

Waterway Management Report to the Joint Legislative Committee on the Capital Improvement Program

The Department of Natural Resources and Environmental Control (DNREC) submits the following report to the Joint Legislative Committee on the Capital Improvement Program required by epilogue to Fiscal Year 2022 Bond and Capital Improvements Act SB200. “DNREC shall provide a report of the projects, priority rankings, and timelines for completion of the dredging, navigation, and channel marking related projects within the Inland Bays to the Joint Legislative Committee on the Capital Improvement Program by September 1st of each year.” This report fulfills this requirement for state fiscal year 2022.

Background

State-managed dredging operations began in 1968 in Delaware when DNREC’s Soil and Water Conservation Commission was directed to determine the feasibility of dredging five inland channels by the Delaware General Assembly (DNREC, 1968). Over time the dredging program grew into a comprehensive waterway management program with continued support from DNREC and the General Assembly. Table 1 lists all public dredging projects completed by DNREC since the beginning of the dredging program.

Table 1: Past locations of public dredging projects performed by the program

Channel	Year Last Dredged:	Water Body
Indian River Inlet Marina	2021	Indian River Bay
Augustine Boat Ramp	2021	Delaware Bay
Indian River – Millsboro	2020	Indian River Bay
Massey’s Ditch (contracted)	2020	Rehoboth Bay/Indian River Bay
Assawoman Canal	2018	Little Assawoman Bay/Indian River Bay
Lightship Overfalls Berth - Lewes	2018	Delaware Bay
Holts Landing State Park Boat Launch	2016	Indian River Bay
Pepper Creek	2015	Indian River Bay
Little River (contracted)	2015	Delaware Bay
Murderkill River (contracted)	2014	Delaware Bay
Vines Creek	2014	Indian River Bay
University of Delaware College of Marine Studies Facility (contract with University)	2016	Delaware Bay
Delaware City Mooring Basin	2011	Chesapeake and Delaware Canal
Garrison’s Lake Boat Launch	2007	Garrison’s Lake Kent County
White Creek	2001	Indian River Bay
Summit North Marina	2000	Chesapeake and Delaware Canal
9 Additional Bay Dredging Projects	1971 - 1995	Delaware Bay (5), Rehoboth Bay (3), Little Assawoman Bay (1)

Today, waterway management program activities by DNREC are funded through a combination of Bond Bill appropriations and revenue from the Waterway Management Fund (i.e., boat registration fees). Annual Bond Bill appropriations to DNREC’s Division of Watershed Stewardship Shoreline and Waterway Management Section are split between beach preservation activities (e.g., federal and state beach nourishment projects) and waterway management activities (e.g., dredging, macroalgae harvesting, navigation marker maintenance). The majority of the appropriated funds often go to support federal beach nourishment project cost-sharing. Table 2 shows the typical schedule of waterway management activities. This schedule is largely governed by time-of-year restrictions related to environmental impacts of dredging on fish, bird and shellfish species.

Table 2: Typical annual schedule for waterway management activities undertaken by DNREC

January	February	March	April	May	June	July	August	September	October	November	December
					peak recreational boating						
dredging								dredging			
		dredge repair and maintenance									
				algae harvesting							
		channel marker maintenance									
navigation hazard removal											
							navigation channel surveys				

Dredging

While the state dredge program has evolved, the need for major navigation works remains. Large-scale dredge projects are accomplished through hired contractors - a contracted consulting engineering firm handles the planning, permitting and construction management, and a contracted dredge company performs the dredging. Masseys Ditch dredging completed in early 2020 is an example of a project executed in this manner because it exceeded the practical capacity of DNREC’s equipment and staffing levels.

Additionally, the number of channels in the Inland Bays and along the Delaware Bay under the State’s responsibility has increased since the program’s creation. Changes in channel authorization from the federal government (whether caused by funding or other reasons); the addition of public access facilities like boat ramps along channels; and increased popularity of recreational activity on the Inland Bays have all contributed to the increased scope of the state’s waterway management portfolio. It is important to note Massey’s Ditch, the Indian River Bay Channel and the Lewes-Rehoboth Canal in the Inland Bays are federally authorized but are in some cases maintained by the State due to federal funding constraints. The Murderkill and Mispillion River Entrance Channels along Delaware Bay are also federally authorized channels that are in some cases maintained by the State due to federal funding constraints.

A data-driven method for prioritizing dredging projects statewide is being developed by DNREC. For the Inland Bays, datasets (2019 to 2020) were identified and collected to develop quantifiable criteria. In 2021, using feedback from stakeholder survey responses and internal

expertise, weighted metrics were used to prioritize potential future dredging projects. To support the statewide prioritization process additional datasets are being collected, along with bathymetric survey data to update shoaling calculations, and weighting criterion will be finalized. Draft statewide dredging priorities have been established and are reflected in this document. The prioritization is designed to update annually to reflect new and updated data.

Statewide prioritization criteria identified by DNREC staff and Inland Bays stakeholders (including local leaders, residents and business owners) are listed below. Of particular importance are major channels connecting bodies of water; number of existing ramps; marinas and boat docks on a channel; and the availability of material disposal options (both upland disposal and beneficial use) near a channel. Prioritization criteria include:

- dredging history;
- major channels connecting bodies of water;
- number of existing marinas/boat docks on a channel;
- number of public and/or publicly accessible (pay to use) boat ramps on a channel;
- availability of upland confined sediment storage facilities near a channel;
- options for beneficial use of dredge material;
- environmental impacts;
- economics;
- safety (i.e., tow reports);
- emergency vessel uses; and
- navigability (i.e., volume of shoaled material to remove).

Based on the completed prioritization analysis for the Inland Bays, feedback from stakeholders and preliminary statewide data, the following channels are scheduled for maintenance to preserve or restore navigable depths within the next five years:

- 1) White Creek – engineering and design work began in September 2020 and construction is expected to begin no earlier than October 2022 and to be completed by April 2023. During the engineering phase, the project team evaluated the feasibility of various material management options and selected thin layer placement on nearby publicly-owned marshes to enhance their resiliency. Removal of 35,000 to 50,000 cubic yards of sediment is planned to restore channel depths to –4 feet relative to Mean Lower Low Water (MLLW) in the main channel and –3 to –4 feet MLLW in the upstream prongs.
- 2) Murderkill River Entrance Channel – Based on recent bathymetric surveys, navigation in the Entrance Channel to the Murderkill River is adversely affected by approximately 30,000 to 40,000 cubic yards of sediment above the design depth of 7 feet below MLLW, which in some areas has formed visible sand bars at low tide. Engineering and design work is underway to put a contractual dredge project out for public bid in fall 2021 to perform dredging under existing permits and within the same parameters as the 2014 dredging project. Dredging is expected to conclude before April 2022. In parallel, DNREC is pursuing permit modifications to allow the targeted harvesting of beach quality sand from the sandbar partially occupying the Inlet, also planned for execution

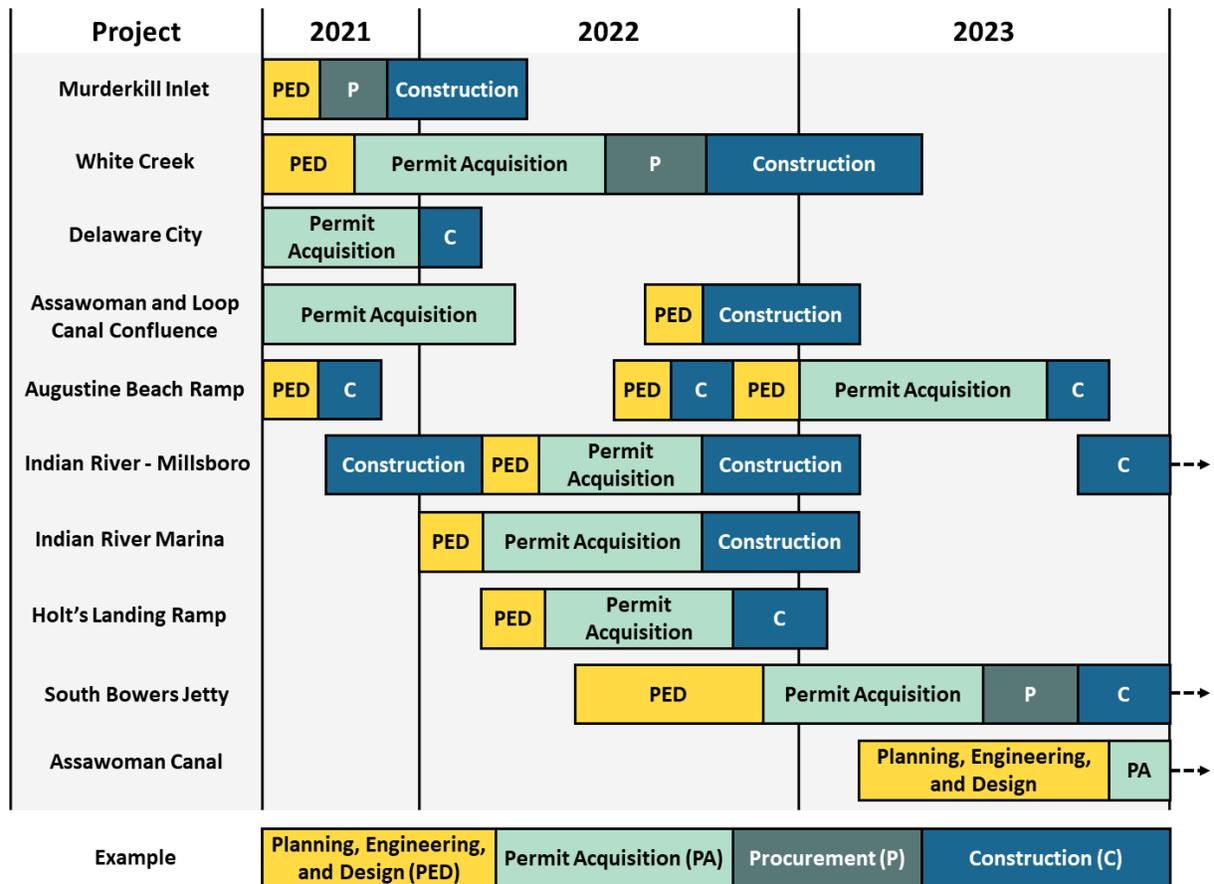
prior to April 2022. During both projects, beach quality sand will be used to nourish South Bowers beach and other sediments will be disposed of at an approved offshore site. In 2022, DNREC will conclude a planning project examining the potential for more broadly beneficially using sediment dredged from the Murderkill and St. Jones Rivers in beach habitat restoration projects in Bowers and/or South Bowers, with funding from the National Fish and Wildlife Foundation National Coastal Resiliency Fund.

- 3) South Bowers Jetty Rehabilitation – The existing jetty at South Bowers does not adequately prevent sediment from passing from the beach into the navigational channel at the Murderkill Inlet. Planning and preliminary designs for this project were developed in 2015, and these will need to be revisited and verified. New state and federal permits will need to be obtained and previous permit restrictions only allowed for construction to occur September 1 to March 1. The targeted timeframe for construction is in the fall of 2022.
- 4) Delaware City Branch Canal and Mooring Basin - Emergency vessel docking is impaired in the Delaware City Branch Canal, and the ability to perform future work in this location will diminish because existing upland disposal facility is to be developed. The permitting phase for this project is underway currently. Federal authorization has been obtained, and the state Wetlands and Subaqueous Lands permit application has been submitted and is in process. This project will be performed by the state dredge and crew in the winter of 2021 to 2022.
- 5) Indian River (Millsboro area) - This area is expected to be dredged in winter 2021 to 2022 using the state-owned dredge and crews, and we expect dredging to occur yearly at this location. DNREC is investigating the beneficial reuse of sediments dredged from this area in a marsh restoration project along the River.
- 6) Assawoman Canal – This state-managed waterway (managed by the DNREC Division of Parks and Recreation) fulfills the highly-ranked prioritization criteria of being a waterway that connects large water bodies (Indian River Bay and Little Assawoman Bay) and has historically had many complaints about shoaling. We expect that this waterway will continue to be a priority for debris clearing and we are planning a small dredging project to clear shoaled areas at the confluence of the Canal and the Bethany Loop Canal in the winter of 2021 to 2022. Planning has also begun for a larger contractual project for addressing shoaling throughout the entirety of the canal, and for this project we are targeting fall/winter of 2022 for construction.
- 7) Lewes & Rehoboth (L&R) Canal - The high priority ranking reflects that the L&R Canal is popular among recreational boaters and connects the Inland Bays with Delaware Bay. However, the large footprint of the dredging needed as well as limited sediment disposal options remain outstanding challenges for this project. DNREC is coordinating with USACE to understand the potential for federal participation in maintenance while this channel remains on the long-term (3 to 5 year) planning portfolio.

DNREC's Divisions of Watershed Stewardship, Parks and Recreation, and Fish and Wildlife work together to maintain public boat access sites such as: Indian River Marina, Augustine Beach Wildlife Area boat ramp and Holts Landing. These sites are dredged “as-needed” (typically 1 to 5 years) using state equipment and the state dredge team. Indian River Marina and Augustine Beach Wildlife Area boat ramp are expected to be dredged in the next 2 years. A survey of the Holts Landing boat ramp approach in August 2021 showed only incremental depth changes since the previous dredging 5 years ago. Holts Landing will need to be maintenance dredged again, likely in the 3 to 5 year timeframe.

Table 3 shows the estimated timeline for the planning, engineering, design, permitting, procurement and construction of upcoming major waterway management projects. This schedule is subject to change based on factors such as unexpected sediment characteristics, permitting considerations and bidding results.

Table 3: Estimated timeline for upcoming waterway projects currently planned by DNREC



Channel Marking

DNREC is responsible for almost 200 individual channel markers in 9 channels. Work is performed in two phases: pre-season marker maintenance from approximately March to May, and in-season maintenance from May through August. The goal of pre-season maintenance is to perform major repairs and ensure marker alignment with channels, while in-season maintenance primarily repairs damage to markers caused by boaters during the months of peak recreational boating.

To date, one buoy has been replaced in Bakers Channel; 16 poles were replaced, and new signs were installed in Roy Creek; seven signs and poles in Pepper's Creek; six in Love Creek; 11 in the Little Assawoman Bay channel; and 10 in the Indian River. Four floating buoys were installed in the approach to White Creek in the Indian River Bay. As per the Fiscal Year 2022 Bond and Capital Improvements Act (SB200) epilogue, DNREC is tasked with maintaining and marking navigational channels not maintained and marked by any entity of the federal government. Therefore, DNREC's channel marking responsibilities are increasing as the United States Coast Guard has indicated their intentions to no longer maintain several markers in multiple channels in the Inland Bays.

With increased productivity due to equipment upgrades DNREC can assume additional channel marking responsibilities where navigational safety is an overriding concern. In 2019, using Bond Bill funds appropriated to the Shoreline and Waterway section, DNREC purchased a 16 feet by 30 feet sectional barge, excavator with vibrating head and a jet boat for channel marking that was used for the first time this season. With acquisition of the new equipment, DNREC also took the opportunity to upgrade to 6 inch diameter marker poles, from the previously used 4 inch diameter poles, because they can now be placed efficiently and have an estimated useful life of 10 years.

Other Waterway Management Activities

In 2021, nuisance macroalgae complaints were received and investigated; however, no algae in amounts warranting deployment of the harvester was observed. Nuisance macroalgae peaks in June and July, which overlaps with in-season channel marker maintenance. Navigation hazard removal (e.g., debris, downed trees, derelict vessels) is ongoing throughout the year in the Inland Bays, however, due to increased boater traffic in the spring and summer months, most debris removal is completed during the period between April and September in response to reports made to DNREC by the public. For example, the crew recently responded to a derelict barge complaint in White Creek. The barge was towed to the Indian River Marina and removed from the water.

In 2019, the Section also performed baseline depth surveys of almost all state-maintained channels. These surveys will be updated regularly for use in the Inland Bays and Statewide Dredging Prioritizations. DNREC is sharing these surveys upon request with members of the public for informational purposes only (i.e., not to be used for navigation). Channels surveyed by DNREC during FY2021 include: Massey's Ditch, Bakers Channel, Indian River Bay Channel

(from Indian River Inlet to Millsboro), Roy Creek, Guinea Creek and Rehoboth Bay Channel. We are also coordinating with the US Army Corps of Engineers to share survey data and leverage existing channel survey data sets.

DNREC has also recently improved community outreach related to waterway management activities and dredging projects. We migrated and improved the information related to waterway management available on the agency's website. Improvements include dedicated websites and online comment forms for individual dredge projects, such as the website recently created for the White Creek dredging project (de.gov/whitecreek). A virtual public workshop for sharing conceptual designs and soliciting feedback was held for the project as well. We intend to conduct interactive public workshops for many more navigation channel dredging projects going forward, including the Murderkill River entrance channel in the fall/winter of 2021.