



## NARROW RIVER PRESERVATION ASSOCIATION

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### Narrow River Preservation Association (NRPA) Position on Proposed Dredging at the River Mouth

September 16, 2024

The Narrow River Preservation Association (NRPA) is the State-Designated Watershed Council for Narrow River. NRPA was founded in 1970 and since that time has worked to engage people to preserve and protect the Narrow River (Pettaquamscutt Estuary) and its watershed.

We greatly appreciate the efforts to date by the town and others to craft a plan to address concerns over safe navigation at the mouth of Narrow River and water quality within the estuary. These concerns are shared by the NRPA Board of Directors and our membership. The NRPA Board of Directors has increasingly heard from our membership who have concerns about shoaling at the mouth and lower river reaches, particularly following storms over the last two winters. Dune erosion, storm over wash, and longshore sediment transport from the Narragansett Town Beach have all contributed to the recent sedimentation inside the river mouth. **As an organization, we are committed to working with the town and other stakeholders to develop a well-designed dredging plan that restores tidal exchange, improves recreational safety, and bolsters the resiliency of the adjacent beach-dune system.**

A dredging project of this scale will be complex, and the environmental consequences should be understood to the extent possible. It will include input from many stakeholders, including the Towns of Narragansett and South Kingstown, state permitting agencies (CRMC, RIDEM), federal permitting agencies (US Fish and Wildlife Service, US Army Corps of Engineers, National Marine Fisheries Service), private entities (e.g., The Dunes Club), residents of the Narrow River Watershed, and of course, NRPA Board of Directors and our members. We submit the following comments on the current hydraulic and mechanical dredging and nourishment alternatives:

1. NRPA recognizes this undertaking is both dredging and beneficial re-use of dredged material for coastal resiliency. NRPA recognizes beach/dune nourishment as the only meaningful action to protect infrastructure in cases where a managed retreat is not practical. The dune restoration associated with the new Alternative 5 also appears to offer resiliency by reducing over wash of sand into the mouth during smaller coastal storms. This benefit is not offered by those alternatives proposing nourishment of the Town Beach.
2. Shoaling at the river mouth (formation of tidal deltas) is a natural process that will continue after the initial dredging concludes. The decision to dredge the river mouth should therefore be made with full understanding that the action will require periodic re-dredging to maintain safe navigation. Sediment transport into the river during storms and as a result of longshore transport from Narragansett Beach will continue.
3. Sand deposited at the mouth of the river is largely the result of erosion at the spit and sediment transport from the adjacent Town Beach. This is supported by findings of the town-



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sponsored Woods Hole Group (2011) study and by the comments of URI Professor of Oceanography J.P. Walsh (attached). The periodic land-sourced beach nourishment by the town appears insignificant in comparison to the ongoing beach and dune erosion and the volumes of sand that are proposed for dredging.

4. The trend of more intense coastal storm events along with the well-documented acceleration of sea level rise at the Newport Tide Station will exacerbate beach erosion and shoaling within the river mouth into the future.
5. With the assistance of Professor Walsh, NRPA has reviewed the limits of proposed dredging. We suggest adding to the scope the constriction between the sandbar and Sprague bridge. As the dredging plans evolve, NRPA will continue to review and seek guidance and suggested modifications from experts to maximize the design life of navigation improvements (recognizing the dynamic nature of the system and coastal storms – any improvements have the potential to be very short-lived)
6. NRPA recognizes that the resources may not exist to fund additional hydrodynamic modeling and furthermore, that results from additional modeling may not be conclusive. Previous modeling studies have shown that dredging would likely reduce tidal flushing time within the lower river, increase the tide range, and improve water quality. Utilizing the existing data, we suggest the town engage with stakeholders to understand if increasing the tidal range will have consequences for the health of salt marshes in the estuary.
7. An investment at this scale should be coupled with a robust pre- and post-monitoring program to inform adaptive management decisions during the inevitable future maintenance dredging and beach nourishment/dune restoration activities.
8. NRPA recognizes that sand removed for the mouth of the river is a public resource and the benefits derived from the re-use of this material to enhance the coastal resiliency of both private and pay-for-use public infrastructure need to extend, in some tangible means, to the public at large.

NRPA looks forward to working with the town and all stakeholders on this important issue.



Dr. Veronica Berounsky  
President, Narrow River Preservation Association  
PO Box 8, Saunderstown, RI 02874


Dear Dr. Berounsky and the Narrow River Preservation Association (NRPA) Board,

I have been researching coastal and marine sedimentary processes for over 25 years, and I am currently a Professor in Graduate School of Oceanography at the University of Rhode Island. Given my experience, the NRPA has recently asked about my perspective on the proposed dredging of the Narrow River mouth by the Town of Narragansett. Please note that the views and opinions expressed herein are mine and do not necessarily reflect the views or positions of the University of Rhode Island.

There are four key overarching points that I would like to highlight: 1) NRPA has a justifiable concern about sediment dredging or other potential environmental disturbances to the Narrow River or its watershed; 2) dredging options provide both navigation and sediment re-use benefits relevant to two critical issues: boating safety and coastal erosion; 3) the Narrow River mouth has shoaled dramatically over recent years while erosion of the adjacent beach and dune system has transpired, and these related issues are not permanently solved by this project, and 4) pre- and post-monitoring of the area should be conducted to inform decision-making and help understand the past, present and future evolution. Each of these points are detailed more below.

Given that the NRPA “... engages people to preserve and protect the Narrow River (Pettaquamscutt Estuary) and its watershed.”, it is logical and important for the NRPA to weigh in on the proposed dredging project or other activities with potential ramifications for the ecosystem and its services. The project specifics were detailed in a presentation titled *Dredging of the Narrow River* by Foth Infrastructure & Environment, LLC to the Town of Narragansett on August 5, 2024. The powerpoint shows the current state and recent changes of the river mouth and outlines three “Alternate” interventions to restore navigation. Some details (volumes and profiles) of how dredged sediment would be beneficially reused to mitigate erosion of Narragansett Town Beach (NTB) are included. Nourishment to the adjacent mouth spit was mentioned during the August meeting, but no specifics are shown in the powerpoint.

Boat safety in the area is a valid concern and relevant to the mission and vision of the organization. NRPA members have verbally noted that if navigation is the primary objective, dredging farther upstream also should be considered (i.e., farther to the northwest; Fig. 1). Erosion is another important issue in the area, and an additional benefit of the project is the potential use of the dredged sand for beach nourishment. Indeed, the NTB has eroded significantly since 2011, and this past winter was especially erosive along the oceanfront.



To my knowledge, a full sediment budget or transport model have not been completed previously for the area. However, there is good evidence suggesting that much of the sediment shoaling near the river mouth is related to local erosion, e.g., material from immediately southwest of the mouth (Fig. 2). Recent erosion has been very high along the oceanfront (~45 ft dune loss since 2011 seaward of the house noted in yellow, Fig. 2), and a large area of overwash sediment deposition is visible (Figs. 1 and 2). Over time, sediment supply from NTB and areas between is likely being driven to the river mouth through wave-driven northeastward longshore transport. A 2011 nourishment feasibility study of Narragansett Town Beach by the Woods Hole Group discussed the dominant longshore transport and evaluated design life for potential nourishment projects. This work illustrated that NTB nourished areas would deflate relatively rapidly due to longshore transport – with 30% or less of nourishment volume remaining after three years without any other type of intervention. In the Foth study, all of the proposed alternatives will help address the shoaling in the short-term. But, without dune/beach restoration of the mouth spit, longshore transport and overwash will likely continue with each strong storm, potentially rapidly refilling areas that are dredged. Having said that, any beach/dune restoration of the spit may also fail with a large event(s) (e.g., last winter), so there is no easy solution. A mature, vegetated dune takes many years to develop, and may not be sustainable in this eroded and dynamic locality. Another factor to consider is the impact of dredging on tidal range and water quality. A 2016 study undertaken by the U.S. Fish and Wildlife Service (USFWS), The Nature Conservancy (TNC), U.S. Army Corps of Engineers and the RI Coastal Resources Management Council used a robust hydrodynamic model (ADCIRC) to assess dredging impacts on flushing and water levels upstream (Report by C. Swansen, M. Spaulding and A. Shaw, 2016). With larger dredging, greater change in the tidal flushing and range was observed. Given the potential impact of dredging on the tidal regime and thus habitat functioning (e.g., wetland inundation), the USFWS, TNC and other management entities should be consulted if they have not been already.

Last but not least, monitoring before and after any project should be planned to better understand system dynamics and guide future decision-making. Dredging projects will typically need to be repeated over a cycle related to sediment influx and geomorphological dynamics, and future investments should be anticipated sooner or later. Tracking change will inform the processes and rates of system evolution, and if a storm rapidly refills the area, some reimbursement by FEMA may be achieved with appropriate data evidence.

I believe the Town of Narragansett has reasonable possibilities to address shoaling issues in the Narrow River mouth and simultaneously mitigate NTB erosion; however, there are some outstanding concerns that should be carefully considered in consultation to NRPA and other management entities.

Sincerely,

A handwritten signature in black ink, appearing to read "J.P. Walsh". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

J.P. Walsh, Ph.D.

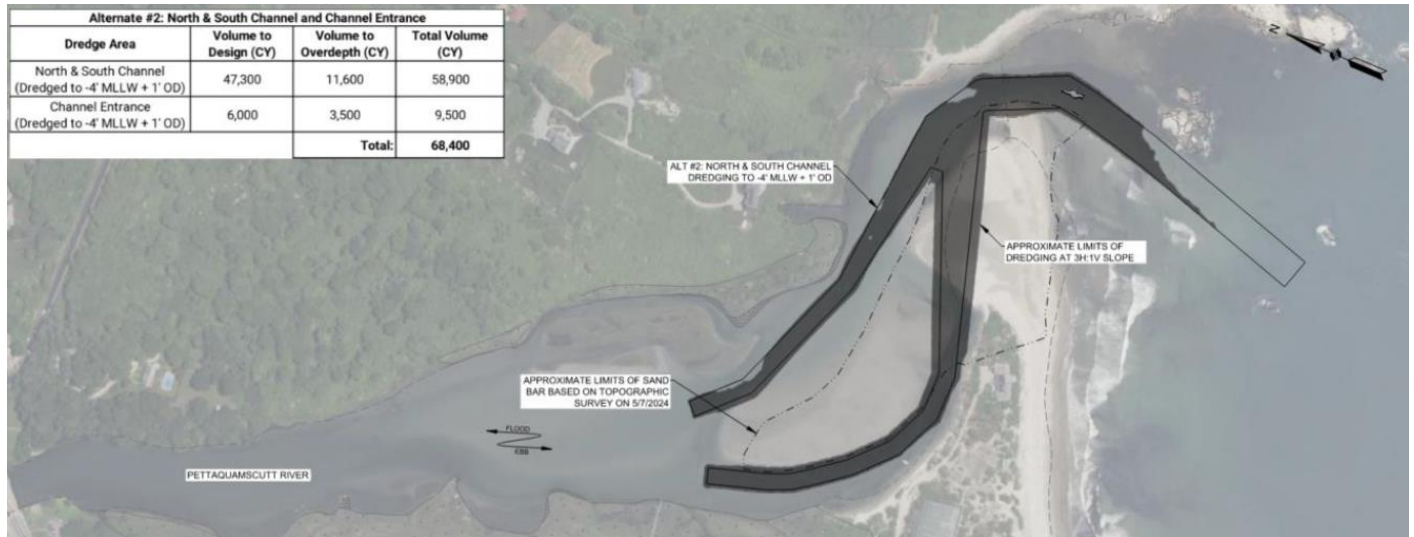


Fig. 1. Design Alternate #2 from aforementioned presentation from Foth Infrastructure & Environment, LLC. Based on the Town of Narragansett meeting, this alternate seemed to be the most preferred. Two concerns include with this plan include: west of the proposed dredge area a shoal is present (visible in the imagery) that may also need to be considered for dredging and the southern spur of the dredge channel crosses the overwash fan which may be reactivated during future moderate storms,.





Fig. 2: Aerial images from 2011 (top) and 2024 (bottom) with text and arrows showing erosion and deposition. Erosion is also evident to the west (not shown) and has been previously documented by the RI Shoreline Change Special Area Management Plan (<https://www.beachsamp.org/coastal-erosion-maps/>). Yellow box highlights a house that is visible in both images. Approximately 45 ft of dune erosion has occurred seaward of the house between 2011 and 2024.