone under and adjacent to the river bed has been recognized as being critical to the health of rivers such as the Merced. The food resources that feed the fish and some birds in the fall and early winter in the Merced River owe their existence in part to water inflow that is delayed until after the spring snowmelt runoff peak. In our Mediterranean climate with no summer rainfall, that important water contribution to the Merced River originates as wetlands that were not assessed in the Jones and Stokes report.

9. Mr. Frazier's four points concerning what Jones & Stokes did are not focused on these critical wetlands, which can be impacted by development in the Valley. Mr. Frazier's points are addressed in order.

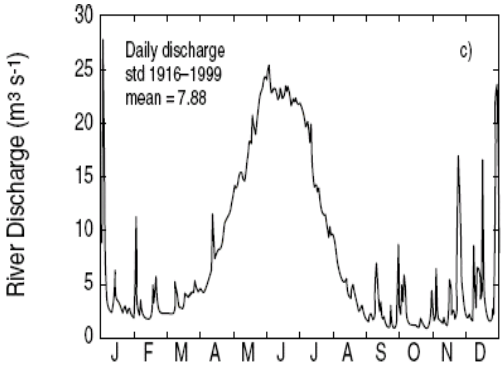
10. In his paragraph 13 Mr. Frazier contends that Jones & Stokes did conduct field surveys during the early portion of the growing season. I can only evaluate the field data sheets that they included in their report and upon which they base their wetland delineation. Their earliest reports are dated in May. The difference between their methodology to determine growing season and the method that I cited are not substantive. They calculated a 205-day growing season and I used a 198-day growing season. I determined that, based on real plant physiological responses on the Valley Floor (bud-break for shrubs) that growing conditions began in mid-March while they chose April 13. For a 15-day period of early growing season saturation, they would have had to evaluate soil moisture no later than April 28. The primary point of my declaration was that they did not indicate that they sampled during the early spring growing season when the upland meadow vegetation is restricted by high soil water levels. By not recognizing this early-season limiting wetland condition that is not related to Merced River

spring runoff derived from higher elevations snowmelt, they missed an important element of wetland creation and maintenance on the Valley Floor.

11. In his paragraph 12, Mr. Frazier further contends that Jones & Stokes did consider all possible sources of water, including local snowmelt and valley wall sources, based upon their interpretation that the Merced River hydrograph is largely a function of snowmelt, and they observed conditions in May and June when the groundwater levels and surface water levels are at their highest and the Merced River hydrograph is at its peak. My point was that the peak Merced River hydrograph is based on high-elevation snowmelt in the Merced River headwaters. Its peak time of runoff as measured in the Valley at Happy Isles is substantially later than the peak snowmelt time on the Valley Floor. I concur that they correctly used the peak Merced River hydrograph timing to evaluate correctly wetlands that are limited by that source of water. However, that is not the source of snowmelt and rainfall that affect the seasonal wetlands that are my concern here, as they are not directly controlled by peak flow in the Merced River.

12. A substantial report that evaluates that hydrographic records is found at http://pubs.usgs.gov/circ/circ1173/circ1173d/chapter03.html. That USGS study states "The annual hydrograph is driven by melting of a seasonal snowpack that accumulates between October and early April and melts during late April to June." The following figure shows the average daily flow of the Merced River at Happy Isles for the period 1916 through 1999. Note that the primary period of high water is mid-May through mid-July. It is this hydrograph that Frazier references in his responsive declaration as controlling the wetlands that they defined. (Figure is from **Air Temperature and Snowmelt Discharge Characteristics, Merced River at**

Happy Isles, Yosemite National Park, Central Sierra Nevada, D. Peterson, R Smith, S Hager, D Cayan, and M Dettinger, 2003 PacClim Conference proceedings)



13. In his paragraph 13, Mr. Frazier also contends that Jones & Stokes actually mapped a larger area of wetlands than normal because they observed shallow groundwater levels in May and June 2003, which represented an above-average condition. May and June of 2003 were only slightly higher than average with three years of higher water recorded in the prior decade The peak water depth in the Merced at the Happy Isles gauging station in 2003 was only 0.2 ft higher than the average for the prior decade. I have no doubt that this may have created

slightly greater areas of wetlands than "average" conditions, but that is immaterial. The wetland meadows that I refer to are not in any way related to the depth of water in the Merced River. Further, it is not the amount of water saturation in a given season that defines a wetland boundary, but the limiting high water condition of the prior several preceding years.

14. Finally, in his paragraph 14, Mr. Frazier contends that Jones & Stokes also utilized a conservative estimate of the saturated soil area as a means to delineate wetlands, which in his view resulted in more inclusive wetland delineation maps. I disagree with Mr. Frazier when he sates, at p. 6, lines 21-27, that "NPS WRD staff believed that the saturated capillary fringe could extend up to 2.5 feet above the water table in some areas, and as such, directed Jones & Stokes to consider a water table found within roughly 12-14 inches of the soil surface as a positive indicator of wetland hydrology, despite the fact that 2003 was an unusually wet year. This directive resulted in more inclusive wetland delineation maps, and ensured that Jones & Stokes did not undermap the extent of jurisdiction wetlands in the subject project areas." This is simply wrong. Two and a half feet above the water table would demand evaluation of soil saturation at a depth of 30 inches, not 12-14 inches. However, I concur with Jones and Stokes that 12-14 inches is an appropriate depth for wetland determination in meadows dominated by grasslands. In the lake sediments that underlie some of the upland meadows, the water tables are seasonally perched rather than subject to capillary fringe rises of several feet. But the fundamental failure of the Jones and Stokes report persists. They did not look at the sites in April and early May when that perched water table limited growth to wetland-tolerant species.

15. In my ¶14 I cited a specific example of Stoneman Meadows that I believe may be controlled and formed by direct and indirect precipitation and not the Merced River or its flood zones. If, as the respondents stress in their declarations, they were instructed to evaluate all the potential wetlands on the Valley Floor, they apparently missed this whole class of wetlands. These wetland meadows exhibit hydrophytic vegetation and hydric soils without mid-summer wetland hydrology. This is precisely contrary to the position take by Mr. Frazier in his ¶9, at page 4, lines 5-7.

16. Further, as I explained in my ¶21, a large area of wetlands near Yosemite Lodge, area YL-26a southwest of the Lodge, was delimited on their map as lying outside the "Limit of Work." (See Fig G-1 in *Appendix G: Draft Floodplain and Wetland Statement of Findings for the Yosemite Lodge Area Redevelopment, and* its orange line.) It was thus not considered in the tabulation of potentially affected wetlands in the Lodge EA, as I explained in ¶21. Because that is the largest wetland area near the Lodge, the environmental analysis of proposed changes diminishes the potential affects of those changes on total areas of wetlands.

17. The failure to adequately account for the sources of water and the existence of seasonal wetlands has consequences. It is impossible for the NPS to document that all environmental effects are to be properly mitigated. In addition, the overall hydrology of the Merced River is not adequately protected in the absence of such fundamental data. And finally, lacking such information, development of infrastructure, particularly with its impervious surfaces, may adversely and irreparably impact the hydrological relationship between sources of water and seasonal wetlands, particularly from development of impervious surfaces as will occur

with Yosemite Lodge redevelopment project and its realignment of Northside Road, resurfacing of the Loop Road, and Camp 6 parking development. Each of these has the potential to negatively affect wetlands.

Pursuant to 28 U.S.C. § 1746 and under the laws of the United States, I declare under penalty of perjury that the foregoing is true and correct. Executed this 1st day of October, 2006 in Soquel, California.

/s Robert R. Curry

Robert R. Curry