

Comments on the Tidal Basin Seawall Replacement Plan, May 31st, 2023

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Thank you for allowing me to comment on the plan. I begin with a short summary of my professional credentials and then present my opinions.

I earned a Ph.D in Oceanography from the University of Delaware in 1986 where I studied, and did research on physical oceanography. After two years as a Postdoctoral Research Assistant in the Department of Applied Mathematics and Theoretical Physics at Cambridge University, I joined the tenure-track faculty at the University of Connecticut in the Department of Marine Sciences. I was appointed to the rank of Professor in 1999, and for the last eight years I have served as the Executive Director of the Connecticut Institute for Resilience and Climate Adaptation (CIRCA), a program supported by federal agencies and the State of Connecticut to assist towns and state agencies develop strategies to address the impacts of climate change on the people, infrastructure, and ecosystems of the State. I also share ownership of Coastal Ocean Analytics LLC, where I work on an occasional basis as a consultant on coastal oceanography projects. It is as a private consultant, and in collaboration with Dr. Arnaldo Valle Levinson, that I offer the following opinions.

The first point I would like to raise is that the plan has missed the main threat to the parks surrounding the tidal basin, the increased frequency of flooding arising from sea level rise. An important lesson from my work in Connecticut is that by 2050 we should expect up to 20 inches, or 50 cm, of sea level rise above the 1983-2001 mean, and it is prudent to plan any new coastal project with that in mind. Note that this is approximately the upper bound of what is likely. There are obviously several ways of projecting the future and they differ, but this estimate is roughly consistent with them all. Further, projections of sea level rise by 2100 show that it is very unlikely to be less than 50 cm. Note that this is several times more than the estimates of the subsidence in the seawall included in the report. The practical consequence of this is that the expected frequency with which the park and access to the monuments should expect to be flooded will increase substantially. My colleague, Dr. Valle Levinson, and I made some preliminary estimates of what would happen if the conditions that led to flooding in March 2023 were to occur with just an additional 1ft of sea level rise. The graphics in his submission show that much of the FDR memorial would be flooded. Another way to think about it is that the March 2023 flooding should be expected every 5 years. These estimates should be refined by more detailed surveys and analyses and the impacts of more frequent flooding on the use of the park and monuments by the public, and then increased costs of maintenance of the infrastructure should be assessed.

I understand that the authors of the report may not have been instructed to be forward-looking in their project plan. However, this park and the surrounding monuments are important national assets, and an expensive project like this should not move forward without a credible assessment of the future flooding risk. The design should determine what flooding risk is tolerable in 2050 and 2100, and then the design of the project should be developed. I think it obvious that the most cost-effective adaptation strategy for towns and agencies is to build resilience into the routine maintenance plan for infrastructure. Not doing so is imprudent use of public funds.

A second point I'd like to emphasize is that the existing tide gates that bound the basin and the elevation of the seawall along the river provide an obvious mechanism to protect the area of these national monuments from flooding. This is exactly the type of project that the US Army Corp of Engineers has extensive experience in executing. Of courses it would require interagency cooperation to design the project, and there would need to be an assessment of the potential for flooding due to rainfall. But this is the time to do that.

The proposition of the report is that the proposed seawall replacement is the only alternative to doing nothing. Another is obvious. The wall should be raised to a higher level in concert with the development of a plan to operate the tide gates to protect the monuments. Without reducing the flood risk to these national treasures, there is little value to replacing the wall. On its own, the area is a low value dredge material disposal site. The motivation for any substantial project in this area should include protection of the main assets.