

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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THE OFFICE OF APPEALS AND DISPUTE RESOLUTION

April 4, 2017

In the Matter of
James J. and Lisa G. McGonigle

OADR Docket No. WET-2015-008
DEP File No. SE 10-2916
Chatham, MA

RECOMMENDED FINAL DECISION

INTRODUCTION

This case is brought by James J. and Lisa G. McGonigle (collectively “the Petitioners”) pursuant to 310 CMR 1.00 and 310 CMR 10.05(7)(j) challenging a Superseding Order of Conditions (“the SOC”) that the Southeast Regional Office of the Massachusetts Department of Environmental Protection (“MassDEP” or “the Department”) issued to them on April 8, 2015, pursuant to the Massachusetts Wetlands Protection Act, G.L. c. 131 § 40 (“MWPA”), and the Wetlands Regulations at 310 CMR 10.00. The SOC denied their proposed project. The McGonigles propose to construct a 108 foot long rock revetment and sacrificial sand cover (“the proposed Project”) on a Coastal Beach and along the toe of an eroding Coastal Bank at their property at 498 Shore Road in Chatham, Massachusetts (“the Property”). The proposed revetment is to protect a dwelling that was built on the Property after August 10, 1978 and to replace a coir fiber roll bank protection system which had fallen into a state of disrepair due to a lack of maintenance. The Department’s SOC overturned an earlier approval of the proposed

Project by the Chatham Conservation Commission (“CCC”) on September 19, 2014. The Department’s SOC overturned the CCC’s approval because in the Department’s view the proposed Project would be detrimental to Coastal Bank and Coastal Beach in violation of the MWPA and the Wetlands Regulations. The McGonigles seek a Final Decision in this appeal vacating the SOC and reinstating the CCC’s prior Order of Conditions approving the proposed Project. It is their contention that the project meets the requirements of the applicable regulations. A Ten Citizens Group, however, comprised of Chatham residents who oppose the proposed Project, support the Department’s SOC and have intervened in the appeal aligned with the Department in seeking the SOC’s affirmance. (See Motion to Intervene, May 4, 2015).

I conducted an evidentiary Adjudicatory Hearing (“Hearing”) on February 3, 2016 at which witnesses who had filed testimony in advance of the hearing were cross-examined. I also viewed the site with the parties and/or their representatives on February 17, 2017 pursuant to 310 CMR 1.01(13)(j).¹ After reviewing the administrative record, and considering and evaluating the testimonial and documentary evidence presented by the parties at the Hearing, as well as my observations at the site view, I recommend that the Department’s Commissioner issue a Final Decision affirming the SOC denying the Petitioners’ project. The rock revetment proposed by the McGonigles is a coastal engineering structure prohibited by the applicable regulations. The

¹ 310 CMR 1.02(13)(j) provides that:

“The parties may request and the Presiding Officer may order that a view be taken of a site, property or other places and things that are relevant to an appeal to promote understanding of the evidence that has been or will be presented. Notice and a reasonable opportunity to be present shall be given to all parties. Parties shall not present evidence during the view, but may point out objects or features that may assist the Presiding Officer in understanding evidence. The Presiding Officer may rely on the Presiding Officer’s observations during a view as evidence to the same extent permissible as if observed in the hearing room.”

preponderance of the evidence demonstrates that the McGonigles' coastal bank is significant to the interests of the MWPA of storm damage prevention and flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches. Because of this, the proposed project cannot comply with the applicable performance standards because it will prevent the coastal bank from supplying sediment to the coastal beaches and will cause erosion of the coastal beach. Even if the coastal bank were not significant as a sediment source, but only as a vertical buffer, I would still recommend that the proposed Project be denied because (a) the Department has the discretion to deny the project because it is not necessary to protect the dwelling and feasible alternatives may be available and (b) the proposed project does not meet the performance standards for coastal beaches.

WITNESSES²

The following witnesses testified on behalf of the Petitioners at the Hearing:

1. Mary Beth Cuddy, Esq. Attorney Cuddy has been a Massachusetts-licensed attorney since 1986. She maintains a private law practice in West Chatham where she concentrates her practice in real estate transactional law.

2. Roger P. Michniewicz. Mr. Michniewicz is a professional civil engineer with over 45 years of experience in civil engineering design and construction management. He is a registered professional engineer in Massachusetts. His civil and marine engineering experience includes residential, municipal and commercial waterfront design projects. His specialties include subsurface, investigational, and permitting on federal, state, and local levels. He holds a Bachelor

² Throughout this Recommended Final Decision, the witnesses' Pre-Filed Direct Testimony will be referred to as "[Witness] PFT at ¶"; Pre-Filed Rebuttal Testimony will be referred to as "[Witness] PFR at ¶"; references to the transcript of the hearing will be referred to as "[Witness] Tr. at p."

of Science degree in Civil Engineering and a Master of Science Degree in Civil and Environmental Engineering.

3. Leslie Fields. Leslie Fields is a Coastal Geologist with over 26 years of experience in multi- jurisdictional environmental studies. She is employed by the Woods Hole Group ("WHG"), where she has worked since 1989. Her technical expertise is in the areas of environmental studies of coastal and marine projects, including resource and existing conditions surveys, impact analyses, and mitigation/restoration planning. Her work at the WHG includes environmental impact analyses, dredged materials management, coastal planning and management studies, shoreline change analyses, coastal hazard evaluations, GIS-based analyses, coastal wetland delineations, scientific and technical reporting, and permitting at local, state, and federal levels. Ms. Fields served on the Falmouth Conservation Commission from 1990 to 1997. She holds a Bachelor of Science Degree in Geology and a Master in Coastal Geology Degree.

4. Seth Wilkinson. Mr. Wilkinson is a Restoration Ecologist, and President of Wilkinson Ecological Design, Inc., an environmental contracting and consulting firm. He has worked there full time as a Restoration Ecologist since 2004, participating in hundreds of invasive plant management and ecological restoration projects. He holds a Bachelor of Arts degree in Environmental Sciences and a Master of Arts in Landscape Design. For two years he served as a Regional Planner for the Cape Cod Commission and for three years as the Brewster Conservation Agent.

5. James J. McGonigle. Mr. McGonigle is the owner of the property at 498 Shore Road in Chatham where the rock revetment is proposed. He and his wife have owned the property since 2001.

The following witnesses testified on behalf of the Ten Residents Group at the Hearing:³

1. John S. Ramsey, P.E. Mr. Ramsey is a co-founder and Principal Coastal Engineer at Applied Coastal Research and Engineering, Inc. He has been employed there for 17 years and has held his Professional Engineer License in Massachusetts since 1995. His technical expertise is in the areas of coastal engineering including tidal hydrodynamics, wave dynamics, and sediment transport processes. He holds a Bachelor of Science degree in Civil and Environmental Engineering and a Master of Civil Engineering (Coastal) degree. He has served as Project Manager and/or Principal Investigator for coastal embayment restoration projects, regional shoreline management plans, beach nourishment and coastal structure designs, estuarine water quality/flushing studies, geotechnical engineering, hydrodynamic and sediment transport evaluations, and environmental studies required for permitting of coastal projects. Mr. Ramsey has also performed numerical modeling studies of waves to evaluate sediment transport, effects of dredging, and dynamic wave forces. He has co-authored papers related to littoral processes analysis.

Robert Lear, Esq. Attorney Lear is a retired attorney who has lived in Chatham for seven years. He served on the Chatham Conservation Commission for five years, from 2009 to 2015, and as Chair for his last five months on the commission. He served as Assistant General Counsel with the School District of Philadelphia for thirty years, and also spent eight years in private practice specializing in civil rights law. His law practices involved development, review, analysis and application of complex local, state and federal statutes and regulations, mainly in the context of administrative proceedings.

³ Robert H. Minetti, Ph.D. filed PFT on behalf of the Ten Citizens Group but did not appear at the Hearing to be cross-examined. His testimony was excluded from the record pursuant to 310 CMR 1.01(12)(f).

Jane Harris. Ms. Harris is a retired Conservation Administrator and past member of the Chatham Conservation Commission. She currently serves as the Chatham Representative to the Pleasant Bay Alliance Steering Committee, where she has served since 2002. As a member of the Coastal Processes and Wetlands committees, Ms. Harris has been involved in decision-making for on-going technical research and development of management guidelines for Pleasant Bay, its watershed and study area. She has prior experience as Conservation Administrator in Belchertown, Harwich and Brewster (interim). From 2007 until 2010, she provided review and analysis of Notices of Intent to the Town of Brewster as a consultant. She has a Bachelor of Arts degree in zoology and a Master of Science degree in Resource Management and Administration.

Diane Holt. Ms. Holt is a retired software engineer who has owned a house in Chatham since 1999. She served on the Chatham Conservation Commission from 2008 until 2014, the last five years of her tenure as Chair.

The following witness testified on behalf of the Department at the Hearing:

James Mahala. Mr. Mahala has been employed by the Department's Division of Wetlands as an Environmental Analyst since September 1986. Since July 2015 he has served as the Section Chief of the Wetlands & Waterways Program in the Southeast Regional Office. Mr. Mahala has applied the coastal wetland regulations for the past 29 years as DEP's coastal geologist. His work at the Department includes administering and enforcing the Wetlands Protection Act and the Wetlands regulations. In the performance of these duties he is required to review Notices of Intent, site plans and complex calculations, and write Superseding Orders of Conditions, Superseding Determinations of Applicability, Administrative Consent Orders, Enforcement Orders, Notices of Noncompliance, and Penalty Assessment Notices. In his

capacity and an Environmental Analyst, he conducts on-site inspections to identify and delineate coastal and inland wetlands and assess the potential impact of a proposed project on the statutory interests of the MWPA. As the Section Chief of the Wetlands & Waterways Program, he is responsible for reviewing the work of eight Wetlands & Waterways staff. During his tenure with the Department he has conducted hundreds of on-site inspections, many of them on Cape Cod. He has submitted technical affidavits in court supporting the scientific basis of the Coastal Wetland Regulations. He was a lead author of “Beach Nourishment”, MassDEP’s Guide to Best Management Practices for Projects in Massachusetts. He was also a lead author of the Department’s policy on Coastal Banks: Definition and Delineation Criteria for Coastal Banks (DWW Policy 91-1). Mr. Mahala has served on the Marine Outreach Guidance Group at the Woods Hole Oceanographic Institution Sea Grant Program since 2006. He has provided technical assistance to the State Attorney General’s Office, Department of Conservation and Recreation (formerly the Department of Environmental Management), and to local Conservation Commissions. He holds a Bachelor of Science degree in Geology and a Master of Science degree in Coastal Geology.

BACKGROUND

The Project Site

The McGonigles’ home is located at 498 Shore Road in Chatham. The property is a .82 acre parcel on the east coast of the Chatham mainland shore between Minister’s Point and Chatham Light. (Notice of Intent for SE 10-2916, November 4, 2013, Department’s Basic Documents; Fields PFT at ¶ 10). The property contains a single family home built in 1986 on top of an eroding coastal bank. The McGonigles bought the Chatham house in 2001 while they were

living in Virginia. (McGonigle PFT at ¶¶ 1-3). At the time of their purchase, the “[coastal] bank was in pretty good shape, although [they] did notice that it was quite steep and much less vegetated than the bank to [their] south...” and they saw some slight erosion on the bank. (*Id.* at ¶ 5-6). The property directly abuts the federally-authorized navigation channel and anchorage area known as Aunt Lydia’s Cove, and is approximately 540 feet north of the Chatham Fish Pier. (Fields PFT at ¶ 12). Tern Island is immediately east of the Property. (Ramsey PFT at ¶ 12). North Beach, a barrier beach, is east of Tern Island, and separates Chatham Harbor from the Atlantic Ocean. There are two openings (inlets) connecting Pleasant Bay and Chatham Harbor to the Atlantic Ocean. One was formed in early 1987, and the second in April 2007. The second inlet is across from Minister’s Point to the north of the McGonigles’ property. (Mahala PFT at ¶ 27, Ex. 7; Fields PFT at ¶ 11). The formation of the 2007 inlet provided an increase in tidal exchange in the Chatham Harbor/Pleasant Bay System. (“Hydrodynamic Model of Chatham Harbor/Pleasant Bay including 2007 North Breach”, Kelly, S. and Ramsey, J., April 28, 2008).

The coastal bank at the property is protected with a coir fiber roll system⁴ permitted by the CCC on January 15, 2003. (Order of Conditions for DEP File No. SE 10-1849, Michniewicz PFT, Ex. B). The Notice of Intent for that project originally proposed to extend the existing Town revetment south of the McGonigles’ coastal bank to their property. (See Exhibit B to PFT of Roger Michniewicz, “Proposed Revetment Extension” and Order of Conditions, DEP File No. SE-10-1849). During the course of the hearing process on the NOI the McGonigles withdrew their request for a revetment and the project was revised to install coir fiber rolls along the toe of

⁴ Coir rolls are cylindrical rolls that span 12 to 20 inches in diameter, are packed with coir fibers (i.e., coconut husk fibers), and are held together with mesh. The rolls are typically 10- to 20-feet long and can be stitched together to provide continuous shoreline coverage. <http://www.mass.gov/eea/docs/czm/stormsmart/properties/ssp-factsheet-4-coir-rolls.pdf>

the coastal bank and to revegetate the eroded section of the bank above the rolls. (Michniewicz PFT at ¶ 8). The CCC found that erosion at the site was significant and was due to end scour from the existing rock revetment to the south of the site. The CCC noted that the McGonigles' coastal bank was not being maintained. (Michniewicz Ex. B, OOC for DEP File No. SE 10-1849, Finding 2). The CCC observed that the existence of dead material and fallen trees on the eroding part of the bank was evidence that revegetation alone would not stabilize the bank and prevent further erosion because of the steepness of the bank. (Michniewicz Ex. B, OOC for DEP File No. SE 10-1849, Finding 3). The CCC found that the site was an appropriate location for the use of coir fiber rolls. Notably, the CCC found that “[t]he Coastal Bank at this site is a source of sediment and a buffer to waves.” (Michniewicz Ex. B, OOC for DEP File No. SE 10-1849, Finding 1). The coir fiber roll project permitted by this OOC was completed on April 9, 2007. (Michniewicz PFT at ¶ 9).

One week later a major storm hit the area, resulting in the development of an opening in the outer barrier beach known as North Beach. The storm washed the sand cover and plantings from the recently installed fiber rolls. (Michniewicz PFT at ¶ 10; McGonigle PFT at ¶ 15). The McGonigles were unable to keep a consistent sand cover on the fiber rolls and in 2011 they decided not to rebuild the “covering sand berm” but to instead plant vegetation plugs in the upper fiber rolls for more protection and stability. (McGonigle PFT at ¶¶ 22-23; Wilkinson PFT at ¶ 20). This planting plan was proposed as mitigation for another project, their proposal to expand a deck and relocate a spa, and relocate a patio and retaining wall. An Order of Conditions (DEP File No. SE-10-2707) for this project was issued on August 10, 2011. (Michniewicz PFT, Ex. C, Order of Conditions for DEP File No. SE 10-2707). The planting plan proposed to plant 2,200

square feet of native plantings to fill in sparse areas and planting native grasses over the top two tiers of the existing coir fiber rolls. (Michniewicz PFT, Ex. C at 11C). Subsequently, the middle section of the system was pulled down by two storms, “Super Storm Sandy”⁵ in October 2012 and “Storm Nemo”⁶ in March 2013. (McGonigle PFT at ¶ 25). The remaining portion of the system was partially collapsed and structurally compromised “such that [in Mr. McGonigle’s opinion] it provided little or no protection for the bank.” (Id.) As depicted in two photographs submitted with Mr. McGonigle’s PFT, the northern section of the system deteriorated between October 2014 and April 2015. (Id. at ¶ 28, Exhibit G). At the time of the Site view on February 17, 2016 at noon (mid-tide), some portion of the coir fiber roll system was in disarray.

The Proposed Project

The project at issue in this appeal involves replacing the fiber roll system with a rock revetment, similar in size and scale to the revetment installed and maintained by the Town of Chatham directly adjacent to and south of the subject property. (See Site Plan, Exhibit D to Michniewicz PFT at ¶ 18). The proposed structure will stretch from property line to property line. The southern end of the proposed revetment will tie-in to the existing fiber rolls at the property line. These fiber rolls will serve to connect the proposed revetment with the existing stone revetment on the adjacent property. (Michniewicz PFT at ¶ 19). The northern end of the

⁵ “Sandy, a hybrid storm with both tropical and extra-tropical characteristics, brought high winds and coastal flooding to southern New England. Easterly winds gusted to 50 to 60 mph for interior southern New England; 55 to 65 mph along the eastern Massachusetts coast and along the I-95 corridor in southeast Massachusetts and Rhode Island.” <http://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=416770>

⁶ “In February 2013, a nor’easter pounded the eastern United States, doing particular damage along the coast of New England. Wind gusts reached hurricane-force in several coastal states, raising a four to five-foot (1 to 1.5 meter) storm surge on top of astronomically high tides. The result was extreme beach erosion along the coast of Massachusetts and other coastal areas.” <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=80523>

proposed revetment will terminate with a return that is contained entirely on the McGonigles' property. The return will include a section of fiber rolls that is designed to create a smooth transition between the McGonigle property and the adjacent property to the north. (Michniewicz PFT at ¶ 20). The revetment will be 108 feet long, with a crest height of 8.0 ft. NGVD, and a slope of 1.5:1. The revetment will be constructed of layers of various components: (1) 5-6 ton toe stones placed on a filter fabric and back filled with a minimum of 9" to 12" layer of bedding stone, (2) 2-3 ton armor stones, and (3) 1.5' secondary stones. The top of the revetment will be constructed of flat stones set similarly to the adjacent revetment, and will be approximately 4' wide. (Michniewicz PFT at ¶ 21). The crest elevation of the revetment at 8.0 ft. NGVD has been designed to match the maximum elevation of the previously installed fiber roll system. The scarped areas of the bank created when the fiber rolls failed will be filled with clean bank compatible sediment, and the areas of the bank above the revetment will be planted with native vegetation. (Michniewicz PFT at ¶ 22).

Following revetment construction, the proposed project also includes the placement of 25 cubic yards of compatible sandy material and a beach monitoring program. The elevation and condition of the beach at the subject property and along the beach to the south towards the Chatham Fish Pier will be monitored twice a year in the late fall and late spring. Post storm monitoring will also be conducted. The purpose of the monitoring will be to evaluate the condition and elevation of the beaches and to evaluate whether additional sand needs to be added to nourish the beaches. The threshold for nourishment will be when the beach drops below the current elevations shown on the attached Plan of Record. The purpose of the proposed project is to "protect the dwelling at the property located at 498 Shore Road, Chatham, MA."

(Department's Basic Documents, Notice of Intent, November 4, 2013, Project Description).

The Petitioners propose a rock revetment because they assert that there is no other viable solution, and a coir fiber roll system is not a viable solution to the bank erosion. (Wilkinson PFT at ¶¶ 23-24).

The Superseding Order of Conditions

The CCC issued the Order of Conditions approving the proposed Project on September 19, 2014. Their vote to approve was 3-2.⁷ Among the findings the CCC made were that “the amount of sediment generated from the coastal bank and/or being transported is small.” (OOC at 11d). Finding that “[i]n this specific case, given the absence of sediment transport, any ruling on an NOI must be subject to [310 CMR 10.30(6)-(8)], the CCC found that the project “will have no adverse effect on the bank and will in fact act to preserve it.” (OOC at 11e). In its Findings, the CCC noted that the Chatham Wetlands Protection by-law departs from the state Wetlands Regulations on the subject of Coastal Banks. The state distinguishes between coastal banks that are sediment sources and those that are not, and the local by-law is mute on the issue, “...simply [saying] that no revetment activity can take place to protect post 1978 houses.” (Id.) Before indicating its approval, the CCC stated “Further, we assume that had Chatham wanted to preclude revetments for post 1978 houses on such banks, they would have explicitly expressed themselves to that effect. As such, we defer to the state for guidance and intent.” (Id.)(emphasis added). It was during the CCC's consideration of this NOI that the memoranda from Greg Berman and Ted Keon were made a part of the record. (See below at p. 21-24).

⁷ The CCC was composed of seven members. Five were present for the vote on this project. Mr. Lear was one of the members who voted against the project.

MassDEP appealed the OOC on its own initiative pursuant to the MWPA because in its opinion, the project and the OOC do not meet the performance standards for Coastal Bank and Coastal Beach. (MassDEP Intervention – 498 Shore Road, September 30, 2014, Department’s Basic Documents). After its review, which included a site visit Department by witness James Mahala, the Department denied the project, reversing the decision of the CCC. In the SOC, the Department determined that the proposed revetment would impede the exchange of sediment between the coastal bank and the coastal beach. In MassDEP’s view, the coastal bank helps to maintain the coastal beach along the McGonigle’s property, contributes sediment to downdrift beaches, and is significant to storm damage prevention and flood control. MassDEP determined that the proposed revetment could not be permitted because it cannot comply with the applicable regulation, 310 CMR 10.30(3). MassDEP further determined that the project could not comply with the performance standards for coastal banks because it would adversely affect the movement of sediment from the coastal bank to the coastal beach due to wave action. (SOC at 2; Mahala PFT at 44). Finally, MassDEP determined that the project cannot meet the performance standards for coastal beach because it would increase beach erosion and interfere with the beach’s ability to act as a sediment source for adjacent and downdrift coastal areas; would decrease the beach’s ability to change its form in response to wave conditions; and would enhance scour by reflecting wave energy, resulting in the narrowing and lowering of the beach. (SOC at 2; Mahala PFT at 59). The Department determined that the existing coir fiber roll system failed because the McGonigles had not maintained it.⁸

⁸ The proposed Project was subject to MEPA (M.G.L. c 30 § 61) because it requires state agency action (by MassDEP) and would result in alteration of a coastal bank. See 301 CMR 11.03(3)(b)(1)(a), part of the MEPA regulations. In the MEPA Certificate issued for this project, issued while this appeal was pending, the Secretary of

Petitioners' Claims of Error and for Relief

The Petitioners claim that the Department incorrectly applied the standards in the Wetlands Regulations applicable to Coastal Banks and Coastal Beaches and wrongly determined that the Project does not comply with those regulations. The Petitioners assert that the Department's findings were erroneous. The crux of their claim is that the sediment from their coastal bank is not significant to the statutory interests of storm damage prevention and flood control because it does not supply sediment to the adjacent or down drift beaches in a manner significant to those interests. (Petitioners' Notice of Claim at 4) ("NOC"). The basis of their claim is that the sediment eroded from the coastal bank is transported south along the beach to the dinghy dock at the Chatham Fish pier or into the federally-authorized navigation channel where it is dredged by the Town of Chatham or the Army Corps of Engineers. (NOC at 4). Simply put, none of the eroded sediment stays on the beach; it all is transported south and then removed. Consequently, the coastal bank is not significant to the statutory interests of storm damage prevention and flood control. Therefore, 310 CMR 10.30(3) neither applies nor prohibits the proposed Project. According to the Petitioners, only 310 CMR 10.30(6) and (7) apply because the coastal bank is significant only as a vertical buffer to storm waters, and not as a

Energy and Environmental Affairs noted that the coir fiber roll system was designed and installed prior to the 2007 breach of the barrier beach and therefore was "not designed for the increased wave energy and tidal range that have been prevalent since this event." MEPA Cert. at 5. He also noted that the system "was further compromised by a lack of annual maintenance, which was discussed at the MEPA July 21, 2015 site visit." *Id.* The Secretary stated:

To improve performance, regular maintenance is required on all bioengineering Projects, which includes replacing or reconfiguring components of a bioengineering system to adjust for changing conditions, adjusting or replacing anchors or anchor cables, replacing plants, and routine sand nourishment.

The MEPA certificate and related materials from MEPA are attached as Exhibit A to the Status Report filed with OADR by the Petitioners on October 1, 2015.

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sediment source. They contend the project meets the performance standards contained in these regulations because the project will not affect the stability of the coastal bank, but will instead stabilize the toe of the bank. (NOC at 4).

The Petitioners further claim that their project meets the performance standards for Coastal Beach and the Department's conclusion to the contrary was error. The McGonigles contend that because the rock revetment is designed to have an elevation two feet lower than the existing coir fiber roll array, more sediment will be available to the beach. Notwithstanding this contention, they maintain that the sediment does not contribute to the beach elevation in any case (see above), so the project will not adversely impact the beach elevations. (NOC at 5). The Petitioners seek a Final Decision overturning the SOC and approving the project as approved in the CCC's Order of Conditions. (NOC at 6).

ISSUES FOR ADJUDICATION

1. Whether the CCC's previous Order of Conditions authorizing construction of the existing home on the Property precluded the construction of the proposed structure at issue in this appeal of the Department's SOC?

2. Whether the Department properly determined that the Coastal Bank at the Property is significant to protection of the MWPA statutory interests of storm damage prevention and flood control pursuant to 310 CMR 10.30(1)?

a. If so, did the Department properly conclude that the proposed Project will not satisfy the Performance Standards at 310 CMR 10.30(3)-10.30(5)?⁹

⁹ "Performance Standards" are "[t]he requirements established by [the Wetlands Regulations] for activities in or affecting [specific wetlands areas protected by MWPA]." 310 CMR 10.04. The Performance Standards appear at 310 CMR 10.25 through 10.35 and 10.37, and 310 CMR 10.54 through 10.60. *Id.* The Performance Standards of 310 CMR 10.30(3)-10.30(5) govern when a Coastal Bank is determined to be significant to the MWPA statutory interests of storm damage prevention or flood control because it supplies sediment to Coastal Beaches, Coastal Dunes, or Barrier Beaches.

- b. If the Department was incorrect in its determination that the Coastal Bank supplies sediment to a Coastal Beach or Coastal Dune, does the proposed Project satisfy the Performance Standards at 310 CMR 10.30(6)-10.30(8)?¹⁰

3. Whether the Department properly determined that the proposed Project did not satisfy the Performance Standards for Coastal Beach at 310 CMR 10.27?

STATUTORY & REGULATORY FRAMEWORK

The Massachusetts Wetlands Protection Act and the Wetlands Regulations have as their purpose the protection of wetlands and the regulation of activities affecting wetlands areas in a manner that promotes the following interests:

- (1) protection of public and private water supply;
- (2) protection of ground water supply;
- (3) flood control;
- (4) storm damage prevention;
- (5) prevention of pollution;
- (6) protection of land containing shellfish;
- (7) protection of fisheries; and
- (8) protection of wildlife habitat.

M.G.L. c. 131, § 40; 310 CMR 10.01(2).

The regulations pertaining to coastal wetlands are at 310 CMR 10.21 through 10.37.

These regulations are “intended to ensure that development along the coastline is located,

¹⁰ The Performance Standards of 310 CMR 10.30(6)-10.30(8) govern when a Coastal Bank is determined to be significant to the MWPA statutory interests of storm damage prevention or flood control because it is a vertical buffer to storm waters.

designed, built and maintained in a manner that protects the public interests in the coastal resources listed in M.G.L. c. 131, § 40.” 310 CMR 10.21. Two coastal wetland resource areas are at issue in this appeal, coastal banks and coastal beaches. The Wetlands Regulations provide the following with respect to each resource area:

Coastal Banks. A Coastal Bank is the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland. 310 CMR 10.30(2).

A particular coastal bank may serve both as a sediment source and as a buffer, or it may serve only one role. 310 CMR 10.30(1). Coastal banks are likely to be significant to storm damage prevention and flood control. Coastal banks that supply sediment to coastal beaches, coastal dunes, and barrier beaches are per se significant to storm damage prevention and flood control. 310 CMR 10.30(1)(emphasis added). These banks, composed of unconsolidated sediment and exposed to vigorous wave action, serve as a major continuous source of sediment for beaches, dunes, and barrier beaches (as well as other land forms caused by coastal processes). The supply of sediment is removed from banks by wave action, and this removal takes place in response to beach and sea conditions. It is a naturally occurring process necessary to the continued existence of coastal beaches, coastal dunes and barrier beaches which, in turn, dissipate storm wave energy, thus protecting structures of coastal wetlands landward of them from storm damage and flooding. 310 CMR 10.30(1).

Coastal banks, because of their height and stability, may act as a buffer or natural wall, which protects upland areas from storm damage and flooding. While erosion caused by wave action is an integral part of shoreline processes and furnishes important sediment to downdrift

landforms, erosion of a coastal bank by wind and rain runoff, which plays only a minor role in beach nourishment, should not be increased unnecessarily. Therefore, disturbances to a coastal bank which reduce its natural resistance to wind and rain erosion cause cuts and gullies in the bank, increase the risk of its collapse, increase the danger to structures at the top of the bank and decrease its value as a buffer. 310 CMR 10.30(1). The parties agree that the coastal bank in this case acts as a vertical buffer.

When a proposed project involves dredging, removing, filling, or altering a coastal bank, the issuing authority shall presume that the area is significant to storm damage prevention and flood control. This presumption may be overcome only upon a clear showing that a coastal bank does not play a role in storm damage prevention or flood control, and if the issuing authority makes a written determination to that effect. 310 CMR 10.30(1). (Emphasis added).

When the issuing authority determines that a coastal bank is significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches, the ability of the coastal bank to erode in response to wave action is critical to the protection of that interest(s). 310 CMR 10.30(1).

When the issuing authority determines that a coastal bank is significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, the stability of the bank, i.e., the natural resistance of the bank to erosion caused by wind and rain runoff, is critical to the protection of that interest(s). 310 CMR 10.30(1).

Coastal Beaches. The Coastal Beach consists of “unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats. Coastal beaches extend from the mean low water line landward to the

dune line, coastal bank line, or the seaward edge of existing human-made structures, when these structures replace one of the above lines, whichever is closest to the ocean.” 310 CMR 10.27(2).

Coastal beaches dissipate wave energy by their gentle slope, their permeability and their granular nature, which permit changes in beach form in response to changes in wave conditions. Coastal beaches serve as a sediment source for dunes and subtidal areas. Steep storm waves cause beach sediment to move offshore, resulting in a gentler beach slope and greater energy dissipation. Less steep waves cause an onshore return of beach sediment, where it will be available to provide protection against future storm waves. Id.

A coastal beach at any point serves as a sediment source for coastal areas down drift from that point. The oblique approach of waves moves beach sediment alongshore in the general direction of wave action. Thus, the coastal beach is a body of sediment which is moving along the shore. Id.

Coastal beaches serve the purposes of storm damage prevention and flood control by dissipating wave energy, by reducing the height of storm waves, and by providing sediment to supply other coastal features, including coastal dunes, land under the ocean and other coastal beaches. Interruptions of these natural processes by human-made structures reduce the ability of the coastal beach to perform these functions. 310 CMR 10.27(1).

PETITIONERS’ BURDEN OF PROOF AT THE HEARING

The Wetlands Permit Appeal Regulations at 310 CMR 10.05(7)(j), as well as the requirements of the MWPA and the Wetlands Regulations, govern resolution of the Petitioners’ appeal of the SOC. Under 310 CMR 10.05(7)(j), the Petitioners have the burden of proof on all Issues for Resolution in the Appeal. See 310 CMR 10.03(2); 310 CMR 10.05(7)(j)2.b.iv; 310

CMR 10.05(7)(j)2.b.v; 310 CMR 10.05(7)(j)3.a; 310 CMR 10.05(7)(j)3.b. My review of the matter is *de novo*.

The Petitioners had the burden to “produce [at the Hearing] at least some credible evidence from a competent source in support of [their] position[.]” See 310 CMR 10.03(2); 310 CMR 10.05(7)(j)2.b.iv; 310 CMR 10.05(7)(j)2.b.v; 310 CMR 10.05(7)(j)3.a; 310 CMR 10.05(7)(j)3.b. Specifically, the Petitioners were required to present “credible evidence from a competent source in support of each claim of factual error [made against the Department], including any relevant expert report(s), plan(s), or photograph(s).” 310 CMR 10.05(7)(j)3.c. “A ‘competent source’ is a witness who has sufficient expertise to render testimony on the technical issues on appeal.” In the Matter of City of Pittsfield Airport Commission, OADR Docket No. 2010-041, Recommended Final Decision (August 11, 2010), 2010 MA ENV LEXIS 89, at 36-37, adopted by Final Decision (August 19, 2010), 2010 MA ENV LEXIS 31. Whether the witness has such expertise depends “[on] whether the witness has sufficient education, training, experience and familiarity with the subject matter of the testimony.” Commonwealth v. Cheromcka, 66 Mass. App. Ct. 771, 786 (2006) (internal quotations omitted).

So long as the initial burden of production or going forward is met, the ultimate resolution of factual disputes depends on where the preponderance of the evidence lies. Matter of Town of Hamilton, DEP Docket Nos. 2003-065 and 068, Recommended Final Decision (January 19, 2006), adopted by Final Decision (March 27, 2006). “A party in a civil case having the burden of proving a particular fact [by a preponderance of the evidence] does not have to establish the existence of that fact as an absolute certainty. . . . [I]t is sufficient if the party

having the burden of proving a particular fact establishes the existence of that fact as the greater likelihood, the greater probability.” Massachusetts Jury Instructions, Civil, 1.14(d).

EVIDENTIARY RULINGS

The relevancy, admissibility, and weight of evidence that the Petitioners, the Ten Citizen Group, and the Department introduced in the Hearing are governed by M.G.L. c. 30A, § 11(2) and 310 CMR 1.01(13)(h)(1). Under G.L. c. 30A, § 11(2):

[u]nless otherwise provided by any law, agencies need not observe the rules of evidence observed by courts, but shall observe the rules of privilege recognized by law. Evidence may be admitted and given probative effect only if it is the kind of evidence on which reasonable persons are accustomed to rely in the conduct of serious affairs. Agencies may exclude unduly repetitious evidence, whether offered on direct examination or cross-examination of witnesses.

Under 310 CMR 1.01(13)(h), “[t]he weight to be attached to any evidence in the record will rest within the sound discretion of the Presiding Officer. . . .” Hearsay evidence may be admissible in an adjudicatory hearing. The Supreme Judicial Court has held that “[s]ubstantial evidence may be based on hearsay alone if that hearsay has ‘indicia of reliability.’” Covell v. Dep’t of Soc. Servs., 439 Mass. 766, 785-86 (2003) (sufficient indicia of reliability was found where the hearsay was detailed and consistent and there was an absence of motive or reason to make false allegations); accord Embers of Salisbury, Inc. v. Alcoholic Beverages Control Comm’n, 401 Mass. 526, 530, 517 N.E.2d 830 (1988) (“Factors to be considered [in determining whether there is sufficient indicia of reliability] include independence or possible bias of the declarant, the type of hearsay materials submitted, whether statements are sworn to, whether statements are contradicted by direct testimony, availability of the declarant, and credibility of the declarant.”). The allowance of reliable hearsay in administrative proceedings is intended to increase their efficiency. Costa v. Fall River Hous. Auth., 453 Mass. 614, 627 (2009). The Supreme Judicial

Court has also held that reliance upon hearsay to form “the basis” of an administrative decision to terminate housing assistance benefits was “consistent with applicable due process requirements . . . so long as that evidence contains substantial indicia of reliability.” (Id.) Analyzing the potential risk of error in the decision, the court stated that “[r]eliance on hearsay that is anonymous, uncorroborated, or contradicted by other evidence will create particular risk of error. . . . On the other hand, reliance on hearsay from known, disinterested parties that is factually detailed, is given under penalty of law, or fits a recognized hearsay exception, will be relatively unlikely to result in error.” Id. at 628-29 (reliance on police report was appropriate but reliance on newspaper article was not because it contained the “kind of unattributed, multi-level, and conclusory hearsay evidence” and the impact of such evidence “turns on the weight” that was given to the article).

Two evidentiary issues were outstanding at the beginning of the Hearing. I address them in the order in which they were raised.

(1) Petitioners’ Motion to Strike Portion of Testimony Submitted by Ten Citizens Group

Five days prior to the Hearing, the Petitioners moved to strike certain statements within the pre-filed direct testimony of witnesses Diane Holt and Jane Harris, and two memoranda attached to the Ten Citizen Group’s Memorandum of Law and referenced in the PFT of John Ramsey. These statements include verbal hearsay statements made to Ms. Holt and Ms. Harris by Mary Fougere (secretary to the Conservation Department), Kirsten Andres (Conservation Agent), and Graham Geise, and two memoranda written to the CCC during its proceedings on the NOI for the proposed Project. (See p. 12, above). These include a memo dated January 8, 2014 from Greg Berman, Coastal Processes Specialist at the Woods Hole Sea Grant/Cape Cod

Cooperative Extension, and a memo dated January 13, 2014 from Ted Keon, Chatham's Director of Coastal Resources. The Petitioners argue that these are unsworn statements from people who are not witnesses and not subject to cross-examination and the statements should, therefore, be struck from the record. The Ten Citizens Group argues that the statements of Ms. Andres are relevant to rebut the testimony of Mr. Wilkinson regarding statements allegedly made to him by Ms. Andres. The Ten Citizens Group made no showing that Ms. Andres was unavailable as a rebuttal witnesses. They could have moved to supplement their witness list after the Petitioners filed their PFT to add Ms. Andres as a rebuttal witness if they believed such rebuttal was necessary. That would have been the appropriate way to have Ms. Andres' statements made a part of the record. The Motion to Strike the hearsay statements of Ms. Andres is granted, and ¶ 8 of Ms. Holt's PFT is struck from the record.

As to the verbal statements contained in the PFT of Ms. Holt and Ms. Harris made by Ms. Fougere and Mr. Geise, the Motion to Strike is granted only as to the statement of Mr. Geise. Paragraph 13 of Ms. Harris's PFT relates conversation between Ms. Harris and Mr. Geise on December 16, 2015 concerning a portion of the PFT submitted by Ms. Fields. Mr. Geise responded to a question posed by Ms. Harris and offered an opinion regarding Ms. Fields's testimony. Although Mr. Geise's work is cited by Ms. Fields in her PFT, I do not find the hearsay statement offered in Ms. Harris's testimony about her conversation with Mr. Geise to be reliable because it is unclear how full an understanding Mr. Geise had of Ms. Fields' testimony. Therefore, the last sentence of ¶ 13 of Ms. Harris's PFT, Mr. Geise's response to the question, is struck.

A portion of ¶ 6 of Ms. Holt's PFT is admissible, despite being hearsay, because it is both reliable and helpful. Ms. Holt testifies that "In a conversation with Mary Fougere, Secretary to the Conservation Department, on January 8, 2016, she [Fougere] explained that SE10-1849, a fiber roll project for this same property, overlapped with SE10-1862 (septic installation) in the process within the Chatham Conservation Office in 2003. Ms. Fougere was Secretary during that period. She stated that the Special Conditions for SE10-1862 which include the prohibition for a CES were 'mistitled' and read SE10-1849 when they should have read SE10-1862." The recording information from the Registry of Deeds confirms that these particular Special Conditions were recorded as part of the OOC for SE 10-1862. This portion of Holt PFT ¶ 6 is admitted. The remainder of the paragraph after that statement is stricken. The Fougere statement clarifies an obvious clerical error in documents in the record relating to OOCs issued to the McGonigles for prior projects at the site, including Exhibit 1 to the PFT of Mr. Mahala, the OOC issued by the CCC for SE 10-1862.

The memoranda from Berman and Keon require a somewhat different analysis. At the Prehearing Conference and in the Prehearing Conference Report and Order, the Chief Presiding Officer made it clear that if Mr. Keon, Mr. Berman and a Mr. Gagne filed "written testimony" it "must be under the pains and penalties of perjury and the witnesses must appear for cross-examination by opposing parties otherwise the witnesses Pre-filed testimony will be stricken from the record...." (Prehearing Conference Report and Order, footnote 16). Neither Mr. Keon nor Mr. Berman filed written testimony in this case. Instead, the Ten Citizens Group submitted the memos with their pre-filed testimony in this case, attached to their Memorandum of Law. According to both Attorney Lear and the Department's counsel, the Chief Presiding Officer

stated at the Conference specifically regarding the Berman and Keon memoranda that if another expert who was subject to cross-examination at the Hearing adopted the opinions in those memoranda, they would be admissible. Both Mr. Ramsey and Mr. Mahala refer to these documents in their pre-filed testimony, concurred in the opinions therein, and relied, in part, on statements made in the memoranda. Both Mr. Ramsey and Mr. Mahala were subject to cross-examination at the Hearing. Additionally, Ms. Fields included a photograph provided by Mr. Keon in her PFT. These memoranda are also part of the administrative record. (See MEPA Certificate and exhibits thereto, attached as Exhibit A to Petitioners' October 1, 2015 Status Report). Additionally, I find both of these documents, while hearsay, to be reliable. The Berman memorandum was prepared at the request of the Chatham Conservation Agent in 2014. Three properties, including the McGonigles, were proposing rock revetments. Mr. Berman was asked to look at the site and give his assessment of the coastal processes as it relates to that stretch of the shoreline. Mr. Keon's memorandum was prepared in his capacity as Director of Coastal Resources for the Town of Chatham. Like Berman, he evaluated shoreline erosion control measures for the same three properties. Both of these memoranda were prepared by the drafters in their official capacities and provided to the CCC to assist with its review and evaluation of the proposed Project. The Motion to Strike is denied as to the Berman and Keon memoranda.

(2) Supplement to James McGonigle PFT.

At the hearing, Mr. McGonigle offered a correction to his rebuttal testimony at ¶ 5 wherein he stated that he did not recall receiving a letter from Ms. Andres in January, 2010. He had been in Spain teaching at the time he prepared his pre-filed testimony and did not have access to his home files. When he returned to Chatham for the Hearing, he located the letter, as

well as his response, and offered them into the record as a supplement to his PFT. The Department did not object to this evidence becoming a part of the record, but the Ten Citizens Group did, arguing that it was opinion testimony being offered by a fact witness. Having reviewed the document, I find that the Andres letter and Mr. McGonigle's response can be admitted as a correction to his pre-filed rebuttal testimony.

DISCUSSION/FINDINGS

I. The 1985 Order of Conditions does not preclude the proposed project.

On August 22, 1985, the Chatham Conservation Commission issued an Order of Conditions ("OOC") to Bassett Construction Co. for the construction of a house at 498 Shore Road in Chatham.¹¹ The OOC is recorded in the Barnstable County Registry of Deeds at Book 4693, Page 133. That OOC, issued on August 22, 1985 for Project SE-10-493, contained an explicit prohibition on the type of Coastal Engineering structure being proposed in this appeal. Special Condition 11 of the OOC stated "No Coastal Engineering structures, such as a bulkhead, revetment, or sea wall shall be permitted on an eroding bank at any time in the future to protect the project allowed by this Order of Conditions." (Cuddy PFT Ex. B, Special Condition 11). By including that condition, the CCC necessarily concluded that the coastal bank supplied sediment to coastal beaches, coastal dunes and barrier beaches. (Mahala PFT at ¶ 8). However, Special Condition 11 was not included as a continuing condition in the Certificate of Compliance that was recorded in the Barnstable County Registry of Deeds at Book 5437, Page 278 after the completion of the house project. (Cuddy PFT at ¶¶ 11-12; Cuddy Ex. C). Whether by mistake or

¹¹ The Petitioners have argued that this Order of Conditions does not pertain to the house. This argument is without merit. Special Condition 7 in the OOC states "There shall be gutters, downspouts, and drywells or French drains on all sides of the house." (emphasis added).

oversight or intention, the Chatham Conservation Commission did not include Special Condition 11 (or any other condition) in the Certificate of Compliance for Project SE-10-493. There is no explanation in the record. The Department and the Ten Citizens Group argue that notwithstanding this omission, Special Condition 11 in the 1985 OOC precludes the McGonigles' revetment project.

The Petitioners argue that the 1985 Order of Conditions was fully released when the Conservation Commission issued its Certificate of Compliance and did not include any continuing conditions in the Certificate. As a result, the condition prohibiting construction of a rock revetment to protect the house did not continue past the date when the Certificate of Compliance was recorded at the Barnstable County Registry of Deeds. (Petitioners' Memorandum of Law at 3). Attorney Cuddy represented the McGonigles when they purchased their home. (Cuddy PFT at ¶ 2). The condition did not appear in the title abstract provided to Attorney Cuddy by her Title Examiner because it was not in the Certificate of Compliance, and Attorney Cuddy did not report the condition to the McGonigles. (Cuddy PFT at ¶¶ 8, 12-13). Therefore, the McGonigles were not aware of Special Condition 11 when they purchased the property. (McGonigle PFT at ¶ 7; Cuddy PFT at ¶ 13).

The Department argues that the McGonigles' lack of awareness of the condition does not matter because the OOC still applies to the property. I disagree with the Department that Lyon v. Duffy, 77 Mass. App. Ct. 860, 934 N.E.2d 831 (2010) controls the outcome of this issue. That case involved an Order of Conditions authorizing construction of a revetment and required the applicant to stabilize the bank above the revetment with fill and vegetation. The Order had been issued to a predecessor in interest to Lyon and recorded in the Registry of Deeds. The

construction of the revetment was completed prior to Mr. Lyon taking title, but the required stabilization of the bank above the revetment had never been completed. Mr. Lyon was unaware of this at the time of his purchase. Lyon, 77 Mass. App. Ct. 860, 862. Notwithstanding his lack of awareness that work required by the Order was not done, Mr. Lyon was bound by the Order's requirement to stabilize the bank. Id. at 863 (Order specifically provided that it was applicable to successors and assigns). Additionally, a Certificate of Compliance had not been issued for the project in that case.

I agree with the Petitioners that the 1985 OOC does not bar the revetment they are proposing now. Their lack of awareness of the prohibition in 2001 when they bought the house is of no consequence in this case, because the prohibition on a revetment in the OOC was not memorialized as a continuing condition in the Certificate of Compliance for SE 10-493. 310 CMR 10.04 defines "Certificate of Compliance" as "a written determination by the issuing authority that work or a portion thereof has been completed in accordance with an Order." 310 CMR 10.05(9)(e) provides that

If the final order contains conditions which continue past the completion of the work, such as maintenance or monitoring, the Certificate of Compliance shall specify which, if any, of such conditions shall continue. The Certificate shall also specify to what portions of the work it applies, if it does not apply to all the work regulated by the Order.

(emphasis added). The plain language of 310 CMR 10.05(9)(e) requires continuing conditions to be included in the Certificate of Compliance for the project. By implication, if a condition contained in a final Order of Conditions is not carried over to the Certificate of Compliance, then it does not continue as a binding condition of that wetlands permit. See generally In the Matter of Community Boating Center, Inc., OADR Docket No. WET-2011-005 and 006, Recommended

Final Decision, (November 11, 2011), 2011 MA ENV LEXIS 117 (“From a regulatory perspective, a Certificate of Compliance demonstrates that work under an Order of Conditions was satisfactorily completed, and upon recording, serves to release the applicant from further obligations to comply with the Order and removes any cloud on title. 310 CMR 10.05(9)). I find, therefore, that the Certificate of Compliance for Project SE-10-493 effected a release of the OOC for that project, and Special Condition 11 from the 1985 OOC does not carry forward to prohibit the proposed Project.

Nevertheless, and for the for the record, there is no reasonable dispute that subsequent Orders of Condition issued to the McGonigles for projects at their property and contained in the administrative record include the same explicit prohibition on Coastal Engineering structures. These include Orders for File Nos. SE 10-1862 (deck or septic system) and SE 10-2707 (deck seaward of the house). The Certificate of Compliance for project SE 10-1862 states clearly and unequivocally that Condition 26 of the OOC for that project is a continuing condition, and the Condition clearly and unequivocally prohibits a revetment at any time in the future to protect the project allowed by that permit. (Mahala PFT, Ex. 1 & 2). As Mr. Mahala testified, the inclusion of this condition in an OOC occurs when the CCC has determined that the coastal bank is a sediment source for the coastal beaches, coastal dunes and barrier beaches. On at least three occasions then, the CCC has made such a determination about the subject Coastal Bank.¹² The Petitioners cannot plausibly argue that they have been unaware of the prohibition on a revetment to protect their coastal bank. The coir fiber roll system ultimately permitted by the OOC for SE

¹² The OOC for SE 10-1849 (fiber roll system) did not contain the prohibition, but the OOC made a finding that the Coastal Bank was a sediment source and a buffer to waves. (Michniewicz PFT, Ex. B, Finding #1).

10-1849 was originally proposed to be a rock revetment. (Michniewicz Ex. B). Although not germane to the resolution of this issue, I agree with the Department and the Ten Citizens Group that the Petitioners have been on notice since at least 2003 that a rock revetment would not be permitted on their eroding Coastal Bank to protect the various projects permitted since that time because the bank is a sediment source for the coastal beaches, coastal dunes and barrier beaches.¹³

II. The Department Properly Determined that the Coastal Bank is Significant to the MWPA statutory interests of storm damage prevention and flood control

The key question in this appeal is whether the subject Coastal Bank supplies sediment to the coastal beach, and is therefore, per se significant to those statutory interests. The Petitioners had the burden of proving by a preponderance of the credible evidence that their Coastal Bank is not significant to the statutory interests of storm damage prevention and flood control as a source of sediment that plays a role in protecting those interests. If they sustained this burden of proof, their project would not be subject to the prohibition in 310 CMR 10.30(3). The theory of their case is that the sediment eroded from the Coastal Bank does not play a role in protecting these interests because most of it is washed away and/or removed and therefore does not nourish the adjacent beaches. They assert that their property is unique in all of Massachusetts. (Fields PFT at ¶ 8; Petitioners' Closing Brief at 1)(“Specifically, the McGonigle property is so uniquely situated, only one other property in the entire Commonwealth can claim the same critical characteristics which dictate the outcome of this case.”) As such, I should conclude that it is an

¹³ It would defy logic and credulity to assert that a revetment could be constructed (because not prohibited by the Certificate of Compliance) to protect the portion of the house constructed in 1986 when none would be permitted to protect subsequent projects such as a deck or septic system, which are parts of the house, and it does not appear that the Petitioners are making such an assertion. Their case hinges only on the significance of the Coastal Bank as a sediment source.

anomaly to which the usual conclusions about, and rules applicable to, coastal processes and rock revetments do not apply. In other words, I should reject a substantial amount of scientific analysis based on decades of data collection in favor of a time-limited snapshot of a system all the experts agree is dynamic. For the reasons discussed below, I decline to draw such conclusions. A preponderance of the evidence supports a finding that the Coastal Bank supplies sediment to the adjacent coastal beaches and plays a role in storm damage prevention and flood control. It is therefore per se significant to storm damage prevention and flood control. I further find that the Petitioners have not made a clear showing that the coastal bank does not play a role in protecting those interests, and thus have not overcome the presumption of significance in 310 CMR 10.30(1). The Petitioners concede that if they fail on the issue of their bank as a sediment source they cannot proceed with their revetment project.

A. The Coastal Bank is Significant to the Statutory Interests as a Sediment Source.

There is no dispute among the parties that the subject coastal bank erodes in response to coastal processes including waves, tides, and storms. The Petitioners rely primarily on the testimony provided by Leslie Fields regarding sediment transport to demonstrate that the eroded sediment does not nourish the fronting and adjacent beaches. Ms. Fields ultimate conclusion primarily relates to the direction of sediment transport. The Department and the Ten Citizens Group dispute her conclusions. Relying on the testimony of Mr. Mahala, Mr. Ramsey and the cross-examination of Ms. Fields at the hearing, these parties conclude that the eroding coastal bank is significant to the statutory interests as a sediment source.

Ms. Fields was retained by the Petitioners after Storm Nemo in 2013. She was asked to identify and evaluate existing conditions and opine on viable alternatives and associated impacts

for a long-term solution to the bank erosion. (Fields PFT at ¶ 7). Ms. Fields testified that the McGonigles' east-facing property is subject to strong winds, storm surge, tidal currents, and waves associated with nor'easters and hurricanes. (Fields PFT at ¶ 11). She conducted a shoreline change analysis that concluded that the shoreline in front of the Property experienced an average annual erosion rate of -0.3 ft./yr. over a period of time stretching from 1886 to 2012. From 1994 to 2007 shoreline erosion rates increased and since the second breach in the barrier beach in 2007 those rates have continued to increase with an average erosion rate of -2.3 ft./yr/ between 2007 and 2012. (Fields PFT at ¶ 13, Figure 1). Ms. Fields determined the erosion rates by analyzing aerial photographs of the shoreline, identifying the location of the Mean High Water (MHW) line, and measuring the rate at which that line changed. (Fields Tr. at 46:24-47:4, 48:22-23). She concluded that the McGonigle property will be subject to increased erosional pressures caused by high energy conditions directly from the Atlantic Ocean until approximately 2063, based on what she described as historical information. (Fields PFT at ¶ 17).¹⁴ This is due to changes expected to occur to the Nauset barrier beach over time that will increase the exposure of portions of Chatham Harbor and the mainland to open ocean as the tip of Nauset Beach accretes and the inlet moves to the south. (Fields PFT at ¶ 16, 19).

Waves within Chatham Harbor are influenced by wind speed and duration, fetch length¹⁵, and water depth. (Fields PFT at ¶ 20). Since the 2007 breach in the barrier beach, maximum

¹⁴ Ms. Fields cited a paper entitled "A Geomorphological Analysis of Nauset Beach/Pleasant Bay/Chatham Harbor For the Purpose of Estimating Future Configurations and Conditions", Geise, G., Mague, S. and Rogers, S., (December 2009).

¹⁵ Fetch is an area of ocean over which the wind blows in an essentially constant direction, thus generating waves. The term also is used as a synonym for fetch length, which is the horizontal distance over which wave-generating winds blow. <https://www.britannica.com/science/fetch>

tides have increased by over half a foot, to an elevation 5.3 ft. The base of the McGonigles' bank was surveyed at an elevation of 5.2 ft. in 2013. (Fields PFT at ¶ 21, 24). Therefore, Ms. Fields testified that the base of the subject bank is inundated during maximum high tides. During 50-year storms and greater, waves and storm surge impact the bottom 6-8 ft. of the subject bank. (Fields PFT at ¶ 30). Ebb tides (southerly moving currents) had a slightly greater velocity than flood tides (northerly moving currents) and these velocities increased slightly after the 2007 breach. These higher current velocities increase the potential for beach and bank erosion particularly during storms when the water level will be high enough to directly interact with the base of the bank. (Fields PFT at ¶ 31-32).

Using this information regarding waves and currents, as well as information gathered during site visits and her review of photographs and literature, Ms. Fields evaluated directions of sediment transport at the subject property. (Fields PFT at ¶ 33). In her opinion, the data clearly indicate a net southerly transport of sediments (bank and beach) along the shore towards the dinghy dock at the Fish Pier and into the federally-authorized navigation channel. In her opinion, sediment that erodes from the coastal bank either is transported to the south where it is caught by the dinghy dock and then removed by dredging, or it spills into the navigation channel. (Fields PFT at ¶ 40). Those sediments may land on the fronting beach and the downdrift beaches but "it very temporarily (for a day or a week) lands there and then transports down to the south." (Fields Tr. at 70:15-22; 71:3-7). In support of her opinion that the sediment from the McGonigles' bank does not supply sediment to the downdrift beaches, she stated that the dinghy dock north of the Fish Pier is dredged on a regular basis, which she describes as approximately every other year.

(Fields PFT at ¶ 46). Typically, 200 to 400 cubic yards of material are removed around the dinghy floats.

In conclusion, Ms. Fields opined that the McGonigles' bank is not significant to the statutory interests as a sediment source because sediment supplied by the bank to the coastal beach does not contribute to the ability of the beach to provide storm damage prevention or flood control for the following reasons: the increased tidal range at the site since 2007 subjects eroded bank sediment to immediate daily transport south and it is washed away with the tides and channel currents; the dominant direction of sediment transport is to the south; sediment trapped near the dinghy dock is dredged and removed; and data from topographic survey of elevations along this stretch of beach indicate a uniform and narrow beach from the McGonigle property to the Fish Pier, indicating that the eroded sediment does not build up on the adjacent or nearby beaches. (Fields PFT at ¶ 49). The McGonigles argue that if sediment from their bank stayed on the beach there would be a noticeable rise in the elevation or the width of the beach since 2007, but survey data show that the beach elevation has remained unchanged for over fifty years. (Michniewicz PFT at ¶ 31; Michniewicz PFR at Michniewicz ¶¶ 28-31; Fields PFR at ¶ 17; Closing Brief at 11). Relying on these data, the McGonigles conclude that "it is plain that sediment from [their] bank does not accumulate on the fronting coastal beach." (Closing Brief at 11). Simply put, it "does not play a role."

The Ten Citizens Group and the Department rebutted the Petitioners' case with credible evidence from multiple witnesses, as well as cross-examination of Ms. Fields that undermined her critical conclusions. Ms. Fields concluded that the net sediment transport from the subject coastal bank is to the south, but she conceded that some sediment is transported to the north.

Mr. Ramsey characterized Ms. Fields presentation of shoreline change data as misleading because it did not present the uncertainty related to the accuracy of the information. He also challenged this testimony for its focus on too brief a time period. (Ramsey PFT at ¶ 24). “[I]t should be understood that shoreline change analysis from maps and photographs is typically evaluated on a multi-decadal basis to ensure that observed trends are generally greater than the uncertainty associated with the analysis for shorelines where meaningful shoreline evolution is occurring.” (*Id.*) Using Ms. Fields’ data, Mr. Ramsey analyzed shoreline position uncertainty utilizing a peer-reviewed technique. Mr. Ramsey determined that Ms. Fields’ conclusion that erosion at the site has increased over time “cannot be scientifically justified within the accuracy of the analysis techniques she used to make this determination.” (Ramsey PFT at ¶ 24). He also challenged her characterization of the Geise, et al, report from 2009 as “historical”, when in fact, it is a projection and does not represent historical information. (Ramsey PFT at ¶ 24). At the Hearing, Ms. Fields agreed with Mr. Ramsey regarding the range of uncertainty. (Fields Tr. at 73-75). Mr. Ramsey also conducted his own analysis based on LiDAR¹⁶ data, and concluded that there has been “virtually no change to the coastal bank and beach fronting the 498 Shore Road property between 2010 and 2013.”

Mr. Ramsey evaluated wind-induced transport of sediment at the site caused by wind-generated waves by performing a quantitative assessment of wind information. (Ramsey PFT at ¶

¹⁶ LIDAR, which stands for *Light Detection and Ranging*, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses—combined with other data recorded by the airborne system— generate precise, three-dimensional information about the shape of the Earth and its surface characteristics. <http://oceanservice.noaa.gov/facts/lidar.html> The Petitioners characterized LiDAR as “data off the Internet” in an effort to undermine his conclusion.

24). Mr. Ramsey's analysis concurred with that performed by Greg Berman and provided to the CCC during the NOI process. Mr. Berman had concluded that "[a]t this site the maximum fetch is roughly the same from the southeast and northeast, however the actual fetch distance will vary depending on a variety of factors in this very dynamic area (i.e. inlet migration, islands and sand bars, etc.) The equal fetch distance (~1.3 miles) from two opposing directions (Figure 2) indicates that there may not be a predominant net sediment transport in this location." Mr. Ramsey also agreed with the conclusions of Ted Keon, provided to the CCC on January 13, 2014: "Erosion of the unarmored coastal banks occurs primarily during storm events and the resultant sediment is added to the littoral system. The eroded material is able to freely migrate both to the north and to the south depending on whichever direction the energy from winds and waves is being provided at that time." While Ms. Fields testified that she disagreed with the conclusions Mr. Ramsey drew from his wind analysis, because she believed he skewed his results by over-emphasizing north-directed winds, she did not dispute the wind rose included in his testimony as Figure 6. (Fields PFR at ¶ 9; Fields Tr. at 81:6-82:2). Ms. Fields did not dispute Mr. Ramsey's conclusion that there is wind transport of sediment to the north, and neither did she have anything "specific or quantitative" to rebut his conclusions. (Fields Tr. at 83:10-24).

Mr. Ramsey also testified regarding tidal-induced sediment transport. (Ramsey PFT at ¶¶ 15-16 & Figure 8; Ramsey Tr. at 137:5-24, 139:4-23). Ultimately, Mr. Ramsey opined that sediment eroded from the coastal bank is transported by waves and currents both to the south and to the north. (Ramsey PFT at ¶ 17).

Mr. Mahala testified that sediment eroded from the coastal bank will be transported both north and south, and will nourish both the fronting beach and the adjacent beaches to the north

and south. (Mahala PFT at ¶¶ 31-32). Mr. Mahala agrees with Ms. Fields that some sediment is transported as far as the dinghy dock and may ultimately be dredged and removed, but some of it remains on the beach. By remaining on the beach, the sediment plays a role in storm damage prevention and flood control by maintaining the beach in front of the Town revetment. (Mahala PFT at ¶ 31). It therefore plays a role in protecting those statutory interests. There is no dispute that the coastal bank is eroding. Eroded sediment plays a role at this site by maintaining the elevation and width of the beach, reducing the height of storm waves, and dissipating wave energy. (Mahala PFT at ¶ 31) Mr. Mahala pointed out that Ms. Fields did not do any quantitative analysis to support her claim of net or dominant transport to the south, and she conceded this point at the hearing, and admitted she could not quantify what she meant by “net” or “bulk” transport. (Mahala PFT at ¶ 33; Fields Tr. at 78). Ms. Fields also admitted that as sediment moves along a beach, it is a part of the beach, and she acknowledged that beaches in and of themselves provide storm damage prevention and flood control. (Fields Tr. at 67-68). Any amount of sediment eroded from the coastal bank, deposited on the coastal beach, and transported to the north [even if more goes south] is significant to the statutory interests. (Mahala PFT at ¶ 33)

Mr. Mahala agrees with Mr. Ramsey that waves and tidal currents transport sediment along the shoreline. (Mahala PFT at ¶ 35; Ramsey PFT at 13). He also agrees with the opinions of Mr. Berman and Mr. Keon regarding sediment transport. (Mahala PFT at ¶ 30). Mr. Mahala’s opinion, based on his 29 years as a coastal geologist for MassDEP and his examination of hundreds of coastal resource areas in Massachusetts, including many on Cape Cod and including the McGonigles’ property, is that the coastal bank is a sediment source to the nearby coastal

beaches, coastal dunes and nearshore shoals, and serves as a vertical buffer to storm waves. (Mahala PFT at ¶ 36).

Mr. Berman, in his memo to the CCC, opined as follows, based on his observations. Net sediment transport appeared to be from north to south along the shoreline, “as evidenced by periodic impoundment at the northern end of the Fish Pier...however there are minimal sediment transport indicators along the shoreline to indicate transport velocity or gross transport. The gross longshore transport is the total transport up or down the beach. Some beaches may have a large gross transport and a minimal net transport if there is not a dominant wind/wave direction. At this site the maximum fetch is roughly the same from the southeast and northeast, however the actual fetch distance will vary depending on a variety of factors in this very dynamic area (i.e. inlet migration, islands and sand bars, etc.) to impoundments of sediment at the southern and northern end of the Fish Pier (dinghy docks area). While net sediment transport in close proximity to the Fish Pier is apparent, it may not extend as far to the north as 498, 500 and 520 Shore Road. The sediment eroded from 498, 500 and 520 likely moves to the south during nor’easter type storms and to the north during southerly winds.”

As to sediment value, Mr. Berman stated that sediment from the coastal bank may be transported along the coastal beach in both directions before a “portion of which could become impounded at the Fish Pier or enter into the channel.” He noted that the Wetlands Regulations “do not specify how far downdrift a beach might have to be to qualify, or how long the material must serve as a role in storm damage prevention or flood control. Even the coastal beach in the immediate area of the eroding coastal bank is using that material to maintain the beach elevation which, in turn, reduces the amount of storm wave energy that strikes the coastal bank.”

At best, the Petitioners have demonstrated that the predominant transport of sediment from the coastal bank is to the south. In light of all the expert testimony and evidence presented, the Petitioners' claim that all the eroded sediment is trapped in the area of the Fish Pier and then removed was not supported by a preponderance of the evidence.

The McGonigles argue that the evidence is “overwhelming” that the sediment from their bank does not “play a role in maintaining the elevation and width of the beach, in reducing the height of storm waves, or by dissipating wave energy” and therefore is not significant to storm damage prevention and flood control pursuant to 310 CMR 10.30(1). (Petitioners' Memorandum of Law at 6). According to the McGonigles, it was error for MassDEP to determine otherwise. (Id.) MassDEP's interpretation of 310 CMR 10.30 – that the coastal bank is *per se* significant to these statutory interests as long as any amount of sediment eroded from the coastal bank is supplied to the coastal beach, coastal dune or barrier beach – is, according to the McGonigles, unlawful and defies common sense. (Id.) Contrary to the testimony of James Mahala, the McGonigles argue that “[a]s a matter of law and logic, a coastal bank's supply of a single grain of sand cannot be ‘significant’ to or ‘play a role’ in the ‘continued existence of coastal beaches coastal dunes and barrier beaches.’” (Id. at 7, quoting Mahala PFT at ¶ 20; 310 CMR 10.04; 310 CMR 10.30). For the coastal bank to be “significant” to the statutory interests of the MWPA, the “sediment that erodes from a coastal bank must have at least a tangible impact....” (Petitioner's Memorandum of Law at 7). The McGonigles argue that their coastal bank does not supply sediment in any significant way relative to storm damage prevention and flood control. (Id.) Nor does it play a role in maintaining the elevation or width of the beach, in reducing the height of storm waves, or by dissipating wave energy. (Id.) Ms. Fields and Mr. Minkiewicz testified in

support this argument. As they put it, the sediment from the McGonigle's coastal bank migrates to the south because the "dominant littoral drift along the shoreline" is in that direction, and the sediment gets trapped by the fish pier and is removed by the town by dredging or washes into the federal navigation channel and Aunt Lydia's Cove, where it is also removed by dredging. (Id.; Fields PFT at ¶¶ 36-40; Fields PFR at ¶¶ 9-14).

The McGonigles disagree with MassDEP and the 10 Citizens Group that some amount of sediment eroded from the coastal bank is supplied to the coastal beach to the north of their property. (McGonigle Memo of Law at 7). They argue that John Ramsey's conclusion on this point is not supported by the data. They argue that the data support a "conclusion that there is an overall net southerly directed residual current that influences current-induced sediment transport to the south, not the north." (Id., citing Fields PFR at ¶ 10). Relying on the testimony of Michniewicz, they argue that if any sediment from their coastal bank is transported to the north the volumes are too small to play a role in maintaining the elevation and width of the beach, in reducing the height of storm waves or by dissipating wave energy. In his testimony, Michniewicz stated that the data of beach elevation on the McGonigle's beach compared to that of the beach to the north indicate "no discernable rise in elevation on the beaches to the north." (Memo at 8; Michniewicz PFR at ¶ 10).

I am not persuaded by the Petitioners' arguments. Ms. Fields' analyses is limited in its temporal scope. To start, to draw her conclusions she focused her analyses on a limited period of time in the life of this coastline and this particular coastal bank, a period of time that happened to be marked by two especially significant storms, "Superstorm Sandy" in October 2012 and "Storm Nemo" in March 2013. As John Ramsey testified, and as Ms. Fields admitted on cross-

examination, the coastal bank and the coastal system should be viewed in a much longer time frame. (See also “Cyclical Behavior of the Tidal Inlet at Nauset Beach, Chatham, Massachusetts”, Geise, G., Woods Hole Oceanographic Institute, Woods Hole, 1988). Records going back to the 1800’s document a dynamic system that experiences significant changes over time. In addition, Ms. Field’s testimony was not persuasive for one simple reason. By describing the sediment transport as “net” to the south, she as much as conceded that sediment from the coastal bank is transported to the north. Other evidence confirms the bi-directional transport of sediment. As noted above, on cross-examination she made numerous concessions regarding her own conclusions and regarding the opinions of Mr. Ramsey. Though she disagreed with Mr. Ramsey’s analysis of wind-generated currents and testified that in her opinion he may have over-estimated their effects on sediment transport, she did not deny that wind-generated currents do, in fact, result in northerly transport of sediment in some amount.

The most relevant decision to this analysis is In the Matter of Stuart Bornstein, Docket No. 98-168, Final Decision, 2001 MA ENV LEXIS 85 (April 9, 2001). In Bornstein, the administrative law judge determined that there is no de minimus amount of sediment required be supplied for the coastal bank to be characterized as a source of sediment. Under Bornstein, even small amounts removed from a bank are significant to the statutory interests of storm damage prevention and flood control. In this case, the amount of sediment supplied to the coastal beaches fronting and adjacent to the McGonigles’ coastal bank was not quantified but the preponderance of the evidence clearly shows that the eroded sediment is deposited on the beach and transported both north and south. The Petitioners argument that (a) all of the southerly transported sediment is dredged or washed away and (b) the northerly transported sediments are too minimal to make

any difference are not supported by a preponderance of the evidence, and are contrary to the holding in Bornstein.

As Mr. Keon noted in his memo, "...all material that has been dredged from any portion of the adjacent navigation project is reintroduced into the littoral system. This enables the materials to continue to provide value for storm damage and resource protection for other locations." Mr. Keon also noted that the Town was willing to provide to the McGonigles some of the dredged material for nourishment of their fronting beach and dunes. (See also Note 17 at p. 43 relating to the Town of Chatham's permit for dredging and disposal).

I find that the Petitioners have not overcome the presumption in the regulation that the coastal bank is significant to the statutory interests. They have not made the "clear showing" required. A preponderance of the credible evidence supports a determination that the McGonigles' coastal bank plays a role in storm damage prevention or flood control by supplying sediment to the coastal beaches, coastal dunes and barrier beaches. To some degree, the Petitioners have demonstrated that the predominant transport of sediment is to the south. Not only does the evidence show that the bank supplies sediment to both the northerly and southerly beaches, but even after the Town dredges the area near the Fish Pier in Aunt Lydia's cove, that sediment is used to nourish other coastal areas within Chatham.¹⁷

¹⁷ Ms. Fields was asked at the hearing if she knew the ultimate disposition of the sediment dredged from Aunt Lydia's Cove. She did not. However, the permit modification application filed by the Town of Chatham with the Army Corps of Engineers for maintenance dredging of Aunt Lydia's Cove (and other locations) indicates that the Town plans to dispose of the dredged materials as beach nourishment and nearshore disposal at locations north of the subject site and just east of Nauset Beach.
http://www.nae.usace.army.mil/portals/74/docs/regulatory/publicnotices/NAE-2011-00488_Town_of_Chatham.PDF

B. The proposed revetment cannot meet the performance standards at 310 CMR 10.30(3)-10.30(5)

It is not disputed that the McGonigles' house was constructed after 1978. As a result, a rock revetment or other coastal engineering structure cannot comply with the Performance Standards applicable to coastal banks that are significant to the statutory interests as a sediment source. Mr. Mahala testified that there are other feasible methods of protecting the house than the proposed revetment, and properly installed and maintained fiber rolls can be an effective means of slowing erosion at this site. (Mahala PFT at ¶¶ 40, 65). No witness testified that the house or any of its accessories are at risk from storm damage. Mr. Michniewicz testified that the house is approximately 60-plus feet from the top of the coastal bank. (Michniewicz Tr. at 33:13-14).

Mr. Mahala's opinion, based on his 29 years of experience as a coastal geologist with the Department, is that the proposed revetment would block the exchange of sediment between the coastal bank and the beach, and therefore could not comply with 310 CMR 10.30(4) ("Any project on a coastal bank...shall not have an adverse effect due to wave action on the movement of sediment from the coastal bank to coastal beaches or land subject to tidal action.") The Petitioners concede this point, and agree that if the coastal bank is determined to be significant to storm damage prevention and flood control as a sediment source, and not only as a vertical buffer, then the project cannot be permitted without a variance. (Petitioners' Memorandum of Law at 9). Although I have determined that the proposed Project cannot meet the performance standards as discussed above, and therefore have determined that the Department properly denied the project, I will address the remaining issues for the record.

C. The Project Could Satisfy the Performance Standards at 310 CMR 10.30(6)-(7)¹⁸

If a coastal bank is determined to be significant to the statutory interests of storm damage prevention and flood control because it is a vertical buffer, the provisions 310 CMR 10.30(6) and 10.30(7) apply to the proposed project. Subsection (6) provides that any project on a coastal bank “shall have no adverse effects on the stability of the coastal bank.” Subsection (7) affords the Department discretion in permitting by providing that “bulkheads, revetments, seawalls, groins or other coastal engineering structures may be permitted on such a coastal bank...” (emphasis added) but does not provide any additional performance standards. The plain meaning of these subsections read together is that a project such as the proposed revetment may be permitted if it shall have no adverse effect on the stability of the bank.

The Petitioners argue that their project will serve to stabilize the toe of the bank, enabling them to further maintain and stabilize the landward face of the bank with compatible sediment and vegetation. (Petitioners’ Memorandum of Law at 9-10; Fields PFT at ¶ 53; Michniewicz PFT at ¶¶ 21-23). The Department concedes that the project could comply with 310 CMR 10.30(6). (Mahala PFT at ¶ 46). The Department argues, however, that 10.30(7), affording the Department discretion, requires some analysis to determine how that discretion should be exercised. In this case, the revetment is not necessary to protect the dwelling. Mr. Mahala notes that even for pre-1978 buildings, the proposed structure must be required to prevent storm damage to the building. Again, no evidence was presented to indicate that the residence is in any way at risk. The evidence at the hearing demonstrated that the house sits about 60 feet back from the top of the coastal bank. (Michniewicz Tr. at 33:13-14). It is Mr. Mahala’s professional opinion that the

¹⁸ All parties agree that the site is not a rare species habitat, and therefore they agree that 310 CMR 10.30(8) is inapplicable to this discussion.

Department should not exercise its discretion to approve this revetment, even if the bank were found to serve only as a vertical buffer because there are other alternatives that have less impact on the fronting beach and adjacent shoreline. (Mahala PFT at ¶ 49). Such alternatives include “soft solution” methods that would stabilize the bank in order for vegetation to become established on the face of the bank. (Mahala PFT at ¶ 65). Mr. Wilkinson disputes this. In his opinion, soft solutions alone will not provide meaningful stabilization due to the proximity of the base elevation of the fiber roll array to mean high tide water and regular inundation. (Wilkinson PFT at ¶¶ 36-39). Even so, the system remained in good repair from 2007 (after the repairs) until 2012, undermining the basis for Mr. Wilkinson’s conclusion. (McGonigle PFT at ¶ 25). What the evidence shows is that it was difficult to maintain a sand cover. As was noted during the MEPA process, regular maintenance is required on all bioengineering projects to improve performance. This includes replacing or reconfiguring components to adjust for changing conditions, adjusting or replacing anchors or anchor cables, replacing plants, and routine sand nourishment. Other than a couple of efforts to replace the sand cover as described by Mr. McGonigle, there is no evidence that anyone attempted to redesign or reengineer the system to account for the conditions in the area after the 2007 break in the barrier beach. (See Note 8, above at pp. 13-14).

There is no dispute regarding whether the proposed project could meet the performance standards applicable to coastal banks that serve the statutory interests only as a vertical buffer and not as a sediment source. The question is only whether the Department should exercise its discretion to allow the revetment. Mr. Mahala makes a persuasive argument for denying the project based on the present record. However, if I had found that this coastal bank was serving only as a vertical buffer, I would recommend that this matter be remanded to the Department’s

Southeast Regional Office for a fuller consideration of viable alternatives based on additional information from the Petitioners and their consultants. Mr. Wilkinson alludes to other options the Department may have rejected in the past. (Wilkinson PFR at ¶ 14). I have determined that this bank serves not just as a vertical buffer but as a sediment source; any consideration of the ability of the proposed project to comply with 310 CMR 10.30(6) and (7) is moot because the project cannot otherwise be permitted.

III. The Project does not meet the Performance Standards for Coastal Beach

The presumption that the coastal beach in this case is significant to storm damage prevention and flood control can only be overcome by a clear showing that the beach does not play a role in protecting those interests. 310 CMR 10.27(1). The ability of a coastal beach to respond to wave action is critical to protecting those interests. If a coastal beach is determined to be significant to the statutory interests of storm damage prevention or flood control, then the proposed project is governed by the provisions of 310 CMR 10.27(3)-(5).¹⁹ In this case, the dispute concerns whether the proposed revetment, if otherwise approvable, would comply with the performance standards in 310 CMR 10.27(3). This section provides that “[a]ny project on a coastal beach...shall not have an adverse effect by increasing erosion, decreasing the volume or changing the form of any such coastal beach or an adjacent or downdrift coastal beach.”

The Petitioners assert that the Department’s determination on this issue was wrong, and claim that neither the Department nor the Ten Citizens Group provided evidence to support the Department’s findings. (Petitioners’ Memorandum of Law at 10). The Petitioners claim that site-

¹⁹ Subsection (4) applies to groins, jetties, solid piers and “other such solid fill structures” which will interfere with littoral drift [transport along the foreshore]; the revetment is not such a structure so this provision does not apply. Subsection (5) allows beach nourishment with clean sediment of a grain size compatible with that on the existing beach, notwithstanding the language of Subsection (3).

specific evidence gathered from actual ground conditions supports their position. Their theory is that the proposed revetment will be constructed to an elevation to match the existing Town revetment, and therefore we can predict the impact of the proposed revetment based on information from the Town revetment. Mr. Michniewicz testified that a survey of the shoreline elevations in the area from the McGonigle's property to the Fish Pier, conducted by his firm on October 28, 2014, demonstrates that the elevations in front of the Town revetment are the same as the elevations in front of the McGonigles' property. (Michniewicz PFT at ¶ 25). The elevations along the shoreline on the McGonigle property are neither higher in elevation nor further seaward than the elevations in front of the Town's revetment. (Michniewicz PFT at ¶ 27). According to Mr. Michniewicz, the elevations along this stretch of shoreline have remained at consistent levels for over fifty years. (Michniewicz PFT at ¶ 28; Michniewicz Ex. F). His opinion is that the Town's revetment has not caused a lowering or loss of volume of the beach fronting it. (Michniewicz PFT at ¶ 31; Michniewicz PFR at ¶¶ 28-31). Therefore, there is no reason to expect a different response to wave energy from the McGonigles' proposed revetment, and the evidence is "irrefutable" that the McGonigles' project will not have an adverse effect on the beach by lowering its elevation or changing its volume. (Michniewicz PFT at ¶ 31; Petitioners' Memorandum of Law at 11). Ms. Fields testified that more sediment will be available from the coastal bank with the proposed revetment than at present because it will be constructed to a lower elevation. The natural bank above the crest of the revetment will be subject to surge and waves at the 20-25 year return period water level and greater. During these events, sediment will be available from the bank, and in the unlikely event that the beach elevations ever fall below elevations critical to the stability of the revetment, the project includes

a beach nourishment component. Ms. Fields (and Mr. Michniewicz) maintain that the site specific data confirm the truth of the Petitioners' claims and demonstrate that the conclusions drawn by Mr. Ramsey and Mr. Berman are wrong. (Fields PFR at ¶¶ 18-21).

As noted above, MassDEP determined that the project cannot meet the performance standards for coastal beach because a rock revetment would increase beach erosion and interfere with the beach's ability to act as a sediment source for adjacent and downdrift coastal areas; would decrease the beach's ability to change its form in response to wave conditions; and would enhance scour by reflecting wave energy, resulting in the narrowing and lowering of the beach. In addition, the Department notes that the toe stones of the revetment itself would be placed on the beach, thereby decreasing the beach's volume. (Department's Closing Brief). Mr. Mahala opined that the sediment from the coastal bank nourishes the fronting coastal beach. (Mahala PFT at ¶ 32). Once the sediment is deposited on the beach, the sediment is then available to be transported by wave action and/or tidal currents to the north and south. Sediment eroded from the coastal bank plays a role in maintaining the elevation and width of the beach, reducing the height of storm waves and dissipating wave energy. (*Id.*) It is Mr. Mahala's opinion that the proposed rock revetment would have an adverse effect on the relevant statutory interests because it would increase erosion and change the form and volume of the fronting and adjacent beaches. (Mahala PFT at ¶ 58). This would result because the revetment, a hard structure, would affect the beach's ability to change its form in response to wave conditions, as it does now, and would interfere with the ability of both the bank and the beach to erode and act as a sediment source for nearby coastal beaches and dunes. (Mahala PFT at ¶ 59).

A critical factor controlling the impact of a revetment on a beach is its position on the beach profile. (Mahala PFT at ¶ 60; Mahala Ex. 9, “Beach Response to the Presence of a Seawall: A Comparison of Field Elevations”, Tait, J., April 1990). The further seaward a seawall is located, the more often and energetically it can interact with waves. The proposed revetment would be located approximately 23 feet from the mean high water line at the Site. In Mr. Mahala’s opinion, this close proximity to the water would cause interaction between the revetment and beach processes even during mild coastal storm events. (Mahala PFT at ¶ 60). Hard coastal structures such as the proposed revetment reflect wave energy rather than dissipate it, leading to beach scour. The proposed revetment would enhance scour by reflecting wave energy and thereby lead to the narrowing and lowering of the fronting beach, and enhance erosion of that beach, thereby depriving downdrift coastal resources of sediment. (Id. at ¶ 61). Mr. Mahala bases this opinion on his personal observations during his many years with the MassDEP, which include observing “numerous narrowed to non-existent high tide beaches in front of revetments in Massachusetts....” (Id.) Adjacent beaches would also be adversely affected because of flanking or end scour, leading to acceleration of loss of beach in front of neighboring properties. During a coastal storm on a natural shoreline, the surf zone widens in a seaward and a landward direction. A revetment on the beach prevents the landward movement of the surf zone and causes the surf zone to be narrower than if the shoreline were natural. This results in storm wave energy being concentrated over a smaller area and surf zone processes, including longshore currents and wave reflection, intensify. (Id. at ¶ 62). For these reasons, it is his opinion that the proposed revetment would not meet the performance standards for coastal beach.

Mr. Ramsey opined that the use of a revetment at the McGonigle property will cause a lowering and loss of volume of the beach, and lead to a loss of sediment supply to adjacent and downdrift beaches. (Ramsey PFT ¶ 20) Mr. Ramsey adopts the opinion of Greg Berman contained in his January 8, 2014 memorandum. Mr. Berman, a coastal geologist, is a Coastal Processes Specialist.²⁰ Because Mr. Ramsey adopted Mr. Berman’s opinion, I provide details from the memorandum. Mr. Berman conducted a site visit to 498, 500 and 520 Shore Road in Chatham to “give an assessment of the coastal processes as it relates to this stretch of shoreline.” Each of the three owners of those properties had applied for a continuous rock revetment that would run south and match up with the existing Town revetment. Only the northernmost property (520 Shore Road) was built prior to 1978. Mr. Berman visited the site on January 2, 2014. Berman describes a series of photographs taken at the site visit.²¹ One photograph showed the existing Town revetment located south of the three properties. A second photograph showed the northern end of the revetment and the adjacent fiber roll project (belonging to the McGonigles). Mr. Berman observed that the “[w]ater depth adjacent to the fiber rolls is minimal.” The third photograph showed some of the fiber rolls in “poor condition and displaced from their original location. Again, there is minimal water at this location.” The fourth photograph was taken looking south from the northern end of the revetment. As to the water

²⁰ “The Coastal Processes Specialist provides technical assistance to the communities of Barnstable County on a variety of coastal land protection and management issues. This is accomplished through site visits, giving formal and informal presentations to regulatory, business, and community groups, and planning and conducting seminars, workshops, and meetings. The Coastal Processes Specialist also conducts applied research on coastal resource issues and provides this information to user groups, develops and implements interdisciplinary community-focused research and extension projects, and assists local grant proposal efforts to fund these projects. Many of these research projects are developed into fact sheets, bulletins, and publications and are distributed to marine industries, municipalities, individuals and agencies”. <http://www.capecodextension.org/coastalprocesses/assistance/>; <http://web.who.edu/seagrant/about/people/>

²¹ The photographs are not attached to the memorandum.

depth along the revetment, it varied, but “[was] significantly deeper than adjacent areas without a CES.”

Mr. Berman observed that the coastal beach at this site extends from Mean Low Water (MLW) to the toe of the coastal bank. It was his opinion that “a lowering of the beach will allow an area to erode more quickly than previous conditions. As a part of the overall system, eroded bank sediment also serves to maintain the salt marsh and tidal flats, which in turn support a great number of ecological services.” (Berman Memo at 2). Mr. Berman advised that “great care” should be taken when permitting a CES because they have the potential to alter wave, tidal or sediment transport processes. Citing the general negative effects of CES, including exacerbating beach erosion, damaging neighboring properties, impacting marine habitats and diminishing the capacity of landforms to protect inland areas from storm damage, Mr. Berman stated that “[w]aves reflected from an exposed CES will likely erode the fronting beach more quickly, potentially undermining the CES while lowering the height of the beach. This erosion may also result in a loss of dry beach at high tide, reducing the beach’s value for storm damage protection, recreation, and wildlife habitat.” (Berman Memo at 3).

Mr. Berman concluded that sediment eroded from the coastal banks likely serves to nourish the adjacent coastal beach to the south, and to the north, but to a lesser degree; a reduced sediment supply at this location may lead to deeper water depth at the revetment which would allow taller waves to impact the coastal bank, potentially increasing storm damage; the coastal bank at the location of the three properties does provide sediment to the system. Mr. Berman acknowledged that some of that sediment may not be beneficial because it enters the channel or

impounds at the Fish Pier, but “at least a portion of the material eroded from the bank nourishes the coastal beach and would be beneficial and ‘significant’.” (Berman Memo at 3).

Mr. Ramsey testified that “it is well understood that the coastal bank at the project site receives direct wave attack during periods of elevated water levels associated with storm surge; therefore the proposed revetment will also be exposed to direct wave attack during similar wave conditions. (Ramsey PFT at ¶ 22). According to Mr. Ramsey, numerous researchers have evaluated wave reflection off of Coastal Engineering structures and the general understanding from the research is that if a beach is overtopped by storm surge and/or wave action, wave reflection from the CES will cause a lowering of the beach profile. Ramsey opines that wave reflection from the proposed Project will cause increased erosion and change the form of the beach fronting the CES. (Id.) Because sediment from the McGonigles’ Coastal Bank is transported both to the south and the north by a combination of wave action and tidal currents, material from the eroding Coastal Bank provides sediment to the littoral system that maintains the adjacent and downdrift beaches north and south of the McGonigles. In rebuttal to Mr. Michniewicz’s opinion, which Mr. Michniewicz based on survey data in the vicinity of the Fish Pier, Mr. Ramsey states that the site-specific survey data provided in Michniewicz PFT Ex. E in fact shows beach elevations in front of the Town revetment to be 1 to 2 feet lower than in front of the McGonigles’ property, evidencing the negative impacts of the revetment on the fronting beach. (Ramsey PFT at ¶ 31). The lowering of beach elevation fronting a revetment is consistent with the findings of standard coastal engineering research. (Ramsey PFT at ¶ 32). In Mr. Ramsey’s opinion, armoring the Coastal Bank with a rock revetment will “prevent sediment that

has historically eroded from the coastal bank from migrating to adjacent beaches, thereby decreasing the volume and changing the form of [those beaches].” (Ramsey PFT at ¶ 23).

Mr. Michniewicz offered an explanation for this discrepancy, but I do not find it credible. In his PFR, Mr. Michniewicz explained that the “beach elevation is lower because the Town regularly removes sediment from the beach near the Fish Pier in order to maintain water depths within the dinghy dock area.” (Michniewicz PFR at ¶ 5). He includes with his rebuttal a news article showing a photograph of the Town’s excavator removing sediment on April 17, 2015 (Michniewicz PFR Ex. A), and two photographs purporting to show this beach area before the dredging, in March 2015, and afterwards, in April 2015, and an aerial photograph from May 2015. (Michniewicz PFR Ex. B and C). The problem is that the site-specific data are reflected in a survey conducted by Mr. Michniewicz’s company on October 28, 2014, six months before this dredging occurred. According to the testimony of Ms. Fields, the Town dredges that area “on a regular basis”, which she describes as “approximately every other year, or as needed following severe storms.” (Fields PFT at ¶ 46). If the area was dredged in April 2014, absent any evidence to the contrary, it is reasonable to infer that it had not been dredged recently prior to the October 2014 survey. The more persuasive testimony is that the lower elevations in that area at the time of the survey were the result of scouring from the Town revetment. The weight of the evidence tips in favor of the evidence provided by the Department and the Ten Citizens Group. I am more persuaded by the opinions of Messers. Ramsey, Berman and Mahala based on documented research into the effects of hard structures on fronting and adjacent beaches than I am by anecdotal information collected during a brief period of time. Based on the foregoing, I find by a preponderance of the evidence that the proposed Project would result in adverse impacts to the

fronting and adjacent beaches by increasing erosion of those resource areas by wave reflection and scouring. It therefore does not meet the performance standards for coastal beach.

CONCLUSION

The Petitioners have not made the “clear showing” required to overcome the presumptions in the applicable regulations. The preponderance of the credible evidence supports the Department’s denial of the Project in the SOC. I recommend that the Department’s Commissioner issue a Final Decision affirming the SOC as a Final Order of Conditions denying the proposed project.

Date: 4/4/2017



Jane A Rothchild
Presiding Officer

NOTICE- RECOMMENDED FINAL DECISION

This decision is a Recommended Final Decision of the Presiding Officer. It has been transmitted to the Commissioner for his Final Decision in this matter. This decision is therefore not a Final Decision subject to reconsideration under 310 CMR 1.01(14)(d), and may not be appealed to Superior Court pursuant to M.G.L. c. 30A. The Commissioner’s Final Decision is subject to rights of reconsideration and court appeal and will contain a notice to that effect.

Because this matter has now been transmitted to the Commissioner, no party shall file a motion to renew or reargue this Recommended Final Decision or any part of it, and no party shall communicate with the Commissioner’s office regarding this decision unless the Commissioner, in his sole discretion, directs otherwise.

SERVICE LIST

**In the Matter of
James J. and Lisa G McGonigle.**

**Docket No. WET- 2015-008
DEP File No. SE 10-2916**

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