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Working Waterfronts: On History, Conflicts, and Finding a Balance Case Studies of the Lynnhaven River, the Ware River, and the Eastern Shore of Virginia



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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, providing 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, one of the largest marine research and education centers in the United States, and Virginia Sea Grant, a nationally recognized broker of scientific information – 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.

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. Whether it is working to understand the underlying realities of local zoning policies or attempting to identify and reconcile the concerns of multiple stakeholders, VCPC students experience the breadth of environmental lawyering while gaining skills that will serve them well regardless of the legal career they pursue upon graduation.

I. INTRODUCTION

Since the early 1600s, Virginia's coastal waters have sustained a rich culture of seafood harvest and cultivation.¹ Toward the middle of the twentieth century, the Chesapeake Bay supported up to 9,000 full-time watermen, and in 2013, approximately 3,000 licensed commercial fishermen and aquaculture permit holders relied on access to Virginia's working waterfronts.² The Virginia Working Waterfront Master Plan states that:

Working waterfronts are areas or structures on, over, or adjacent to navigable bodies of water that provide access to the water and are used for water-dependent commercial, industrial, or government activities, including commercial fishing, recreational fishing, tourism, aquaculture, boat and ship building, boat and ship repair, boat and ship services, seafood processing, seafood sales, transportation, shipping, marine construction, military activities and other water dependent uses.³

Today, working waterfronts support almost all of Virginia's commercial fishing operations,⁴ and continue to provide critical access to coastal waters for people engaged in recreational fishing, seafood processing, boat building, aquaculture, and other water-dependent businesses.

Waterfront redevelopment or revitalization has also been a trend throughout the United States over the last several decades.⁵ This development pressure, coupled with an international trend of urbanization (with increasing value being placed on coastal areas), has resulted in the transformation of many communities' former working piers and wharves into residences, offices, hotels, and restaurants.⁶ Though the coasts' edges often still provide access for historic ships, recreational vessels, ferries, and the occasional workboat, their value as working waterfronts is diminished.⁷ Lastly, there are often intergenerational transfer difficulties with working waterfront sites, and the potential loss of commercial seafood operations. Aquaculture is a more historic use, but it is often surrounded by land that is purely residential. In many areas, if there is a lapse in the commercial use of a piece of land, the owner of the land can lose the right to continue the non-conforming use in a residential area.⁸

The first Virginia Working Waterfront Master Plan, funded by the Virginia Coastal Zone Management Program at the Department of Environmental Quality, was developed this year and "outlines the overall contribution of working waterfronts to Virginia's economy, the historical context of working waterfronts to the development of the Commonwealth, a review of the status

¹ *Preserving Virginia's Working Waterfronts*, VA. DEP'T OF ENVTL. QUALITY, <http://www.deq.virginia.gov/Programs/CoastalZoneManagement/CZMIssuesInitiatives/WorkingWaterfronts.aspx>.

² *Id.*

³ *Working Waterfront Master Plan, Virginia Coastal Zone Management*, VA. DEP'T OF ENVTL. QUALITY 4 (2016), http://www.hrpdcva.gov/uploads/docs/5A_MPPDC%20WWF%20PLAN%2007%2008%2016_RED.pdf.

⁴ *Id.*

⁵ NATIONAL WORKING WATERFRONT NETWORK, <http://www.wateraccessus.com/statustrends.html> (last visited Feb. 22, 2017).

⁶ *Working Waterfront Master Plan*, *supra* note 3, at 13.

⁷ *York River/Gloucester County, VA: Balancing Conflicting Uses Through Stakeholder Engagement*, MIDDLE PENINSULA PLANNING DIST. COMM'N (2013), http://www2.vims.edu/bridge/wateraccess/case_study.cfm?ID=38.

⁸ Telephone interview with Anne Ducey-Ortiz, Director, Planning and Zoning/Zoning Administrator for Gloucester County, Va. (Nov. 7, 2016).

of working waterfronts in each of the four coastal Virginia Planning Districts, the threats that working waterfronts face from natural forces of sea level rise, global warming, subsidence and channel shoaling and a series of policies that could be enacted at all levels of government to preserve and protect working waterfronts well into the future.”⁹ The Plan was presented at the second annual Working Waterfront Summit, held in conjunction with the Virginia Coastal Policy Center’s 2016 annual conference, and provides numerous recommendations to preserve working waterfronts.¹⁰

This white paper outlines three case studies that demonstrate some of the issues facing working waterfront communities that are outlined in the Plan: the Lynnhaven River, the Ware River, and the Eastern Shore of Virginia.

II. REGULATORY FRAMEWORK

The Code of Virginia contains provisions regarding the leasing, growing, and harvesting of shellfish, as well as provisions for protecting submerged aquatic vegetation (“SAV”). Section 28.2-603 of the Virginia Code authorizes the leasing of oyster grounds by the Virginia Marine Resources Commission (“VMRC”).¹¹ Available grounds may be leased for the planting or propagating of oysters, including the use of temporary protective enclosures.¹² Section 28.2-606, a key provision as it relates to the current use conflicts in Virginia, pertains to the notification procedure for lease applications. Pursuant to this section, notice must be published in a newspaper once a week for a month, must be posted at the city or county courthouse, and also must be posted in at least two other prominent places in the vicinity of the ground that is the subject of the application.¹³

VMRC administers oyster permits and authorizes the harvesting of shellfish pursuant to the Virginia Code. VMRC’s regulations allow for shellfish aquaculture on privately leased shellfish planting grounds and provide for a commonly used permit for oystermen.¹⁴ The permit applies to aquaculture structures that stand no higher than twelve inches above the bottom substrate, remain properly marked, do not inhibit navigation, and are not placed over SAV.¹⁵ Crucially, this regulation does not require a procedure for notifying nearby landowners. Therefore, leaseholders can maintain oyster cages under the twelve-inch threshold without notifying adjacent property owners.

VMRC also issues a general permit for the use of temporary protective enclosures for shellfish that exceed twelve inches above the bottom ground.¹⁶ Unlike the aforementioned authorization for shellfish aquaculture structures, this permit does include a notification procedure.¹⁷ A key component of the notification procedure requires recording the names and

⁹ *Working Waterfront Master Plan*, *supra* note 3, at 8.

¹⁰ *Id.*

¹¹ VA. CODE ANN. § 28.2-603 (2011).

¹² *Id.*

¹³ VA. CODE ANN. § 28.2-606 (1992).

¹⁴ 4 VA. ADMIN. CODE § 20-335 (2016).

¹⁵ 4 VA. ADMIN. CODE §§ 20-335-30(A)-(G) (2016).

¹⁶ 4 VA. ADMIN. CODE § 20-1130-10 (2007).

¹⁷ 4 VA. ADMIN. CODE § 20-1130-30 (2007).

addresses of property owners within 500 feet of the cages and notifying them of the pending application.¹⁸

In addition, VMRC regulates the harvesting of clams at 4 Virginia Administrative Code § 20-70-10 *et seq.* The regulations provide that, with the proper license and permit, a hydraulic dredge may be used to harvest soft shell clams in lease beds of 3 acres or more.¹⁹ However, hydraulic dredges may not be used to harvest hard shell clams in any tidal waters.²⁰ Additionally, conventional dredges may not be used to harvest hard shell clams, except “between December 1 and April 1 . . . from unassigned ground on the seaside of Accomack and Northampton counties where the water is more than four feet in depth at mean low water...”²¹ Lastly, certain types of hand-held rakes may be used to harvest clams, but only in limited circumstances.²²

The Commonwealth is more protective of submerged lands on the seaside of the Eastern Shore. Hydraulic dredges are expressly prohibited on the seaside of Northampton and Accomack Counties.²³ With regards to Chincoteague Bay and Assateague Bay and Channel, dredging is prohibited in any areas of SAV, or within 218 yards of any SAV (for purposes of this section, SAV includes both eelgrass and widgeon grass).²⁴

III. THE LYNNHAVEN RIVER

The Lynnhaven River (“Lynnhaven”) is located in the northern part of the City of Virginia Beach. Its watershed totals 64 square miles with nearly 150 miles of shoreline containing approximately 4,500 waterfront homes.²⁵ The river is shared by many different types of users, including recreational boaters, swimmers, fishermen, and commercial watermen.

The Lynnhaven has a long history of oyster production. However, the degradation of water quality throughout the 1900s brought aquaculture activity to a halt.²⁶ Successful restoration efforts have markedly improved the water quality, and in recent years the oyster industry has rebounded.²⁷ The recent resurgence of commercial aquaculture on the Lynnhaven gives rise to a classic use conflict between riparian owners seeking to protect their property rights and commercial watermen lawfully making a living in a booming industry.

¹⁸ *See id.*

¹⁹ 4 VA. ADMIN. CODE § 20-70-50 (2015).

²⁰ 4 VA. ADMIN. CODE § 20-70-110 (1995).

²¹ 4 VA. ADMIN. CODE § 20-70-120 (2001).

²² 4 VA. ADMIN. CODE § 20-70-135 (2015).

²³ 4 VA. ADMIN. CODE § 20-100-20 (1995).

²⁴ 4 VA. ADMIN. CODE § 20-70-10 (1995).

²⁵ *Lynnhaven River Watershed Application for Federal No Discharge Zone Designation*, VA. DEP’T OF ENVTL. QUALITY, <http://www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/NDZ/lynnhavenndz.pdf>.

²⁶ *Id.*; *see also infra* notes 34-35.

²⁷ *See infra* notes 36-39.

A. Background

The Lynnhaven shares in Virginia's rich history of aquaculture as one of the most productive sites in the Commonwealth for oyster farming.²⁸ Anecdotal evidence abounds of the golden age of the Lynnhaven, when the riverbed was covered with sizable oysters that were consumed not only in Virginia, but all along the Eastern seaboard.²⁹ The river has distinguishing characteristics that make it a prime area for growing oysters. It has a long growing season,³⁰ an appropriate salinity level,³¹ and nutrient rich and intertidal areas, both of which allow for rapid growth.³²

However, as aforementioned, high bacteria levels on the Lynnhaven hindered aquaculture activities throughout the 1900s. In 1930, high bacteria levels in Linkhorn Bay prompted a Shellfish Area Condemnation from the Virginia Department of Health (VDH) Division of Shellfish Sanitation.³³ Additional sections of the river were eventually condemned and, in 1971, the entire river was condemned for the harvesting of shellfish.³⁴ In 1998, the Virginia Department of Environmental Quality (DEQ) listed the Lynnhaven on its list of impaired waters due to high levels of fecal coliform bacteria.³⁵

Restoration efforts in the past fifteen years have resulted in a marked improvement in water quality. Much of this improvement can be attributed to efforts of the nonprofit organization Lynnhaven River Now,³⁶ projects implemented by the City of Virginia Beach,³⁷ and the implementation of a fecal coliform Total Maximum Daily Load (TMDL) by DEQ in 2006. As of 2007, twenty-nine percent of the Lynnhaven met bacteria water quality standards for safe shellfish

²⁸ *Annual Report of the Department of Conservation and Recreation 55*, VIRGINIA DEP'T OF ENVTL QUALITY (2009), <http://www.deq.virginia.gov/Portals/0/DEQ/Water/Publications/319Rpt2008.pdf>.

²⁹ John Charles Morris, William Allen Gibson, William Marshall Leavitt & Shana Campbell Jones, *THE CASE FOR GRASSROOTS COLLABORATION: SOCIAL CAPITAL AND ECOSYSTEM RESTORATION AT THE LOCAL LEVEL* 145 (2015).

³⁰ Telephone interview with Karen Forget, Executive Director, Lynnhaven River Now (Oct. 26, 2016). The river reaches sufficiently high temperatures early in the season and stays warm into the fall.

³¹ *Id.* The oyster's salinity is not as salty as seaside on the Eastern Shore but saltier than more inland rivers.

³² *Id.* Intertidal areas create an environment where oysters are covered with water part of the day and uncovered at other times.

³³ *Lynnhaven River Watershed Application for Federal No Discharge Zone Designation*, *supra* note 25.

³⁴ *Annual Report*, *supra* note 28.

³⁵ *Id.* at 1.

³⁶ LYNNHAVEN RIVER NOW, <http://www.lynnhavenrivernow.org> (last visited Dec. 12, 2016). In 2002, Lynnhaven River Now was formed with a mission to restore the river to its prior level of water quality. In addition to achieving buy-in from the community, the group has formed an alliance with the City of Virginia Beach, The Chesapeake Bay Foundation, the U.S. Army Corps of Engineers, and the VMRC. The organization has implemented a variety of projects, including oyster restoration, septic tank removal, waste management, and publicity and education campaigns within the community.

³⁷ *Id.* See also EPA SECTION 319 NONPOINT SOURCE PROGRAM SUCCESS STORY, <https://www.epa.gov/nps/nonpoint-source-success-stories> (last visited Dec. 12, 2016). Among the City's efforts were projects including retrofitting stormwater outfalls that empty into the Lynnhaven, constructing wet ponds, installing extended detention ponds and wetlands, creating oyster reefs, revegetating riparian buffers, implementing a no discharge zone designation, repairing leaking sewer lines, and implementing an enforcement ordinance.

consumption, leading the VDH to open 1,462 acres for shellfish harvesting.³⁸ Today, approximately forty-four percent of the Lynnhaven is open for oyster harvesting.³⁹

The reopening of the Lynnhaven for oyster harvesting brought commercial watermen back to the water. VMRC received an influx of applications for available public grounds,⁴⁰ creating an atmosphere that has been equated by some to a “gold rush.” For riparian owners, the resurgence of aquaculture activities brought new sights, sounds, and smells to the river. Most of the current residents lining the shores of the Lynnhaven were unaccustomed to such activity. Some riparian owners on the Lynnhaven who are unaccustomed to seeing exposed cages in the water and hearing the motors of working boats and power washers are at odds with the resurgence in aquaculture activity.

Riparian owners who purchased homes between the 1960s and early 2000s likely did not contemplate the future resurgence of the Lynnhaven’s water quality and the introduction of high levels of oyster aquaculture.⁴¹ When they purchased their homes, they bought property along a river that was open for boating and swimming, but not shellfish harvesting. Herein lies the core of the conflict—riparian owners perceive their use of the river to be “first in time,” whereas commercial watermen consider the river’s history of commercial aquaculture to precede the interests of riparian owners.

B. Conflicting Interests

Some riparian owners contend that the activities of commercial watermen conflict with their property rights.⁴² Specifically, their relevant interests are of safety, water access, visibility of cages and markings, property value, and privacy. A primary concern voiced by riparian owners is that metal oyster cages pose a hazard to people on the water.⁴³ Second, cages that are placed in close proximity to riparian owners’ property or docks may obstruct their ability to access the water.⁴⁴ Third, the activities of commercial watermen—use of metal cages that become visible at

³⁸ TOTAL MAXIMUM DAILY LOADS AT WORK IN VIRGINIA: RESTORING THE LEGENDARY LYNNHAVEN OYSTERS, <https://nepis.epa.gov/> (last visited Dec. 22, 2016).

³⁹ 2015 Annual Report, LYNNHAVEN RIVER NOW, http://www.lynnhavenrivernow.org/wp-content/uploads/2016/02/LYNN-27344-AnnualReport_2015sm.pdf.

⁴⁰ Telephone interview with Ben Stagg, VMRC Habitat Management (Nov. 16, 2016).

⁴¹ One can conclude that the number of waterfront homes on the Lynnhaven significantly increased in this timeframe, given Virginia Beach’s census data. U.S. Bureau of the Census and Weldon Cooper Center for Public Service (1970 population was 172,106; 1980 population was 262,199; and 1990 population was 393,060). *Accord Morris*, *supra* note 29, at 145.

⁴² Telephone interview with the Honorable Bill DeSteph, Senator, Virginia General Assembly (Oct. 25, 2016); *see also Lynnhaven River Shellfish Workgroup Meeting of May 20, 2016*, VIRGINIA MARINE RESOURCES COMMISSION, <http://www.mrc.virginia.gov/SMAC/2016-05-20-Lynnhaven-River-Workgroup.pdf>; Report of Recommendations from The Lynnhaven River Shellfish Work Group, VIRGINIA MARINE RESOURCES COMMISSION (2016), <http://www.mrc.virginia.gov/SMAC/2016-08-15-Lynnhaven-River-Oyster-Workgroup-recommendations-final-report.pdf>.

⁴³ Telephone interview with Senator Bill DeSteph, *supra* note 42; *see also* KEEP VIRGINIA WATERS SAFE!, <http://sos-va.com/water-safety/> (last visited Dec. 12, 2016).

⁴⁴ Obstruction of navigation is prohibited pursuant to 4 VA. ADMIN. CODE § 20-335-30(G), which states “no structures may cause more than a minimal adverse effect on navigation.” This concern is therefore either founded on under enforcement of the existing regulation, different interpretations of the standard, or divergent perceptions of the issue.

low tide, installation of poling to mark the location of cages, and use of work boats—create in some waterfront owners’ eyes visual pollution that detracts from the beauty of the river. Fourth, for some, increased activity on the river negates the privacy that motivated the purchase of waterside property.

Because the commercial watermen conduct their activities pursuant to the requirements of the Virginia Administrative Code, the regulatory framework administered by the VMRC has become a focus of the conflict. To that end, some riparian owners contend that the regulations are outdated, overly lenient towards aquaculture interests, and under-enforced.⁴⁵ As noted above, under § 28.2-606 of the Virginia Code, the notification process for oyster ground leases requires posting of an application at a courthouse and in a local newspaper, as well as posting notice in other prominent places.⁴⁶ Riparian owners argue that these requirements are antiquated and fail to give adequate notice, thereby excluding adjacent property owners from voicing their opposition to pending leases.⁴⁷ Further, oystermen often utilize the authorization for cages less than twelve inches from the ground that are not subject to a notice procedure.⁴⁸ Additionally, riparian owners are concerned that the costs of the application process are so low that they fail to disincentivize “land grabbing.”⁴⁹ Under the Virginia Code, the cost of an application is \$25 and the annual cost of an oyster lease is \$1.50 per acre, a rate set by the General Assembly in 1960.⁵⁰ The most significant cost for the application process is the \$675 survey fee, which is paid if the land is ultimately assigned.⁵¹ To address these issues, riparian owners want to see changes to the Virginia Code and the Virginia Administrative Code.

Commercial watermen maintain that their activity is not only within the bounds of the law, but is in line with cultural and historical practices.⁵² The state has enthusiastically promoted aquaculture activities since the 1800s.⁵³ They argue that the river bottoms are held in trust for the benefit of the people and are not the property of adjacent landowners.⁵⁴ Moreover, the watermen argue that their activity benefits the local economy and the environment.⁵⁵

⁴⁵ Telephone interview with Senator Bill DeSteph, *supra* note 42.

⁴⁶ VA. CODE ANN. § 28.2-606.

⁴⁷ Recommendations from The Lynnhaven River Shellfish Work Group, *supra* note 42, at 4. (noting that the “current notification process is outdated and ineffective”).

⁴⁸ 4 VA. ADMIN. CODE § 20-335-10 et seq. *But see* 4 VA. ADMIN. CODE § 20-1130-30(B) (requiring a notice procedure that includes publishing in the local newspaper and posting notice at a local courthouse and other prominent location).

⁴⁹ Telephone interview with Ben Stagg, *supra* note 40.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² Telephone interview with Michael Oesterling, Executive Director, Shellfish Growers of Virginia (Oct. 6, 2016).

⁵³ In *Blake v. Marshall*, the Virginia Supreme Court stated “[t]he Commonwealth had developed a well-defined policy of encouragement and promotion of the planting of oysters long before the adoption of the Constitution of 1902.” *Blake v. Marshall*, 148 S.E. 789, 791 (Va. 1929).

⁵⁴ *See* VA. CODE ANN. § 28.2-100 (2002): “‘Territorial sea’ means the waters within the belt, three nautical miles wide, that is adjacent to Virginia’s coast and seaward of the mean low-water mark.” *See also* § 28.2-1202(A) (2014): “[T]he rights and privileges of the owners of such lands, shall extend to the mean low-water mark but no farther[.]”

⁵⁵ Dave Mayfield, *On the Lynnhaven River, oyster population sees a comeback - and conflict*, The Virginian-Pilot, Dec. 12, 2015, http://pilotonline.com/news/local/environment/on-the-lynnhaven-river-oyster-population-sees-a-comeback-and/article_439fd56d-469c-5c38-bd1d-296a27b41116.html.

Economic drivers support the interests of commercial watermen. Virginia's oyster industry has grown significantly in the last three years, generating a dockside value of \$34 million in 2015, a 52% increase from 2013.⁵⁶ In recognition of this growth and its importance to Virginia's economy, Governor McAuliffe launched the Virginia Oyster Trail in November 2015⁵⁷ and a year later declared that November is Virginia Oyster Month.⁵⁸ Environmental groups also support oyster culture, citing its beneficial impact on water quality.⁵⁹ Lynnhaven River Now manages multiple programs that are aimed at restoring native oyster populations to the river.⁶⁰ While it is impossible to measure with specificity the effect oyster restoration efforts have had on the Lynnhaven's water quality, recent research supports the assertion that oyster filtering reduces bacterial concentrations in river bodies.⁶¹

The conflict caught the attention of Virginia State Senator Bill DeSteph, R-8, in late 2015. In response to complaints his office received concerning the placement of oyster cages and the activity of oystermen on the Lynnhaven, Senator DeSteph introduced two bills in the 2016 Session of the Virginia General Assembly. One bill, Senate Bill 298, increased the bottomland leasing price from \$1.50 to \$5,000 per acre⁶² and the other, Senate Bill 254, suspended the assignment or transfer by the VMRC of general oyster grounds in the Lynnhaven River until July 1, 2017.⁶³ These bills brought focus to the issue, prompting the VMRC to form a working group to perform a study of the Lynnhaven River and impose a moratorium on new leases there. Senator DeSteph ultimately struck both pieces of legislation, stating that the purpose was to spark a dialogue surrounding the issues on the Lynnhaven,⁶⁴ which he certainly accomplished.

A taskforce appointed by VMRC performed a seven-month study of these issues during which a moratorium was imposed on new oyster leases on the Lynnhaven. The thirteen-member taskforce included waterfront property owners and representatives from the shellfish industry. The

⁵⁶ GOVERNOR MCAULIFFE ANNOUNCES NOVEMBER AS VIRGINIA OYSTER MONTH, <https://governor.virginia.gov/newsroom/newsarticle?articleId=18230#sthash.q3md1V1m.dpuf.Secretary%20of%20Commerce%20and%20Trade%20Todd%20Haymore> (last visited Dec. 12, 2016).

⁵⁷ Press Release, Virginia.org, Governor McAuliffe Launches New Virginia Oyster Trail (Nov. 10, 2015), <http://www.virginia.org/pressroom/release.asp?id=443> (last visited Dec. 12, 2016). In the November 2015 press release Maurice Jones, Virginia's Secretary of Commerce and Trade, stated, "[t]he continued growth of the oyster industry and our fisheries management programs, combined with private sector investment, positively impacts the Chesapeake Bay and Virginia's economy, particularly with respect to tourism[.]" *Id.*

⁵⁸ GOVERNOR MCAULIFFE, *supra* note 56. Governor McAuliffe stated, "Virginia is the Oyster Capital of the East Coast, boasting eight regions that each produce oysters with distinct and unique flavors based on the water in which they grow." *Id.*

⁵⁹ The Chesapeake Bay Foundation leads multiple oyster restoration programs, stating that oysters "filter algae, sediment, and other pollutants and in the process improve water quality and clarity." *Oyster Restoration*, <http://www.cbf.org/how-we-save-the-bay/programs-initiatives/virginia/oyster-restoration>.

⁶⁰ Projects include: Oyster Castle Shorelines, Community Oyster Gardening, "Save Oyster Shell" Program, Living Shorelines, and Oyster Reef Construction. LYNNAHAVEN NOW, <http://www.lynnhavenriversnow.org/get-involved> (last visited Dec. 12, 2016).

⁶¹ *Oyster Reefs*, <http://chesapeakebay.noaa.gov/oysters/oyster-reefs> (last visited Dec. 12, 2016).

⁶² SB 298, 2016 Session of the General Assembly, <http://lis.virginia.gov/cgi-bin/legp604.exe?161+ful+SB298> (last visited Dec. 12, 2016).

⁶³ SB 254, 2016 Session of the General Assembly, <http://lis.virginia.gov/cgi-bin/legp604.exe?161+ful+SB254> (last visited Dec. 12, 2016).

⁶⁴ Travis Fain, *\$5,000-per-acre oyster lease bill to die*, Daily Press, January 27, 2016, <http://www.dailypress.com/news/politics/dp-nws-ga-oyster-lease-fee-increase-20160127-story.html> (last visited Dec. 12, 2016).

taskforce ultimately issued a list of recommendations.⁶⁵ Taskforce members agreed that (1) the use of *all* cages should require a notice procedure, not just those exceeding twelve inches; (2) a use plan should be required for new applications, transfers, and renewals of leases; (3) the minimum threshold of coastal land required to qualify for riparian oyster ground leases⁶⁶ should be reduced; and (4) the VMRC should work to raise awareness of aquaculture activities among the community.⁶⁷ In a public hearing on September 27, 2016, the VMRC voted 7-2 to not amend its regulation of oyster leases to reflect the taskforce's recommendations.⁶⁸ Thus, changes to the regulatory framework will have to come from the General Assembly.

IV. THE WARE RIVER

A. Background

The Ware River (the “Ware”) has a history of operating as a working waterfront, although on a smaller scale. The Ware River is a 9-mile-long tidal river, being an arm of Mobjack Bay and a part of the Chesapeake Bay estuary system.⁶⁹ While not as large or densely populated as the Lynnhaven River, the focus of the current conflict is on an oyster business that has operated since the late 1940s/early 1950s. The use of the bottomlands on the Ware and other Virginia rivers has changed over time. Mid-20th Century, the oyster industry operated dredges that would dredge up the bottomland to collect oysters for processing on-shore. Ward Oyster Co., located on the Ware, innovated a new technique, being the first in the state to do so.⁷⁰ While the process now is more industrial, Ward Oyster Co. claims that its techniques are better for the environment because they reduce pressure on the wild oysters in the river. The aquaculture company grows their oysters from start to finish, beginning inside their facility and ending in cages throughout the Ware.⁷¹ As noted on the company's website:

Ward Oyster Co. has, since 2003, diverted all of its aquaculture activities to raising only oysters. Today, they are one of the largest cage aquaculture farms in Virginia, selling farm raised oysters all over the United States. Ward Oyster Co.'s plan for the future is to continue the expansion of the oyster farm by adding an oyster hatchery in 2012, enabling them to produce their own oyster seed for the oyster farm. While continuing the expansion of the oyster farm, Ward Oyster Co. has become increasingly aware that the location of its farm has given their oysters a unique taste. Raw half shell and cooked oysters from Ward Oyster Co. are fast becoming the first choice for many seafood distributors and restaurants locally and nationwide.⁷²

⁶⁵ See Recommendations from The Lynnhaven River Shellfish Work Group, *supra* note 42.

⁶⁶ VA. CODE ANN. § 28.2-600 (1992). Landowners with a minimum of 205 linear feet along a tidal waterway may qualify for an oyster ground lease.

⁶⁷ *Id.*

⁶⁸ Agency NEWS, <http://www.mrc.virginia.gov/whatsnew.shtm> (last visited Dec. 22, 2016).

⁶⁹ U.S. GEOLOGICAL SURVEY, National Hydrography Dataset (2011).

⁷⁰ Telephone interview with John Vigliotta, Owner, Ward Oyster Co. (Nov. 13, 2016).

⁷¹ WARD OYSTER COMPANY, *Who is Ward Oyster Company*, <http://www.wardoyster.com> (last visited Nov. 18, 2016).

⁷² *Id.*

While the Ware aquaculture is more concentrated in nature than on the Lynnhaven, it provides an example of how conflicts can arise between equally lawful and legitimate uses of waterways and bottomlands. Much of the forthcoming information about the Ware is anecdotal in nature, with the authors having spoken to members of the VMRC, residential homeowners, a Gloucester County local government official, and an aquaculture business owner on the Ware.

B. Conflicting Interests

Currently, a conflict exists on the Ware between some residential landowners and the aquaculture industry. Burke King, a riparian residential landowner on the Ware River, has been particularly vocal about his issues with VMRC's permitting process, which have been intensified by the number of oyster cages in the Ware River. When asked about when he first noticed the issue on the Ware, Mr. King responded that,

In 2004 there were a small number of cages on the river. During this time, Ward Oyster primarily used the cages for clam relaying, which is the process of cleansing contaminated clams. From 2004 – 2006, the number of cages began to grow as Ward Oyster started the oyster aquaculture business. The pivotal year was 2006, as this is when Ward Oyster received VMRC approval to place up to 2,500 aquaculture cages on the Ware River in the area around Jarvis Point. The number of cages has escalated since 2006. In 2015, Ward Oyster petitioned VMRC to convert clamming grounds, which cannot be used for aquaculture, to oyster grounds with the understanding that this additional acreage would be used for aquaculture. Also, from 2006 to now, the shoreline activity has grown in lock-step with the number of cages: more power-washing of the cages, loud machinery, more tanks for growing oysters, and the placement of the large upweller structures along the pier.⁷³

Lewis Lawrence, Executive Director of the Middle Peninsula Planning District Commission, noted that different user groups have different perspectives on how the water should be utilized.⁷⁴ He pointed out that there are also differences between the aquaculture and seafood industries: aquaculture is more labor intensive, industrial, and uses more public space in the water column, while the seafood industry is more extractive.⁷⁵ He observed that businesses saw a way to use aquaculture to make money by growing oysters differently, which reenergized the industry and required new sites and infrastructure.⁷⁶ Mr. Lawrence noted that Mr. King's family ran a seafood business in the same location as Ward Oyster Co. for 40 years and, therefore, Mr. King understands the importance of the seafood industry.⁷⁷ However, many residential landowners believe that the way the industry is managing itself has brought to light these new use conflicts. Per authority granted by the Virginia General Assembly, the VMRC regulates the permitting process and resolves any conflicting issues. Yet, many residential landowners believe VMRC is an advocate

⁷³ Email Correspondence with Burke King (Nov. 11, 2016).

⁷⁴ Telephone interview with Lewis Lawrence, Executive Director, Middle Peninsula Planning District Commission (Sept. 28, 2016).

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

for the aquaculture industry, rather than an objective regulator, because many members of the VMRC have ties to the aquaculture industry.⁷⁸ While there have been several attempts by the General Assembly and VMRC to make this work, policy changes cannot keep up with the effects of the aquaculture.⁷⁹ Because these issues are constantly unfolding, focused research in this field is unavailable, so policy lacks modernization.⁸⁰

The first permits issued to Ward Oyster Co. were for use of 12 inches of the water column in the Ware River.⁸¹ Now that the operation has expanded, there is a need for upwellers,⁸² barges, and cranes, all of which bring various odors and debris. However, John Vigliotta, owner of Ward Oyster Co., notes that the odors associated with oyster farming are no different than those present forty or fifty years ago.⁸³ Mr. Vigliotta also noted that, although some riparian owners have stated that boaters cannot compete with the oyster cages located in the Ware, the situation has not changed much over the years—in the past, buoys from crab pots have always been present, oysters have always been shucked on land, and dredging has always taken place at dawn—except now the VMRC has issued rules and regulations with which the aquaculture industry must comply.⁸⁴ Mr. Vigliotta further proffered that waterman culture, although changing, is still largely the same as in years past; the demographic of people moving to the coastline is what has changed.⁸⁵ In response to the locals' concerns, Mr. Vigliotta moved his cages 750-1,000 feet from the shoreline, and implemented a rigid time frame for when his business operates.⁸⁶

Ward Oyster Co. was the first company in the area to grow oysters in an innovative manner. The company originally harvested clams from the then-polluted James River, relocated them to cages in the clean waters of the Ware River, and then sold them two weeks later as clean clams. In 2008, Ward Oyster Co. was harvesting approximately 10,000 clams a day.⁸⁷ The company adapted this process for oysters—rather than relocated oysters, they are grown from start to finish in the Ware. From the Ward Oyster Company website, the process is as follows:

Growing oysters is a multi-step process which requires a lot of handling and labor. It all starts with 200-500 adult oysters... Once the oysters are spawned, the next step is to take eggs and sperm and put them in tanks where they turn to oyster larvae... The next step is to take 1 millimeter oysters and place them outside in land based upweller tanks, which allow ambient river water with natural algae to flow past the small oysters. The oysters feed off the natural algae and grow. After about a month, when the oysters get to about 0.25 inches, we put them in a floating upweller, which is in the Ware River. In this system, we are able to increase the water flow considerably at a low cost. This increases the growth of the oysters faster

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² An upweller is a device that allows ambient river water with natural algae to flow past small oysters, which helps them grow at a faster rate. UPWELLING AND UPWELLING DEVICES, <http://chesbayoysterco.blogspot.com/2010/02/upwelling-and-upwellers.html> (last visited Dec. 12, 2012).

⁸³ Telephone interview with John Vigliotta, *supra* note 70.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

than we could do on land... . Overall, it is possible for the fastest growing oysters to make it to market in one to one and a quarter years. Yet, some may take up to three years.⁸⁸

Mr. Vigliotta stated that he wants to work with his neighbors to do what he can to alleviate some of their concerns, if possible.⁸⁹

Mike Oesterling, Executive Director of the Shellfish Growers of Virginia, maintains a different viewpoint from some riparian residential owners concerning who should regulate aquaculture and how well VMRC is currently executing that task. Mr. Oesterling spent 30 years at the Virginia Institute of Marine Science and now, as a lobbyist for the Virginia aquaculture industry, provides an industry perspective on the conflicting interests on the Ware.⁹⁰ He stated that there are eight challenges facing the aquaculture industry: water quality, coastal growth, access to the working waterfronts, changing demographics, regulations and zoning ordinances, climate change, harmful algal blooms, and disease. In terms of the industry's environmental impacts, Mr. Oesterling noted that there is ongoing research to show that the impacts of oyster aquaculture on the environment are "not all good, not all bad."⁹¹ Mr. Oesterling touted aquaculture as a "green industry" that removes pollutants from the water, specifically nitrogen, phosphorous, and sediments, but he also mentioned that oysters can emit waste, although anything in the tissue and shell of an oyster is also removed when the oyster is taken from the water.⁹² Cages must be cleaned; while some oyster growers clean cages right over the water, other businesses participate in a USDA program in which dirty cages are cleaned on shore in order to keep fowling organisms from returning to the water.⁹³ Residential owners on the Ware expressed concern with Ward Oyster's process in this regard, given the large sediment piles on the company's property where cages are cleaned close to the shoreline.⁹⁴

When asked about VMRC's role in the permitting process and whether they are an adequate and objective authority for regulating aquaculture, Mr. Oesterling stated that VMRC is the appropriate state agency and it "does not favor the aquaculture industry."⁹⁵ He mentioned that while VMRC permits waterborne activities and permits the leasing of the grounds, they also conduct enforcement in conjunction with two other departments: the Virginia Department of Health and the Department of Environmental Quality.

The Ware River provides an ideal case study, as the interests of riparian owners, who provide local tax revenues, are pitted against a lawful business enterprise that provides local employment and local tax revenue. Riparian owners have an interest in having an unmarred waterfront view, adequate recreational boating access on the river, and peace and quiet without unpleasant odors or sights from a nearby industrial use, whereas the local industry grows oysters that help the economy and improve water quality, and engages in an innovative approach to

⁸⁸ WARD OYSTER COMPANY, *supra* note 71.

⁸⁹ Telephone interview with John Vigliotta, *supra* note 70.

⁹⁰ Telephone interview with Mike Oesterling, Executive Director, Shellfish Growers of Virginia (Oct. 6, 2016).

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ *Id.*

increase oyster harvests on a river that has a long heritage of seafood harvesting. There is little research on these conflicting interests on the Ware because the conflicts are currently unfolding, so they may ultimately be addressed by the legislature along with the conflicting interests involved in the Lynnhaven River.

V. THE EASTERN SHORE - CASE STUDY #1: REDEVELOPMENT OF WORKING WATERFRONTS

A. Background

As of 2014, the Accomack-Northampton Planning District Commission identified 222 working waterfronts on the Eastern Shore.⁹⁶ In Northampton County alone, the total economic impact of the seafood industry was valued at \$97.4 million in 2015; it supported 987 jobs, and generated “household and business incomes of \$27.1 million.”⁹⁷ In 2015 VMRC issued 246 permits for clams and 477 for oysters in Accomack County, while issuing 293 for clams, 380 for oysters, and 299 for crabs in Northampton County.⁹⁸ The fees collected for issuing these permits and licenses for both counties totaled \$359,806.⁹⁹ In addition to commercial ventures, the Eastern Shore and its waterfronts are also valuable for recreational boating, fishing, and historical nature trails.¹⁰⁰

Virginia’s Eastern Shore, although rural and sparsely populated, has been dealing with development pressures on the coast in recent years.¹⁰¹ As government regulations¹⁰² and a decline in the seafood industry persist, localities on the Eastern Shore are attempting to make up for the loss in tax revenue by increasing tourism, specifically in Cape Charles and Chincoteague.¹⁰³ Cape Charles houses two marinas: a privately-owned marina, now called the Oyster Farm Marina at King’s Creek, and the Town Harbor, which is owned by the Town of Cape Charles.

Historically, the private marina was simply called “King’s Creek Marina,” and was family-owned for decades, serving as a major hub for crabbers and oyster dredgers all over the Eastern Shore and Tangier Island.¹⁰⁴ Over time, the marina became less prosperous, and in 2004 it was purchased by the Bay Creek development as part of a larger “dockominium” project, complete with an upscale restaurant, events center, beach-front villas, and a signature golf course, surrounded by a massive planned, residential community.¹⁰⁵ In 2014, the marina, events center,

⁹⁶ *Working Waterfronts Master Plan*, *supra* note 3, at 12-13.

⁹⁷ *Id.* at 5.

⁹⁸ *Id.* at 97.

⁹⁹ *Id.* at 13.

¹⁰⁰ *Id.*

¹⁰¹ *Id.* at 97.

¹⁰² *See, e.g.*, 4 VA. ADMIN CODE § 20-270-10 *et seq.* (2008) (establishing regulations to allow for the conservation and rebuilding of the crab resource and to improve the enforceability of other laws pertaining to crabbing).

¹⁰³ *Id.*

¹⁰⁴ Telephone interview with William “Smitty” Dize, Harbormaster, Oyster Farm at King’s Creek Marina (Nov. 29, 2016).

¹⁰⁵ *Id.*

restaurant, and villas were sold again, this time to a developer from New Jersey who has since renamed the complex the Oyster Farm at King's Creek.¹⁰⁶

B. Conflicting Interests

Commercial fishermen consistently used the private marina until 2004, when it was converted into the luxury facility it is today. While the slippage rates are slightly higher at the Oyster Farm than at the Town Harbor, the primary reason commercial fishermen left was a lack of adequate facilities at the marina. The marina does not provide space to offload catch or to clean fish; additionally, there are environmental concerns with respect to cleaning the boats, cages, and crab pots because the marina is not equipped with the facilities to perform these activities.¹⁰⁷ For these reasons, the marina caters almost exclusively to private charter boats; as of November, 2016, only two commercial fishermen were docked at the marina.¹⁰⁸

When commercial fishermen left the private marina, they went to the Town Harbor, owned and operated by the Town of Cape Charles.¹⁰⁹ During the mid-2000s, the Town Harbor was very prosperous due to the influx of commercial fishermen. In addition to maintaining facilities to offload catch and clean fish, it also encourages commercial fishermen to use the docks by offering discounts to watermen and only collecting wharf fees when catch are brought in.¹¹⁰ Harbor sales income from commercial watermen at the Town Harbor reached \$300,000 in 2005, \$320,000 in 2006, and \$310,000 in 2007.¹¹¹ However, another blow to commercial fishermen came in 2008 when the VMRC placed a moratorium on crabbing. After the moratorium, income at the Town Harbor dropped to \$144,000 in 2008, and to \$102,000 in 2009.¹¹² Currently, the Town Harbor is not bringing in enough income to cover its costs.¹¹³

Thus, two factors are at play in displacing commercial fishermen on the Eastern Shore. First, redevelopment drove watermen from an historically commercial marina, then government regulations closed down the crab fishery. A decline in water-based employment opportunities have not only displaced many youth who seek employment out of the Eastern Shore, but have also shifted focus to increasing tourism as a means of recovering lost tax revenue.¹¹⁴ While the Oyster Farm at King's Creek Marina and the Town Harbor are still technically working waterfronts, the nature of the waterfront has changed significantly over the past decade.

¹⁰⁶ Charles Southern, *NJ Entrepreneur Buys AQUA, Marina for \$4.6 million*, Cape Charles Wave, Dec. 29, 2012.

¹⁰⁷ Telephone interview with William Dize, *supra* note 104.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Id.* William "Smitty" Dize kept meticulous records when he served as the Harbor Master for the Town Harbor prior to moving to the Oyster Farm at King's Creek.

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Id.*

VI. THE EASTERN SHORE – CASE STUDY #2: SAV vs. CLAM AQUACULTURE

A. Background

The regeneration of SAV is a vital component of the Chesapeake Bay restoration effort. SAV are vegetation that grow in, but do not break the surface of, shallow water.¹¹⁵ These plants must be in shallow water in order to obtain sunlight, as they only grow up to five or six feet.¹¹⁶ They must also be submerged because they lack the waxy cuticle of other plants that keep them from drying out.¹¹⁷ The Chesapeake Bay contains more than 16 species of SAV that vary in location depending on the salinity level, with the most common type being eel grass, which is found in mid- to high-salinity areas.¹¹⁸

SAV serve several important functions in improving water quality, including primary production, providing a habitat for shellfish and small fish, settling sediment, and acting as a nutrient buffer to prevent algae growth.¹¹⁹ As a primary producer, SAVs absorb carbon dioxide and inorganic nutrients and convert them into carbohydrates and proteins, which serve as grazing materials for some aquatic animals, or, once the SAVs are dead, are filtered by clams and oysters.¹²⁰ SAVs also act as shelter from predators for small fish, such as rockfish and herring, as well as blue crabs.¹²¹ In fact, blue crabs were found to be thirty times more abundant in SAV areas than unvegetated areas.¹²² SAV can also reduce the velocity of water flow and reduce wave action, which causes suspended sediments to settle.¹²³ Finally, SAV can limit algae growth because they compete with algae for nitrogen and phosphorus—so when the amount of SAV increases, less of these materials are available for algae to grow.¹²⁴

Clam aquaculture also has water quality benefits. Clams, like other shellfish, can purify water by removing pollutants such as nitrogen and phosphorus.¹²⁵ Clam aquaculture also has a major economic impact for the Commonwealth. In 2014, the economic impact for Virginia alone reached \$38.8 million, a 14 percent increase from 2013.¹²⁶ Additionally, the clam industry is

¹¹⁵ SUBMERGED AQUATIC VEGETATION, <http://chesapeakebay.noaa.gov/submerged-aquatic-vegetation/submerged-aquatic-vegetation> (last visited Dec. 12, 2016).

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ BAY GRASSES, http://www.chesapeakebay.net/fieldguide/categories/category/bay_grasses_sav (last visited Dec. 12, 2016).

¹¹⁹ DECLINE OF SUBMERGED PLANTS IN CHESAPEAKE BAY, <https://www.fws.gov/chesapeakebay/savpage.htm> (last visited Dec. 12, 2016).

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² SUBMERGED AQUATIC VEGETATION AS FISHERIES HABITAT, <http://chesapeakebay.noaa.gov/submerged-aquatic-vegetation/submerged-aquatic-vegetation-as-fisheries-habitat> (last visited Dec. 12, 2016).

¹²³ DECLINE OF SUBMERGED PLANTS IN CHESAPEAKE BAY, *supra* note 119.

¹²⁴ *Id.*

¹²⁵ SHELLFISH IS GOOD FOR THE ENVIRONMENT, <http://www.ecsga.org/Pages/Sustainability/CultureBenefits.htm> (last visited Dec. 12, 2016).

¹²⁶ Virginia continues to lead in clam and oyster aquaculture. PHYS ORG, <http://phys.org/news/2016-04-virginia-clam-oyster-aquaculture.html> (last visited Dec. 12, 2016).

responsible for hundreds of jobs, and has Virginia the leading clam producing state in the country in 2016.¹²⁷

B. Conflicting Interests

SAV and clam aquaculture, while both beneficial uses of submerged lands, also can conflict with one another. While there is interest in expanding each of them, both require similar conditions to grow and thus can compete for space. SAV and clams both need subtidal bottomland within a certain depth range and water movement to thrive.¹²⁸ Often, the areas suitable for growing one are suitable for growing the other.¹²⁹

As SAV is successfully restored in the Bay, less space is available for the expansion of clam aquaculture. Current clam operations are safe because most have been “grandfathered” into locations where SAV has expanded. Yet, those leases that have not been grandfathered in have difficulty gaining permits because, pursuant to VMRC regulations, SAV takes first priority.¹³⁰

In the late 1990s, scientists at VIMS concluded that there was little, if any, conflict between SAV and clam aquaculture.¹³¹ In 1999, SAV covered only 28,000 hectares in the Chesapeake Bay, but by 2015, that number had grown to 38,000 hectares, and is likely to continue increasing.¹³² The reason for the dramatic increase is not only because of restoration efforts, but also due to VMRC regulations designed to protect SAV. As mentioned above, SAV takes priority over shellfish aquaculture,¹³³ but the VMRC also has prohibited the use of hydraulic and even conventional dredges in certain areas to protect SAV, as these devices are known to cause large scale scarring in vegetated areas.¹³⁴

However, some in the clam aquaculture industry view their trade as a more beneficial use than SAV growth. Studies in Rhode Island have shown that when clams and oysters were placed in previously dead areas, aquatic organisms returned to those areas, using the cages as refuge and habitat.¹³⁵ Furthermore, shellfish can permanently remove excess nitrogen from the water, whereas SAV, once dead, will release excess nitrogen back into the water.¹³⁶

A final issue regarding this case study is mapping. SAV needs to be mapped to determine which locations may be leased for clam aquaculture. Yet, just because SAV does not seem to be

¹²⁷ *Id.*

¹²⁸ Interview with Andrew Johnson, Ph.D Student, Virginia Institute of Marine Science (Nov. 30, 2016).

¹²⁹ *Id.*

¹³⁰ See 4 VA. ADMIN. CODE § 20-335-30.

¹³¹ *Shallow Water Resource Use Conflicts: Clam Aquaculture and Submerged Aquatic Vegetation*, VIRGINIA INSTITUTE OF MARINE SCIENCE (1999), http://ccrm.vims.edu/publications/pubs/clamaqua_sav.pdf.

¹³² *2015 Distribution of Submerged Aquatic Vegetation in Chesapeake Bay and Coastal Bays*, VIRGINIA INSTITUTE OF MARINE SCIENCE (2016), <http://web.vims.edu/bio/sav/sav15/index.html>.

¹³³ See 4 VA. ADMIN. CODE § 20-335-30.

¹³⁴ See 4 VA. ADMIN. CODE § 20-70-10; see also Kenneth Moore & Robert J. Orth, *Evidence of Widespread Destruction of Submerged Aquatic Vegetation (SAV) from Clam Dredging in Chincoteague Bay, Virginia*, VIRGINIA INSTITUTE OF MARINE SCIENCE (1997), <http://web.vims.edu/bio/sav/clamdredge>.

¹³⁵ EELGRASS IS GREAT, BUT SHELLFISH AQUACULTURE IS BETTER, <http://www.ecsga.org/Pages/Sustainability/eelgrass.htm>.

¹³⁶ *Id.*

present at one particular time does not mean a seed or root will not germinate in that location in the near future.¹³⁷ These fluctuations in SAV presence can make mapping difficult.

VII. RECOMMENDATIONS

A significant recommendation of Virginia's Working Waterfront Master Plan is to maintain open communication between landowners, industry, and government, so all actors feel they have an adequate role in shifting policy over time.¹³⁸ Increasing understanding of the importance of aquaculture and working waterfronts will also be important in order for people to respect a growing industry that has historically been supported by the Commonwealth.¹³⁹ Historic working waterfronts can be better preserved through adequate understanding of the importance of these industries to the Virginia economy, while also understanding that almost all of these businesses are water-dependent.¹⁴⁰ Lastly, it is imperative that local governments scale the industry to fit the locality, so no single interest wins out overwhelmingly over another.¹⁴¹ Because working waterfronts involve an array of players, including private landowners, small-scale commercial watermen, and large industry, it is imperative that any action taken at the federal, state, or local level should aim to strike a balance between these equally lawful and legitimate uses of Virginia's waterways.

¹³⁷ Interview with Andrew Johnson, *supra* note 128.

¹³⁸ *Working Waterfront Master Plan*, *supra* note 3, at 56.

¹³⁹ *Id.* at 21-22.

¹⁴⁰ *Id.* at 10.

¹⁴¹ *Id.* at 21.