23 June 2014

Mr. Dwayne Johnson
Regulatory Branch, CESWG-PE-RB
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229
swg_public_notice@usace.army.mil

Re: Memorial Park Demonstration Project; USACE Permit Number SWG-2012-01007.

Dear Mr. Johnson:

I am submitting this letter in support of the application of the Harris County Flood Control District (HCFCD) for approval of the Memorial Park Demonstration Project (MPDP; USACE Permit Number SWG-2012-01007). I am a Board Member of the Bayou Preservation Association (BPA) and of the White Oak Bayou Association (WOBA); however, the comments in this letter are not intended to represent the views of either BPA or WOBA, or any other organization. Rather, this letter represents my personal perspective as a 30+ year Houston resident, with a strong interest in the water quality and ecological health of our local waterways, and as a geologist with 25+ years of professional practice in environmental hydrogeology.

That said, I unequivocally agree with the conclusions stated in BPA's letter to you, dated 16 June 2014; namely, that i) the effects of hydromodification in Buffalo Bayou, which have resulted from intensive urbanization and historical flood mitigation measures, are too severe and too advanced to be adequately addressed by an *ad hoc* patchwork of "channel armoring, bio-engineering or vegetative plantings" and that ii) "the scientific, design and engineering principles underlying Natural Channel Design [NCD] are sufficiently robust, well-defined and understood to justify going forward with the [MPDP] project."

As a geologist, I believe it is imperative to consider our environment, including our river systems and their ecology, from a regional, and even global, perspective, and from a long-term point of view. As a citizen, I believe we owe it to future generations to accept our responsibility as stewards of the land we inhabit, including its waterways. With this in mind, our local waterways should be understood and managed as tributaries to one of the most biologically diverse and productive estuaries on any continent, Galveston Bay, rather than as mere conveyances for stormwater runoff and sewage treatment plant effluent.

Buffalo Bayou, like many another tributary to Galveston Bay, exhibits symptoms of "urban stream syndrome," including but not limited to an imbalance of erosion and sedimentation resulting from the loss of dynamic equilibrium, as described in the BPA's comments cited above. In addition to the property damage noted in BPA's comments, channel degradation and accelerated erosion result in a higher load of suspended sediment. This reduces the water's capacity for dissolved oxygen, which in turn, impacts the stream's viability as habitat for macro-invertebrates and the fish and other fauna that depend upon them. Ultimately, the health of our vitally important Galveston Bay fisheries depends upon the ecological health of the estuary and of the tributaries discharging to it. Although to some, Buffalo Bayou may represent merely a "drop in the ocean," it is one of many impacted local streams which cumulatively impact the estuary.

Throughout most of the 19th and 20th centuries, to meet society's needs for transportation, power generation, flood mitigation, and waste disposal, our nation's river systems have been adversely impacted by a combination of neglect, abuse, and well intentioned but radically disruptive engineering solutions. We have dammed, diverted, channelized, straightened, dredged, paved and dumped industrial and domestic sewage into our streams. We have drained, filled and built upon many of our wetlands, and deforested and paved vast upland areas of our watersheds.

Fortunately, and hopefully not too late, our society has come to recognize that many of these past practices are incompatible with a healthy environment and that new approaches are needed. In the last years of the 20th and first years of the 21st centuries, science has focused more attention on the need to better understand the interplay of natural systems, regulations have been implemented to mitigate past and reduce future damage, and engineering has focused on developing more effective and sustainable approaches to environmental management. Much remains to be done, but I believe we are at a critical juncture in turning the corner toward a more sustainable environmental future.

Having worked for the past 25+ years in the field of environmental consulting, focused primarily on groundwater contamination, I have seen first-hand the progress that has been made and the potential for future improvement in mitigating historical damage. I also have directly experienced the challenges facing such efforts. Environmental restoration is a slow, expensive, imperfect, and sometimes controversial process. We cannot realistically expect to correct the damage that has occurred over a period of decades or centuries within a few years or even within our own lifetimes. But it is our generation's obligation to future generations to do what we can to at least begin the process of repairing past damage, reversing historical trends, preventing future impacts, and promoting proactive change in the way our society manages our natural resources.

Natural Channel Design is a good example of combining a better understanding of how natural streams work with the use of tested engineering and construction techniques to restore waterways to a more natural state and revitalize damaged habitats. As with any other scientific and engineering pursuit, it is an evolving field and with experience, it will continue to be improved. Implementation of the MPDP represents a rational approach to the specific problem of eroding banks and increased sediment load in Buffalo Bayou. It will also be another step forward in the development of a sound interdisciplinary methodology for restoring the dynamic equilibrium of damaged streams, with the potential for broader application within and beyond the Buffalo Bayou watershed.

While I can certainly understand the skepticism and reservations voiced by opponents of the project, it is unfortunate that some have chosen to mischaracterize the MPDP it as a "project to cut down trees" or to "destroy the riparian forest." It is true that during the construction process the area will be disturbed and trees will be lost, but in the long-term, a healthier Buffalo Bayou is worth the short-term disruption. Restoring the dynamic equilibrium of a damaged stream can be better accomplished by using the best available science and engineering in a systematic manner rather than waiting for nature to take its course or attempting spot "fixes" that merely move the problem down stream.

In conclusion, I urge the U.S. Army Corps of Engineers to issue the requested permit to allow the Memorial Park Demonstration Project to go forward.

Thank you for your consideration

Sincerely,

Robert S. Lee, P.G.

601 East 18th Street
Houston, Texas 77008

cc: Bayou Preservation Association