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About the Authors

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About the Virginia Coastal Policy Center

The Virginia Coastal Policy Center (VCPC) at the College of William & Mary Law School provides science-based legal and policy analysis of ecological issues affecting the state's coastal resources, by offering education and advice to a host of Virginia's decision-makers, from government officials and legal scholars to non-profit and business leaders.

With two nationally prominent science partners – the Virginia Institute of Marine Science and Virginia Sea Grant – VCPC works with scientists, local and state political figures, community leaders, the military, and others to integrate the latest science with legal and policy analysis to solve coastal resource management issues. VCPC activities are inherently interdisciplinary, drawing on scientific, economic, public policy, sociological, and other expertise from within the University and across the country. With access to internationally recognized scientists at VIMS, to Sea Grant's national network of legal and science scholars, and to elected and appointed officials across the nation, VCPC engages in a host of information exchanges and collaborative partnerships.

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VCPC grounds its pedagogical goals in the law school's philosophy of the citizen lawyer. VCPC students' highly diverse interactions beyond the borders of the legal community provide the framework for their efforts in solving the complex coastal resource management issues that currently face Virginia and the nation.

I. ISSUE PRESENTED[1]

This research paper explores ownership rights at sites with material from completed dredging projects, supplying a general overview of this issue. This paper also explores the question of whether quality dredged material stored on a publicly-owned upland site can be used later for other applications.

II. BRIEF ANSWER

Current practices in the use and non-use of dredged material make ownership rights issues largely prospective. Presently, a majority of dredged material is considered unsuitable for beneficial use projects. Indeed, it is generally *misconceived* as a waste product. This material is disposed—either in open water, confined disposal facilities (usually when the material is contaminated), or in other upland disposal facilities—and, once disposed, the question of reuse for other applications is, for all intents and purposes, off the table. As a result, ownership rights are largely irrelevant. For the proportion of dredged material currently being used for beneficial use projects, the time, place, and manner of the uses also make most ownership rights questions superfluous. To the extent any such ownership rights issues arise currently, they are relatively straightforward issues resolved by property and contract law.

Quality dredged material stored on upland sites can and should be used for other applications. Interestingly, as discussed below, the widespread perception of dredged material as waste plays a large role in holding back such use. However, even as society begins to see dredged material as a resource, the practical limitations of beneficial uses—such as site proximity, desiccation and decontamination, and transportation—remain. Luckily, more uses are being conceived that would allow more dredged material to be used rather than disposed. These uses could harness material stored at upland sites.

III. BACKGROUND

A. What Is Dredging?

The Virginia Department of Environmental Quality's (DEQ) Virginia Water Protection Permit Regulation defines "dredging" as "excavation in which material is removed or relocated from beneath surface waters."[2] Dredging can be done for a number of purposes. First and foremost, dredging helps increase or maintain the depths of Virginia's navigable channels, making them safe for boat traffic.[3] Dredging may be required for construction projects such as bridge or dock construction.[4]

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[1] This research paper is a companion to another paper addressing regulatory frameworks and permitting challenges for projects involving the beneficial use of dredged material.
[2] 9 VA. ADMIN. CODE § 25-210-10 (2018).
[3] *See* Nat'l Oceanic and Atmospheric Admin., *What is Dredging?*, NAT'L OCEAN SERVS. (Jun. 25, 2018), https://oceanservice.noaa.gov/facts/dredging.html.
[4] *Dredging 101*, GEOFORM INT'L, https://geoforminternational.com/sediment-removal-101/ (last updated Apr. 4, 2019).

By removing dead vegetation and contaminated material that builds up from sewage accumulation, industrial discharge, and stormwater runoff, dredging can reduce human and wildlife exposure to harmful substances.[5] Relatedly, dredging can mitigate eutrophication, the buildup of excess nutrients in a waterbody due to runoff.[6] Given its many purposes, dredging is a common activity, and such operations result in a large amount of dredged material being excavated from Virginia waterways.

B. Beneficial Use Projects

Although the act of dredging is largely beneficial, dredged *material* has been traditionally viewed as waste, due in no small part to the misconception that most if not all dredged material is contaminated and unusable.[7] In 2007, the Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE) emphasized that there must be a "shift from the common perspective of dredged material as a waste product to one in which this material is viewed as a valuable resource that can provide multiple benefits to society."[8] To accompany this shift in mindset, EPA and USACE identified myriad potential beneficial uses for dredged material:

> Beneficial uses of dredged material involve the placement or use of dredged material for some productive purpose. Examples of beneficial uses of dredged material include habitat development (e.g., wetland restoration or creation, fishery enhancement); development of parks and recreational facilities (e.g., walking and bicycle trails, wildlife viewing areas); agricultural, forestry, and horticultural uses; strip-mine reclamation/solid waste management (e.g., fill for strip mines, landfill capping); shoreline construction (e.g., levee and dike construction); construction/industrial development (e.g., bank stabilization, brownfields reclamation); and beach nourishment (e.g., restoration of eroding beaches).[9]

In addition, EPA and USACE delineated beneficial uses based on the type of dredged material in the below table,[10] thereby combatting another common misconception that only dredged sand can be used beneficially:

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[5] Nat'l Oceanographic and Atmospheric Admin., *supra* note 3; *id.*

[6] Dredging 101, *supra* note 4. If left unchecked, eutrophication could cause an overgrowth of plant life, leading to potentially fatal levels of oxygen deprivation for animal life. *See id.*

[7] *See* ENVTL. PROT. AGENCY & U.S. ARMY CORPS OF ENG'RS, IDENTIFYING, PLANNING, AND FINANCING BENEFICIAL USE PROJECTS USING DREDGED MATERIAL v, 8-9 (2007) [hereinafter EPA/USACE, IDENTIFYING, PLANNING, AND FINANCING].

[8] *Id.* at 9.

[9] ENVTL. PROT. AGENCY & U.S. ARMY CORPS OF ENG'RS, THE ROLE OF THE FEDERAL STANDARD IN THE BENEFICIAL USE OF DREDGED MATERIAL FROM U.S. ARMY CORPS OF ENGINEERS NEW AND MAINTENANCE NAVIGATION PROJECTS 1, box 1 (2007) [hereinafter EPA/USACE, THE ROLE OF THE FEDERAL STANDARD]; *see also* EPA/USACE, IDENTIFYING, PLANNING, AND FINANCING, *supra* note 7, at 8-13.

[10] EPA/USACE, IDENTIFYING, PLANNING, AND FINANCING, *supra* note 7, at 11, tbl.2.1. For additional detail on each material type and its potential uses, see *id.* at 11-13.

Table 2.1 Beneficial Uses Most Compatible With Dredged Material of a Given Composition

Material Type	Potential Beneficial Use*
Rock	***Habitat Restoration and Development*** ***Beach Nourishment (offshore berms only)*** Parks and Recreation Agriculture, Forestry, Horticulture, and Aquaculture Strip-Mine Reclamation/Solid Waste Management ***Construction/Industrial Development***
Sand and Gravel	***Habitat Restoration and Development*** ***Beach Nourishment*** ***Parks and Recreation*** Agriculture, Forestry, Horticulture, and Aquaculture Strip-Mine Reclamation/Solid Waste Management ***Construction/Industrial Development***
Consolidated Clay	***Habitat Restoration and Development*** Parks and Recreation ***Agriculture, Forestry, Horticulture, and Aquaculture*** Construction/Industrial Development
Silt/Soft Clay	***Habitat Restoration and Development*** Parks and Recreation ***Agriculture, Forestry, Horticulture, and Aquaculture*** Construction/Industrial Development
Mixture (rock/sand/gravel/silt/soft clay)	Habitat Restoration and Development Beach Nourishment (offshore berms only) Parks and Recreation Agriculture, Forestry, Horticulture, and Aquaculture Strip-Mine Reclamation/Solid Waste Management Construction/Industrial Development

* *Uses in bold italics text are the most suitable uses for the corresponding material type.*

Despite many innovative and promising theoretical beneficial uses—as well tangible results in their application[11]—current practices fall short of realizing the full potential of dredged material. The majority of the several million cubic yards of dredged material in the U.S. is disposed of in open water rather than being used in any one of the plethora of beneficial ways discussed above.[12] Of the 200 to 300 million cubic yards of material dredged annually by USACE and other federal and private parties, "USACE estimates that 20 to 30 percent of the total volume dredged is currently used beneficially."[13]

Half of the 3 to 5 million cubic yards of material dredged annually from federally maintained channels in the Great Lakes "is considered not contaminated and does *not* need to be

[11] *See id*. at 28.
[12] EPA/USACE, THE ROLE OF THE FEDERAL STANDARD, *supra* note 9, Preface. In cities such as Virginia Beach, many confined disposal facilities for dredged material are close to or have already reached full capacity, further catalyzing the need to conceive of, prioritize, and execute beneficial use projects. *See* VA. BEACH BEACHES & WATERWAYS ADVISORY COMM'N, NEIGHBORHOOD DREDGING PROGRAM, app. C (2012).
[13] EPA/USACE, THE ROLE OF THE FEDERAL STANDARD, *supra* note 9, at 1.

placed into confined disposal facilities (CDFs) built to contain contaminated sediments."[14] Even contaminated material has the potential to be used beneficially—the question is not binary (contaminated versus not) but rather a matter of degree (that is, the level of contamination and the particular beneficial use in question).[15]

Commonly cited barriers to beneficial use projects include "increased costs, the need for earlier planning and more widespread coordination, lack of complementary federal and state regulatory frameworks for evaluating dredged material as a resource, and [the] widespread misperception that dredged material is a waste instead of a resource."[16] This paper explores another potential barrier to beneficial use projects that is inextricably linked with the misconception that dredged material is waste: ownership rights at sites with material from completed dredging projects, and the question of whether quality dredged material stored on an upland site can be used later for other applications.

IV. OWNERSHIP RIGHTS

A. Generally

Ownership questions over dredged material can generally be solved through the application of property or contract law. When parties contemplate where dredged material will go, their solutions will be cemented through negotiated contract or memoranda. Involved parties may include state or local actors, dredging contractors, users of material, and storage or disposal site owners.[17] Such questions are currently far less likely to arise once the material is disposed of because disposal is the ultimate disposition of the material and reuse is not contemplated.[18] If reuse after upland storage were to become an option generally, ownership rights during storage, as well as during removal from storage to reuse, would likely be addressed through contract too.

The City of Virginia Beach Public Works Project Manual for the Construction of Rudee Inlet Outer Channel Maintenance Dredging provides an example of the process of contracting to ensure ownership rights in a dredging project.[19] Throughout the manual, which lays out the contracting process for the dredging project, the City of Virginia Beach is defined as the "Owner"

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[14] Wis. Sea Grant, *Beneficial Use of Dredged Material*, WIS. SEA GRANT, https://www.seagrant.wisc.edu/our-work/focus-areas/coastal-processes-and-engineering/coastal-processes/beneficial-use-of-dredged-material/ (last visited Mar. 31, 2019) (emphasis added).

[15] *See* EPA/USACE, IDENTIFYING, PLANNING, AND FINANCING, *supra* note 7, at 12–13.

[16] EPA/USACE, THE ROLE OF THE FEDERAL STANDARD, *supra* note 9, preface. For a prime example of how increased costs and need for earlier planning and coordination affects decisions regarding beneficial use projects, *see generally* N.Y. STATE THRUWAY AUTH., APP. H: CONSTRUCTION IMPACTS: H-5 DREDGED MATERIALS MANAGEMENT ALTERNATIVES (appendix to draft environmental impact statement for the Tappen Zee Bridge replacement project in New York, outlining cost-benefit analysis that resulted in a recommendation to dispose rather than beneficially use dredge material from the project).

[17] In some cases, one entity may inhabit more than one (and possibly all) of these roles, in which case the need for negotiation and contract is much less. An example would be a town with a dredging project that will be disposing the dredge material at its own public facility.

[18] *See infra* Section IV.B.

[19] CITY OF VIRGINIA BEACH, PUBLIC WORKS PROJECT MANUAL FOR THE CONSTRUCTION OF RUDEE INLET OUTER CHANNEL MAINTENANCE DREDGING (2013).

of the bid contract soliciting the project.[20] The manual describes that after receiving bids, the City will contract with a Contractor who agrees to furnish all materials and equipment, and perform all the labor required to complete the dredging project.[21]

An USACE permit included in the manual provides for beach placement of some of the sandy spoils along the oceanfront and/or Croatan Beach, though all non-sandy material "must be disposed of in a currently approved dredged material disposal site, in an approved upland disposal site, or at the Craney Island Dredged Material Management Area/Rehandling Basin."[22] Although the City was defined as the "Owner," there was no express discussion of ownership of the non-sandy material in the permit because there was no plan to use the non-sandy material beneficially.[23] Rather, there was only a plan for the non-sandy material's disposal.[24]

Sometimes both parties to a dredging contract are municipalities or government entities, but negotiating terms for dredged material storage resolves ownership rights just as it would if the storage site were on private property. For example, in 2016 the City of Salisbury, Maryland and Wicomico County, Maryland, came to agreement regarding dredged material storage.[25] Salisbury wanted to dredge the Wicomico River in the area of Beaverdam Creek Dam (which is owned by Salisbury), but needed a place to store the dredged material.[26] In a Memorandum of Understanding (MOU) between the two entities, Wicomico County granted a license to Salisbury to store 850 cubic yards of dredged material at the Sharps Point Dredge Material Placement Site, which sat on a land tract the County owned in fee simple.[27] Ownership and other property rights were central to the agreement. The parties agreed that upon deposit of the dredged material at Sharps Point, ownership of the dredged material would automatically vest in Wicomico County.[28] As the licensee, Salisbury was granted rights of access to enter and exit Sharps Point.[29] Salisbury also agreed to maintain the rights-of-way used in connection with the use of the site.[30]

As with the Virginia Beach example, the Wicomico County memorandum was silent on material reuse, beneficial or otherwise. Salisbury's rights as a licensee were designed to facilitate the disposal of the material at Sharps Point, and would effectively expire once all 850 cubic yards were delivered.[31] Thus, questions of ownership rights beyond disposal did not arise.

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[20] *Id.* § 101.02.
[21] *Id.* § 102.01. This specific project concerned the hydraulic dredging and placement of 70,000 to 100,000 cubic yards of dredged material from a portion of the Rudee Inlet channel system of Virginia Beach. *Id.*
[22] *Id.* app. A, (U.S. ARMY CORPS ENG'RS, Regional Permit, CENAO-REG 13-RP-02, at 5–6).
[23] *See id.*
[24] *Id.*
[25] Wicomico Cty. Council Res. 61-2016, 2016 Leg. Sess. (Md. 2016) (Approving a Memorandum of Understanding between the City of Salisbury, Md and Wicomico County, Md for Sharps Point Dredge Material Placement Site Usage).
[26] *Id.* pmbl., ¶ 1.
[27] *Id.*
[28] *Id.* ¶ 6.
[29] *Id.* ¶ 5.
[30] *Id.* ¶ 9.
[31] See *id.* ¶¶ 2–3.

B. Current Use Scheme for Dredged Material

As demonstrated above, the ownership issues currently surrounding dredge spoils are minimal. Sand is used almost immediately, on either public or private beaches, and the remaining materials are disposed of permanently with no consideration of reuse.

In Virginia, the Secretary of Natural Resources is tasked with determining if the dredged material is suitable for beach nourishment.[32] Public beaches receive "priority consideration as sites for the disposal of that portion of dredged material determined to be suitable for beach nourishment."[33] Sandy dredged material can be put on a public beach with no associated costs, as long as it does not encroach on the State-owned subaqueous land.[34]

In the Middle Peninsula for example, "[i]f a public beach placement site is not suitable or available, dredged material may be placed on [a] private beach, or in a private or public upland containment site."[35] If the sandy dredged materials are to be used for beach nourishment on a private beach, the dredging entity will need to negotiate an easement with a private property holder.[36]

If dredged material is not suitable for beach nourishment, it will be stored in an upland containment site.[37] These property considerations are the same regardless of whether the federal, state, or local government has assumed responsibility for dredging operations. The dredging entity will need to contract with the dredger and the site owner to ensure they retain ownership of the material. Public and private containment sites currently function as permanent holding sites for dredged material or as a location for dredged material to dry.[38] Because the material stored at these sites is considered waste, and will not be repurposed, there is currently little discussion about possible ownership issues. Once localities begin to conceive of dredge spoils as a commodity, ownership will become more relevant, and parties will contract to preserve (or modify) ownership rights.

Current ownership issues are considered in the royalty framework for dredging, as defined under the Virginia Code section relating to ownership and use of submerged lands.[39] There are two different complementary royalty schemes, one for removing material and one for adding material.[40] For placing dredged material, the VMRC charges various royalties depending on the purpose of the fill. These range from $0.00 to $5.00 per square foot.[41] The Code specifies that when a project requires the removal of bottomland material the permit shall prescribe a royalty to

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[32] NAT'L OCEANIC & ATMOSPHERIC ADMIN., STATE, TERRITORY, AND COMMONWEALTH BEACH NOURISHMENT PROGRAMS 8 (2000).
[33] VA. CODE ANN. § 10.1-704 (1988).
[34] *See id*; VA. MARINE RES. COMM'N, SUBAQUEOUS GUIDELINES § 3, A, F (2005).
[35] MIDDLE PENINSULA PLANNING DIST. COMM'N, USERS GUIDE TO DREDGING IN TIDEWATER VIRGINIA 6 (2011), http://www2.vims.edu/seagrant/coastalaccess/resource/docs/FINAL_Dredging Report_2011.pdf.
[36] *Id.*
[37] *Id.*
[38] *Id.*
[39] VA. CODE ANN. § 28.2-1206 (2004); VA. MARINE RES. COMM'N, SUBAQUEOUS GUIDELINES § 2 (2005).
[40] VA. MARINE RES. COMM'N, SUBAQUEOUS GUIDELINES § 2-3 (2005).
[41] VA. CODE ANN. § 28.2-1206; VA. MARINE RES. COMM'N, RENT AND ROYALTY SCHEDULE (2005). Beach fill for example has a recommended royalty payment of $0.05 per square foot. *Id*.

be paid to the Virginia Marine Resources Commission.[42] Per the Code, the royalty shall be no less than $0.20 and no more than $0.60 per cubic yard of removed bottomland; however as of 2005, the Commission is using $0.45 as the minimum assessment.[43]

In determining the appropriate royalty the Commission considers the purpose of removing the bottomland material, the commercial value of the material, the public benefit or detriment associated with removing the material, the physical characteristics of the material, and the cost associated with removal.[44] If being placed or removed for a commercial purpose, the maximum royalty will likely be applied.[45] Once this royalty has been paid, the Commission cedes any financial interest in or control of the dredged material.[46] At that point, the material is placed in a disposal site, like the ones examined below.

C. Current Scheme at Specific Virginia Sites

The Craney Island Dredged Material Management Area ("Craney Island") was developed in the 1940's as a long-term dredged material storage site for the ports of the Hampton Roads area, including Newport News, Hampton, Norfolk, Portsmouth, and Chesapeake.[47] Private actors, municipalities, and government agencies deposit dredge spoils, usually consisting of mud, silt, clay, sand, shell, and marl, at this location.[48] Each dredging entity pays an equitable unit toll charge for each cubic yard of material they deposit at the site.[49] The depositing entity is responsible for the handling expenses incurred during placement of the material in the facility, including supervision and inspection costs.[50] As of 2010, the 2,500-acre Craney Island has "received more than 253 million cubic yards of dredged material."[51]

The Norfolk Ocean Dredged Material Disposal Site (ODMDS) is another example of a spoil site for Virginia's dredged material. In 2009, the EPA and USACE predicted that 100,000 to 500,000 cubic yards of dredged material from the Naval Facilities at Yorktown would be placed at the site every three years.[52] According to the Norfolk ODMDS Site Management Plan, ODMDS would also accept all material designated for Craney Island if that site became unavailable.[53]

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[42] VA. CODE ANN. § 28.2-1206.
[43] *Id.*
[44] *Id.*
[45] VA. MARINE RES. COMM'N, SUBAQUEOUS GUIDELINES § 2, I (2005).
[46] Email from Tony Watkinson to Angela King, Assistant Director, Virginia Coastal Policy Center (Feb. 13, 2019) (on file with author).
[47] *Craney Island Dredged Material Management Area*, U.S. ARMY CORPS OF ENG'RS NORFOLK DIST. (Feb. 28, 2018), https://www.nao.usace.army.mil/About/Projects/Craney-Island/.
[48] *Craney Island - Contractor Regulations*, U.S. ARMY CORPS OF ENG'RS NORFOLK DIST. (Apr. 15, 2005), https://www.nao.usace.army.mil/About/Projects/Craney-Island/CraneyContractorRegs/.
[49] *Id.*
[50] *Id.*
[51] *Craney Island Dredged Material Management Area*, U.S. ARMY CORPS OF ENG'RS (2011), https://www.nao.usace.army.mil/Portals/31/docs/Brochures/CRANEYISLANDBROCHURE_042811.pdf.
[52] ENVTL. PROT. AGENCY & U.S. ARMY CORPS OF ENG'RS, SITE MANAGEMENT PLAN FOR THE NORFOLK OCEAN DREDGED MATERIAL DISPOSAL SITE 3 (2009).
[53] *Id.* All of these disposal sites are currently accepting dredge material even if they were created decades ago. Capacity is not expressly defined in the documents creating these sites, and the disposal areas often are expanded significantly over time. *See, e.g.*, *Craney Island Eastward Expansion*, U.S. ARMY CORPS OF ENG'RS NORFOLK DISTRICT, https://www.nao.usace.army.mil/About/Projects/Craney-Eastward/ (last visited May 30, 2019).

A final, and similar, example of a permanent dredged material disposal site is the Dam Neck ODMDS.[54] Approximately 1.2 million cubic yards of dredge spoils are placed at this site every two years.[55]

D. The Costs of Managing Dredged Material

ODMDS management, such as in Norfolk, is an intensive and costly process. Monitoring and management of disposal sites requires strict supervision of the timing, quantity, and chemical and physical characteristics of all material.[56] The managing entity must also strive to meet conditions imposed by the dredging permit, prevent potential impacts on the marine environment, and ensure no adverse effects from past or current use of the site.[57]

The related decrease in management and monitoring costs is a tangential benefit to be derived from new beneficial use projects using historically discarded dredge spoils. As localities assume dredging responsibilities, they can lessen the burden on these old disposal sites by using the majority of the dredged material for beneficial use projects. As this process becomes customary, it is possible that the material that has been stored in these sites for generations can be commoditized and put to use, with the result that the costs associated with managing and monitoring these sites will be reduced.

V. UPLAND SITES: CAN DREDGED MATERIAL BE REUSED?

A. Beneficial Use and "Innovative Reuse" of Dredged Material

State and local governments are becoming increasingly aware of the value of beneficial use projects.[58] However, most current beneficial uses are feasible only when the time, manner, and place of the beneficial use line up neatly with the dredging project that supplies the material.[59] To unlock the full potential of dredged material for alternative uses, dredged material that continues to be discarded as waste must be tapped for reuse.

The first step in using dredged material stored at upland sites is to realize that (1) the commonly disposed material (the non-sandy spoils) has myriad applications; (2) much of that material is not contaminated; and (3) even contaminated material can be used to a certain extent,

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[54] ENVTL. PROT. AGENCY & U.S. ARMY CORPS OF ENG'RS, SITE MANAGEMENT PLAN FOR THE DAM NECK OCEAN DISPOSAL SITE (2009), https://www.epa.gov/sites/production/files/2015-10/documents/r3_dam_neck_smmp_final_signed.pdf [hereinafter EPA/USACE, SITE MANAGEMENT PLAN].
[55] *See id.* at 3.
[56] EPA/USACE, SITE MANAGEMENT PLAN, *supra* note 54, at 1.
[57] *Id.*
[58] *E.g.*, MD. DEP'T ENV'T, INNOVATIVE REUSE AND BENEFICIAL USE OF DREDGED MATERIAL GUIDANCE DOC.13 (2017), https://mde.maryland.gov/programs/Marylander/Documents/Dredging/FINAL_IBR_GUIDANCE_8.30.2017_MDE.pdf.
[59] *See, e.g.*, N.Y. STATE THRUWAY AUTH., *supra* note 16, at 5-8; *Beneficial Use of Dredged Material*, MD. DEP'T NAT. RESOURCES, https://dnr.maryland.gov/ccs/Pages/Beneficial-Use.aspx (last visited May 30, 2019) ("For beneficial use projects to occur, dredging and restoration projects must be aligned in space and time….").

depending on treatment and the intended use. In short, the non-sandy material has value, and the need to commoditize this material becomes more critical as federal funding for dredging is reduced and localities assume the responsibility for dredging and storage of dredged material.[60] While at first glance it might seem like disposal of dredge spoils is the most cost-efficient option, this is not universally true—numerous studies have identified a wide range of beneficial uses that are cost-efficient and sustainable.[61] In Japan, more than 90 percent of the resulting material is put to beneficial use.[62] By taking advantage of this resource, localities can reap the economic, environmental, and social benefits of reusing dredged material.[63]

In many cases, the dredged material is similar in make-up to garden soil and can be used in a similar fashion to restore parks and gardens, as well as in agriculture.[64] Dredged material can be used for construction, acting as foundation material for buildings or roads.[65] Environmental uses include capping landfills, rehabilitating brownfields, restoring marshes, engineering wetlands, and creating or improving habitat.[66] Dredge spoils can even be used to build fish farm impoundments for aquaculture, thus supplementing wild fishing.[67]

In 2017, the Maryland Department of the Environment (MDE) issued a comprehensive guidance document for the use of dredged material.[68] In addition to beneficial uses,[69] MDE incorporated and provided guidance for "innovative reuse[s]" of dredged material, including "use for daily, intermediate, or final cover as an alternative to traditional earthen material currently used at active landfills, as well as soil and fill materials in the reclamation of brownfields, engineered fill for roadway bed material, parking lot foundations, or embankments and manufactured soil or soil amendments…."[70] For a given dredging project, the placement or disposal location of the material is addressed during the MDE permitting process, "and includes the following dredged material management options: upland containment or disposal, beach nourishment/marsh creation, and other beneficial use, or innovative reuse."[71] While beneficial uses are largely limited by time and space (that is, the beneficial use must be pre-planned and, for all intents and purposes, executed contemporaneously with the dredging project), there is more flexibility for "innovative reuse[s]." MDE noted specifically that "[t]he specific innovative reuse need not be identified, finalized or approved by MDE at the time the dredging occurs. The dredged material may be placed at an

[60] *See* MIDDLE PENINSULA PLANNING DIST. COMM'N, *supra* note 35, at 2–3 (describing the paradigmatic shift from federally funded and managed dredging operations to state and locally funded and managed dredging operations).
[61] INT'L ASS'N OF DREDGING CO., FACTS ABOUT DREDGED MATERIAL AS A RESOURCE (2009).
[62] *Id.*
[63] *Id.*
[64] *Id.*
[65] *Id.*
[66] *Id.*
[67] *Id.*
[68] MD. DEP'T ENV'T, *supra* note 58.
[69] Beneficial uses include "(i) the restoration of underwater grasses; (ii) the restoration of islands; (iii) the stabilization of eroding shorelines; (iv) the creation or restoration of wetlands; and (v) the creation, restoration, or enhancement of fish or shellfish habitats." *Id.* at 21–22.
[70] *Id.* at 27.
[71] *Id.* at 18.

approved containment facility and the innovative reuse project may be implemented at a later point in time post-dredging."[72]

Thus, dredged material stored on upland sites can be reused. The proposition is a matter of re-conceptualizing dredged material as a valuable resource and finding a reuse application for which the stored material is fit. Virginia is taking steps in this direction via the Waterway Maintenance Fund and associated guidelines.[73] Created in 2018, the Fund supports localities' dredging projects and the beneficial use of dredged material.[74] To apply for funding, an applicant must submit an application detailing not only the dredging project but also "the potential beneficial use of dredged materials for the purpose of mitigation of coastal erosion, flooding or other purposes…."[75] This scheme aptly addresses conventional beneficial uses in which the dredging project and beneficial use line up neatly in time and space, but there are myriad "other purposes" that could make use of stored dredged material. Pursuant to the Fund's guidelines, so long as the proposal is economically feasible and meets certain policy objectives,[76] a dredging applicant theoretically should be able to obtain funding for an "innovative reuse" project that uses stored material. If the current Fund is incapable of entertaining such reuse, policymakers should look towards making such reuse possible.

B. Ownership Rights and Collateral Issues

Even though questions of ownership rights beyond disposal did not arise in the Wicomico MOU,[77] one can imagine how such questions might arise when dredged material is stored upland for future reuse, and how the parties might contract to anticipate such issues. And, some collateral issues that were accounted for in the disposal scenario would also feature in a reuse scenario.

For example, suppose a locality[78] knows it wants to reuse the material in the future but merely requires temporary storage. In this scenario, the material has value. The locality would not agree to relinquish ownership to the property owner[79] upon depositing the material at the site.[80] Thus, the storage agreement might look more like a lease, as though the locality were renting an apartment or a storage unit and placing its personal property inside for a set time period. The locality likely would negotiate for its site access rights to apply to activities associated not only with the initial deposit but also the removal of the material; the property owner would do likewise for the requirement that the locality maintain the rights-of-way that the locality uses to access the site. The parties would agree to a time period for the lease and the "rent," and include provisions for renewal and early termination. To remove the material for reuse, the locality would come get

[72] *Id.* n.19. The MDE further notes that whether or not the innovative reuse was identified and approved at the time of permitting would not change the permitting requirements needed for approving the specific end use. *Id.*
[73] *See* VA. PORT AUTH., POLICY ON GRANTS TO LOCAL GOVERNMENTS FOR FINANCIAL ASSISTANCE FOR DREDGING ACTIVITIES (2018), http://www.portofvirginia.com/pdfs/stewardship/VA_Waterway_Maintenance_Fund_Guildelines.pdf.
[74] *Id.* Preface, § II.A.2.
[75] *Id.* § II.A.5.
[76] *See id.* § II.A.3.
[77] *See* Wicomico Cty. Res. 61-2016.
[78] VA. CODE ANN. §§ 1-221 (2005) & 15.2-102 (1997) (defining "locality" as "a county, city, or town . . .").
[79] Note that the "property owner" could be a private party or another locality.
[80] Contrast this scenario with the Wicomico MOU disposal scenario in which the title to the material vested in the county upon deposit. Wicomico Cty. Res. 61-2016 ¶ 6.

the material with its own source of transportation, and acquire any necessary permits to transport the dredged material.[81]

Another issue might be the intent of the parties at the time the material is stored. For instance, suppose that the locality and the property owner agree to storage terms with the understanding that the deposit will be permanent. However, how could the locality position itself to use the material if a desirable reuse project comes up later? The locality would likely negotiate to include a provision in which it reserves the right to reclaim the material in the future. In return, the property owner might require the payment of a reclaiming fee in addition to the regular storage royalties.

Insurance and indemnity featured prominently in the Wicomico MOU,[82] and would undoubtedly be included in an agreement tailored to or contemplating future reuse. In the disposal scenario, the city had to carry insurance, and include the county as an additional insured, to protect against third-party harm resulting from the city's disposal operation at the site.[83] The city had to indemnify the county for any loss the county might incur as a result of the city's negligence associated with the dredged material disposal, provided the county was not also negligent.[84] In a reuse scenario, one could imagine more robust insurance and indemnity provisions because there potentially would be more exposure for the property owner.

VI. CONCLUSION

Current beneficial use practices utilize sandy dredged material but relegate other dredged materials to disposal sites that are costly to maintain. Dredged material stored at these sites can and should be put to beneficial use. To do so we must correct misconceptions regarding the value of dredged material. As a commodity, this previously wasted resource could be put to new and important uses. And, once commoditized, we can realize the full potential of stored dredged material by finding suitable "innovative reuses" for it. As localities begin to bear the dredging burden, they should reconsider the current use, or lack of use, of dredged material, and how it might be reused once stored, to make the process more efficient, cost-effective, and sustainable. As reuse becomes a viable option, ownership issues may become more prevalent but likely will remain relatively uncomplicated. Parties will continue to negotiate title and other rights as they always have, though those negotiations will be shaped by the fact that the material will be reused after storage.

[81] The city had to acquire any necessary permits when depositing the material for disposal. *Id.* ¶ 10. It is reasonable that the county would require the city to do the same for removal of the city's own material from county land.
[82] *Id.* ¶¶ 11–12.
[83] *Id.* ¶ 11.
[84] *Id.* ¶ 12. For example, a person who was injured as a result of the city's negligence during the disposal operation might sue the county because the injury occurred on county property. In paragraph 12 of the MOU, the city agreed to compensate the county in the event the injured person recovered against the county.