

**WATER MANAGEMENT ADMINISTRATION
TIDAL WETLANDS DIVISION**

Wetland Report and Recommendation

State Wetlands Case No:
15-WL-0757



Applicant: Maryland Department of Natural Resources
580 Taylor Ave
Annapolis MD 21401
(410)974-3733

Date Application Received: September 9, 2015 **Public Notice Required?** Yes

Comment Period Closing Date: February 18, 2016

Maryland Coordinates: 168587 x 449804

Book Map Coordinates: Baltimore City & Co. ADC Map Num: 0 Ed: 28 Coord: N/A

Location of Proposed Work: North of the Chesapeake Bay Bridge in the Chesapeake Bay near the mouth of the Patapsco River, Baltimore County, Maryland.

Description of Authorized Work: To hydraulically dredge up to 5 million bushels (roughly 300,000 cubic yards) of oyster shell, in two phases, as part of a comprehensive research and development effort to monitor and assess the ecological consequences of removing shell from the shoal and to use the shell material to enhance oyster populations and oyster fisheries in the Chesapeake Bay. Maryland Department of Natural Resources (MDNR) is proposing to dredge a series of no more than ten "cuts", totaling no more than 32 acres of the approximately 214 acre shoal, so as to preserve the overall integrity of the Shoal. Each dredge cut will be taken from the outer edge of the north or south edges of the shoal. Each cut will be approximately 500 feet wide, and will extend no further than one-third the width of the Shoal at that location, with an expected average of 275 feet. Existing depths in the potential cut locations are approximately 10 to 13 feet, relative to mean low water. Initial depth of each cut will be approximately 30 feet below the bottom, but will be partially backfilled to an expected final depth of 10 to 15 feet below bottom, by discharging the return water, including unused shell fragments and sediment, through a discharge pipe located below the surface of the water and directed to the cut being dredged.

The project will be sequenced as follows:

- In Year 1 of the license period, data on water quality, oyster populations, and fish and benthic communities will be collected seasonally at proposed dredging sites and reference locations at the shoal.
- In Year 2, approximately 2 million bushels of shell will be removed from four initial dredge cuts.
- In Years 2 and 3, water quality, oyster populations, and fish and benthic communities will be monitored seasonally in the initial dredge cut(s) and in two undisturbed reference locations at the shoal.
- By the end of Year 4, the monitoring data from Years 1, 2, and 3 will be analyzed and presented in a study report. If the studies indicate that the initial dredging has produced no significant adverse effects, the remaining 3 million bushels of shell will be dredged in Year 5, using the same methodology.
- If monitoring results of the 5-year project show no adverse effects, MDNR will submit an application for a new Tidal Wetlands License no earlier than Year 5 of the license to continue the dredging of the shoal, until a maximum of 30 million bushels (1.8 million cubic yards) of shell has been removed.

License Term: To facilitate these activities and the proposed monitoring schedule, the Department recommends a 6-year initial license term.

Requires Water Quality Certification?: Yes, WQC will be issued by MDE.

Qualifies for Maryland State Programmatic General Permit?: No, United States Army Corps of Engineers alternate review and issuance of permit required.

Area of Vegetated Wetland Impacts: 0 s.f.

Area of Wetlands Created: 0 s.f.

Was the Applicant's Original Project Modified?: No

Purpose of the Proposed Project: The shell from the Man-O-War Shoal (Shoal) is to be used for the restoration of native oyster populations and oyster fisheries. Shell may be used to improve existing oyster bars to enhance natural recruitment, to provide a foundation for hatchery-spawned seed oysters deployed to encourage reestablishment of an abundant and self-sustaining oyster population, to provide substrate for leased bottom in support of aquaculture, and to provide substrate needed to sustain oyster fisheries in Maryland.

Background

The Man-O-War oyster restoration project is a component of the recommendations of the Chesapeake Bay Program's 2000 Agreement, the Maryland Oyster Advisory Commission, the 2005 Oyster Management Plan, President Obama's 2009 Executive Order to restore and protect the Chesapeake Bay, Maryland's 2010 Oyster Restoration and Aquaculture Development Plan and the 2014 Chesapeake Bay Watershed Agreement, and is necessary to implement the preferred alternative specified in the *Final Programmatic Environmental Impact Statement for Oyster Restoration in Chesapeake Bay Including the Use of a Native and/or Nonnative Oyster* (USACE et al. 2009).

This permit application requests approval to remove approximately 5 million bushels of the shell from Man-O-War Shoal for use on oyster sanctuaries, managed public harvest areas and aquaculture areas. To preserve the basic integrity of the shoal structure, multiple dredge cuts are proposed into the shoal along its periphery in Years Two and Five of the permit term. Most of the surface area of the shoal will remain undisturbed during the term of this permit and serve as a base for future seed plantings.

MDNR intends ultimately to remove approximately 30% of the available shell (about 30 million bushels) to use primarily to restore oyster habitat and oyster populations. In response to stakeholders' concerns about the potential ecological effects of a shell-dredging project of this magnitude, MDNR is requesting an initial five-year permit to dredge 5 million bushels of shell as part of a comprehensive monitoring project to assess the ecological consequences of removing shell from the shoal.

As part of MDNR's initial 2015 application package to the Department, MDNR submitted a document entitled, "*Attachment 1- DNR Shell Dredging Application 2015*" (MDNR Attachment 1), which is included herein as Attachment A. That document has been continuously revised throughout the application process in response to comments by the Department, as well as other agencies including, the United States Army Corps of Engineers (ACE), National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) and the United States Environmental Protection Agency (EPA). The most recent 72 page document (revised February 2017) contains detail regarding the dredging process, project need, alternatives analysis, potential

environmental effects of the proposed dredging and the use of the dredged oyster shell, and proposed monitoring.

Project Need

Pages 5-9 of MDNR Attachment 1 provided much detail regarding the need for the project. The population of the native Eastern oyster (*Crassostrea virginica*) has declined to record low levels compared to its historical abundance. The availability of hard substrate is critical for increasing the number of oysters in the Bay; however, sedimentation and deterioration of oyster shell together are reducing hard-bottom habitat in Chesapeake Bay available for recruitment.

In a 2009 report to the Governor and General Assembly, the Maryland Oyster Advisory Commission (OAC) stated that a shortage of high-quality habitat for settlement and growth of oyster larvae represents a significant limitation of the oyster population's potential for expansion and that recent limitations on the availability of dredged shell have curtailed shell-planting programs. The OAC recommended that MDNR apply for a permit to dredge shell from Man-O-War shoal. This was followed by a Maryland Law that required MDNR to apply.

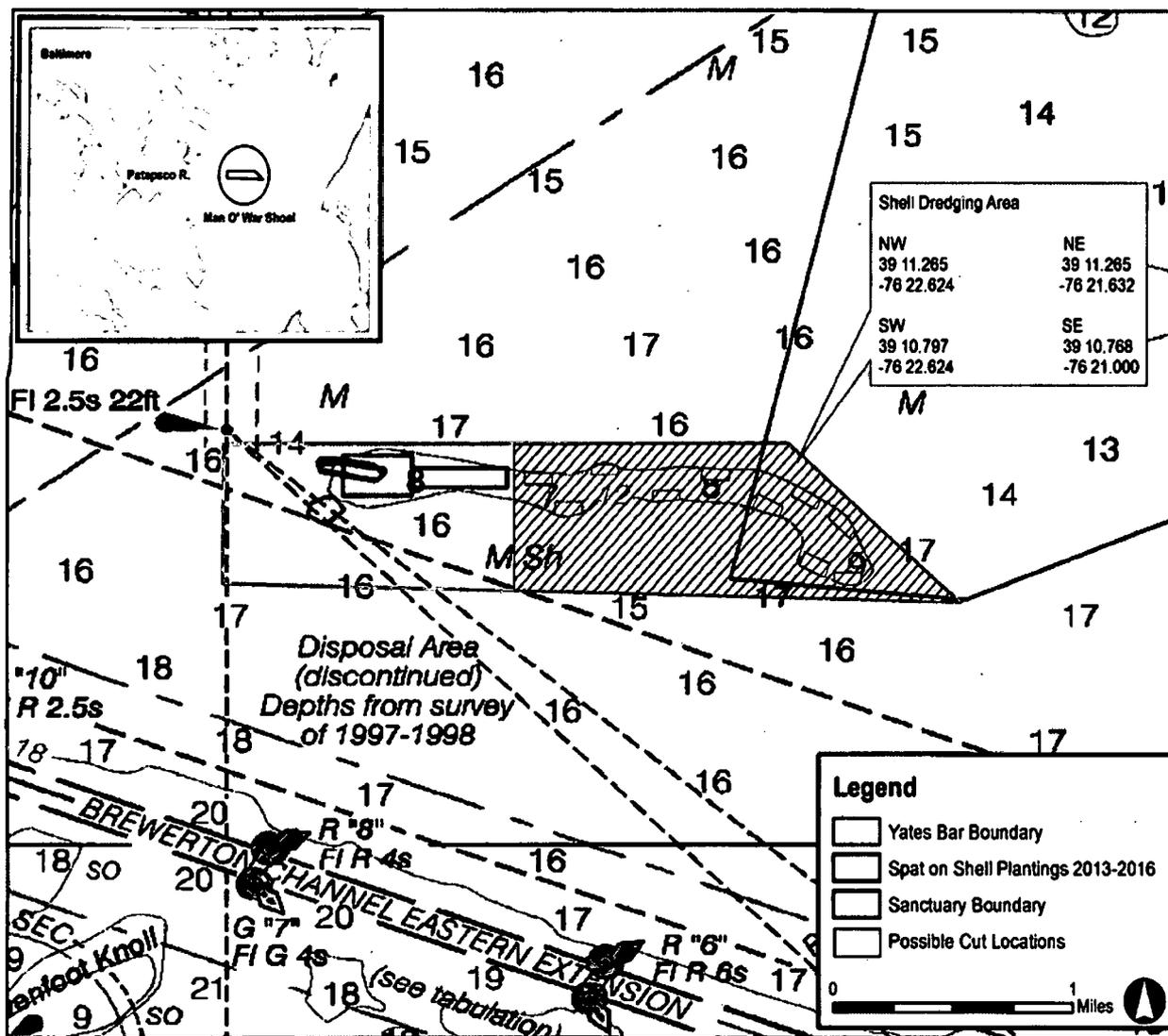
Dredging Process and Methodology

As described on Page 2 of MDNR Attachment 1, "Dredging will be conducted by a hydraulic shell dredge that uses a rotating cutterhead to dislodge the bottom material, which is silt and shells and shell bits called 'fines'. Behind the cutterhead, a suction pipe moves the loosened material onto the dredging barge into a washing and sorting apparatus. The shells are washed using ambient bay water pumped into rotating washing drums. At the same time the shells are sorted using a set of screens, with the silt, water, and the smallest of the fines going through the screens into an 'elephant trunk' discharge pipe directed into the cut. The cut is partially backfilled by this process. The shells and larger sized fines that are captured by the screens are directed by conveyor belts to barges tied to the side of the dredge. Shells that are retained (also called whole shells) are larger than 1 inch. Fines that are retained are between about 1/4 to 1 inch. Smaller fines are discharged with the silt and wash water."

Each cut will be no wider than 500 feet and extend no more than one-third of the distance through the shoal. The initial depth of the dredge cut will be approximately 30 feet deep relative to the surrounding bottom elevations, based on past shell dredging projects, but the cut will then be partially backfilled by sediment and fines from the shell washing & sorting process on the dredge, resulting in a final cut depth of the cut being 10 to 15 feet deep.

The surface area of an average cut will be about 3.2 acres (approximately 500' x 275') due to limitations at Man-O-War on the width and length of cuts. However, exact lengths and acreages will vary depending on where the cut is made. The number of dredge cuts to be made is estimated at 10 (~32 acres total), but it will be dependent on how much shell each dredge cut contains. Undredged shoal bottom will be left between cuts, creating a pattern of dredged and undredged shoal bottom. This arrangement of dredge cuts is intended to provide irregular topography along the perimeter of the shoal in order to increase the habitat surface area of the shoal, i.e. "structure" that can be utilized by various fish species and colonized by benthic biota. An overview of the project site and proposed dredge areas is provided below, as "Figure 1." This information is also presented in Attachment H.

Figure 1: Project overview and dredge map



Notes:-

- The proposed shell dredging area is the crosshatched area.
- Locations of dredge cuts are conceptual, for illustration purposes.
- Actual locations determined before dredging and according to the permit.
- Cut dimensions will be 500' maximum width and a length no greater than 1/3 of the way into the charted edge of the shoal (average of 275' long).
- Undredged bottom will be left between cuts.
- No greater than 10 cuts will be made to remove the proposed 5 million bushels of shell.

Alternatives Analysis

Pages 10-19 of MDNR Attachment 1 detailed MDNR's analysis of potential alternate dredging locations alternate dredging methods, alternatives to using dredged shell to create oyster habitat, including rehabilitating oyster bars through surface dredging, reclaiming previously planted shell at other locations, purchasing shell from out-of-state suppliers, and using alternative materials.

Potential Effects of Removing Shell from Man-O-War Shoal

Pages 19-47 of MDNR Attachment 1 provided detail regarding the potential environmental consequences of the proposed project. These effects, evaluated through monitoring of comparable, past MDNR shell dredging activities, include water quality impacts, impacts to shoal habitat, and recreational/commercial use of the shoal in the vicinity of the project. Additionally, upon completion of the dredge, the size and shape of the shoal will be altered, which could result in changes in use of the shoal by fish and other biota and possible changes in the characteristics of substrate in the dredged area.

With respect to water quality, the primary effect of dredging at Man-O-War shoal will be the presence of a visible turbidity plume that may range in size up to tens of acres when dredging occurs during running tides. However, MDNR indicates that the presence of the plume is unlikely to result in any significant biological or ecological effects, and the plume is likely to dissipate nearly completely within several hours of cessation of dredging. Recommended special conditions are included herein to protect water quality standards.

With respect to impacts to shoal habitat, oyster production on the shoal currently is very limited. The existing Man-O-War oyster population has been supported primarily through seed plantings. As a result of inter-agency review comments, no dredge cuts are proposed on an area of the shoal that has been planted with natural oyster seed or hatchery oyster seed within the past 10 years. There are no other active oyster bars in the immediate vicinity of Man-O-War shoal (the next closest oyster bar to Man-O-War is about 4,500 meters away). According to MDNR, dredging is likely to result in a loss of benthos, both biomass and numbers of species, in the dredged cuts immediately following dredging, and bivalve species probably will be most affected. However, benthic communities probably will recover to pre-dredging levels of abundance, biomass, and number of species within 6 to 12 months after dredging is completed.

One major concern regarding dredging shell from Man-O-War shoal is the potential effect on fish communities and, consequently, on the value of the location for recreational and commercial fishing. MDNR indicates that past fish surveys conducted to determine impacts of dredging in the upper Bay suggest that the fish communities in areas in which shell dredging occur are not substantially altered either during dredging activity or after dredging was completed. MDNR prepared and submitted an Essential Fish Habitat Assessment to ACE, who coordinated with NMFS, as part of the application. NMFS's comments are discussed on Page 7 of this report. The ACE recommendations in consultation with NMFS have been included in this report. With the special conditions included in this report, potential impacts to commercial and recreational fishing will be minimized to the maximum extent possible.

Use of Dredged Shell

Pages 47-55 of MDNR Attachment 1 discuss the potential uses for the dredge shell. MDNR intends to use the shell dredged from Man-O-War shoal on oyster sanctuaries, on managed public harvest areas, and for aquaculture. The shell planted on managed harvest areas will be directed by MDNR in consultation with Maryland's County Oyster Committees.

Three options were proposed as ranges of allocation of shell between the intended possible uses – sanctuary areas, managed public harvest areas, and aquaculture. These three options include:

- 90% of the dredged shell planted on sanctuary areas and 10% planted on managed public harvest or aquaculture areas,
- 50% of the dredged shell planted on sanctuary areas and 50% planted on managed public harvest or aquaculture areas, or

- 25% of the dredged shell planted on sanctuary areas and 75% planted on managed public harvest or aquaculture areas

These allocation options are merely suggestions. Ultimately, MDNR will utilize comments from the public and the Oyster Advisory Commission to develop an allocation plan. The plan will consider specific sites (bars), the bottom condition and acres involved, and will include the use of both shell and alternate materials; not just shells from Man-O-War. Some of the variables that will be taken into account for allocating all the different materials (including shells from Man-O-War) will be proximity of the source of the materials to the bars, timeliness of availability, and costs and resources available to move (and if needed store) the shell or other materials for planting.

MDNR indicates that the total proposed dredged shell from Man-O-War shoal from this permit and future permits, about 30 million bushels, would be sufficient to create 6"-12" relief oyster bars covering about 1,000 acres, if all the shell were to be used to construct such bars. For the 5 million bushel initial project proposed in this application, approximately 170 acres could be constructed at 6"-12" relief (approximately 7% of the acres estimated to be lost per year).

Monitoring

As part of the proposed shell dredging project, monitoring of potential impacts to water quality, sediment, benthos, oyster, and fish populations will occur before and after the dredging. Sampling will occur each year: Year One – before dredging occurs; Year Two – during dredging; and Year Three – after dredging. During sampling, fish bottom trawls, sediment samples, benthic samples, and water quality (bottom and surface salinity, dissolved oxygen, conductivity, turbidity, and water temperature) will be sampled once during each season (spring, summer, and fall). Additional water quality sampling will occur during the dredging activity. A sufficient number of samples will occur to allow for statistical analysis and the sites will be fixed so that trends over time may be assessed. Once a year, an oyster patent tong survey will occur on Man-O-War oyster bar. Pages 56-59 of MDNR Attachment 1 detail the proposed monitoring. Appropriate monitoring reports will be provided to the Department and the ACE in accordance with the special conditions of this report.

Public Participation

As required by §5-204(b) of the Environment Article, the Department drafted and issued a public notice by posting the public notice on its web site from January 1, 2016 to February 1, 2016 and publishing the public notice for the proposed project in the December 19, 2016 edition of the Dorchester Banner, Baltimore Sun, Star Democrat and Dundalk Eagle.

A total of two joint State public informational hearings/federal public informational meetings were held on February 2, 2016 from 6:00 PM to 9:00 PM at Sparrows Point High School, Auditorium, 7400 North Point Road, Edgemere, Maryland 21219 and February 3, 2016 from 6:00 PM to 9:00 PM at Governor Hall at Sailwinds Park, 200 Byrne Street, Cambridge, Maryland 21613. A poster session was also available during both hearings from 6:00 PM to 7:00 PM to allow the public to speak with MDNR representatives about the project. The public informational hearing record remained open until February 18, 2016, providing interested persons additional time to comment on the application. The attendance sheets for the Public Informational Hearing are included for reference as Attachment B.

Written comments were received during the comment period, oral and written comments were received during the Public Informational Hearing, and additional written comments were received during the period the hearing record remained open. The comments received by MDE were both in support of and in opposition to the

proposed project. A list of the written commenters, as well as copies of the received written comments, are included for reference as Attachment C.

Citizens expressed concerns over the restoration efforts, including: the need for the proposed project; potential short-term and long-term effects of the proposed project; why other restoration efforts are not being implemented such as alternative materials or recycling shell; whether the project will be successful; degradation of the existing shoal and associated habitat; sediment plumes and how water quality will be affected in the proximity of the project area as well as the amount of scientific data available to support the dredging.

The Delmarva Fisheries Association, Inc., the Tidal Fish Advisory Commission and one citizen submitted letters in support of the oyster restoration. The Clean Chesapeake Coalition and several watermen also provided oral comments in support of the project. Comments for the support of the restoration efforts included the following: the overall need for oyster shell in the state of Maryland; oyster shell is the best surface for oyster larval settlement and recruitment, and the oyster shell would help restore natural oyster bars on the Eastern shore.

Although not part of the record of written comments, representatives of the Coastal Conservation Association (CCA) of Maryland met with BPW and Department staff on June 15, 2017, to express their opposition to the project. Among the reasons cited by CCA for their opposition to the project included their assertions that: the Man O' War Shoal is a unique fisheries habitat resource in the upper Bay; that the quantity of shell to be dredged will have insufficient environmental benefit, in the context of Maryland's overall oyster restoration goals, relative to the adverse impacts to the shoal itself; and that a better long-term solution to the state's goals is to place less policy emphasis on public harvest areas, and greater emphasis on public and private hatcheries and private aquaculture operations to promote improved stewardship of the resource.

Comments by Local, State or Federal Agencies and Elected Officials

Maryland Department of Natural Resources (DNR)

DNR's Fisheries Service conducted an internal Departmental review of the proposed project and any concerns raised by that review were addressed by DNR prior to the submission of the application. As a result, DNR's Integrated Policy and Review Unit did not comment during MDE's application review process.

Maryland Historical Trust (MHT)

Upon receipt of an application, MDE screens using a Geographic Information System (GIS) database for potential impacts to historical and archeological resources. For this particular application, the screening process identified potential areas of concern so the application was forwarded to MHT for review and comment. Subsequently, MHT provided its determination that the proposed project would not have any significant effect on historical or archeological resources.

United States Army Corps of Engineers (ACE)

The Department and ACE coordinated closely with regard to review and comment on the proposed project. As a result of ACE comments, revisions to the proposed project and the associated MDNR Attachment 1 were made to address concerns regarding impacts to existing oyster populations, aquatic resources and fisheries, proposed monitoring parameters and the associated monitoring report, impacts resulting from backfilling the dredge cuts, locations of the dredge cuts, impacts to sturgeon and sea turtles, and impacts of increased turbidity as a result of the project. The Department and ACE will continue to coordinate closely to ensure that any required monitoring is conducted accurately and in accordance with an approved monitoring plan.

National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS)

The ACE consulted with NMFS, as part of its review of the proposed project. MDNR Attachment 1 was revised in response to provided comments. By letter of June 20, 2017, ACE indicated that consultation with NMFS had concluded under Section 7 of the Endangered Species Act for the project. NMFS concluded that it concurred with the ACE's determination that the proposed project "is not likely to adversely affect the NMFS ESA-listed species." Based upon this consultation with NMFS, ACE provided six recommendations with regard to conservation of essential fish habitat in a June 20, 2017, letter to MDNR. MDNR indicated that it was in agreement with the six recommendations, by way of letter dated August 21, 2017. The June 20th ACE letter and the August 21st MDNR response letter, are included herein as Attachment D.

United States Environmental Protection Agency (EPA)

By letter dated February 18, 2016 (Attachment E), the EPA provided written comments on the proposed project. The EPA raised concern regarding whether the applicant had provided documentation to demonstrate that the proposed oyster shell dredging was the least environmentally damaging practicable alternative (LEDPA) available to restore oyster populations and oyster fisheries in the Chesapeake Bay. Specifically, the EPA indicated that such documentation should discuss whether other less damaging alternatives, such as alternative substrates (fossilized clam shells, imported shell, construction debris, etc.), are available that do not involve dredging oyster shells. The alternatives analysis should also address available project design and implementation alternatives to avoid and/or minimize environmental impacts, including water quality and species habitats. Additionally, EPA recommended that an updated survey of the shoal's living oyster population be completed prior to any dredging to better determine the pre-construction conditions.

EPA also raised concerns regarding the placement of the dredged oyster shells. Specifically, EPA indicated that the proposed locations of the shells and the placement criteria were unclear. Additional criteria should be provided with regard to determining the allocation of the dredged shells. EPA also raised concern regarding as to why a significant portion of the shells may be used for the providing substrate for leased bottom in support of aquaculture when the main purpose of the project should be to encourage establishment of an abundant, self-sustaining oyster population.

EPA also indicated that secondary impacts on habitat for existing oyster populations and other benthic communities should be evaluated. EPA raised concern regarding whether the sediment and fill material being discharged back into the cuts would cover remaining shells and negate any benefits of leaving shell for future oyster growth. EPA also expressed concern regarding the resulting sediment plume and its secondary impacts on other species in the surrounding area.

United States Coast Guard

By email dated December 30, 2015 (Attachment F), Coast Guard Captain of the Port of Baltimore submitted written comments on the proposed project indicating that the applicant's equipment shall not obscure or interfere with any aids to navigation, specifically, the Craighill Channel Range Front Light (LLNR 8040) depicted on the applicant's Figure 1, which has an advertised height of 22 feet. Additionally, any proposed mooring or other navigation aids established to support dredging shall be approved through the 5th Coast Guard District.

Councilman Todd Crandell submitted a letter (Attachment G) in opposition to the proposed project and expressed his concern regarding risking the health of the Man-O-War Oyster Bar for a program that has had previously low success rates.

The evaluation of this project has taken into account ecological, economic, recreational, developmental, and aesthetic considerations appropriate for this proposal as well as other requirements set forth in the Code of Maryland Regulations. To ensure that impacts to resources are avoided and minimized to the maximum extent possible and to ensure that all work is performed in accordance with critical area and local regulations, the Department has recommended a number of special conditions. Provided all general and special conditions are adhered to, the work proposed will not cause significant deleterious impacts to marsh vegetation, submerged aquatic vegetation, finfish, shellfish, or navigation.

Project Justification: In consideration of the site characteristics and the nature of the proposed work, the Department concludes that the application represents a reasonable exercise of riparian rights.

SPECIAL CONDITIONS:

- A. The Maryland Department of the Environment has determined that the proposed activities comply with, and will be conducted in a manner consistent with the State's Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended.
- B. The Licensee shall comply with all Critical Area requirements and obtain all necessary authorizations from local jurisdiction. This License does not constitute authorization for disturbance in the 100-foot Critical Area Buffer. "Disturbance" in the Buffer means clearing, grading, construction activities, or removal of any size of tree or vegetation. Any anticipated Buffer disturbance requires prior written approval, before commencement of land disturbing activity, from local jurisdiction in the form of a Buffer Management Plan.
- C. If the authorized work is not performed by the property owner, all work performed under this Tidal Wetlands License shall be conducted by a marine contractor registered with the Maryland Department of the Environment in accordance with Chapter 286 of the 2010 Laws of Maryland. A list of registered marine contractors can be obtained by contacting the Department at 410-537-3249 or by e-mail at MDE.MCLB@maryland.gov.
- D. Within six months of issuance of the Department License by the Board of Public Works, the Licensee shall submit a detailed Turbidity Monitoring Plan (TMP) describing how turbidity will be monitored during all dredging and backfilling activities during the license term. The TMP shall be submitted to the Water & Science Administration, Tidal Wetlands Division, for review and approval. The TMP should include:
 1. Provisions for the use of an Independent Monitoring Contractor (IMC) for the collection of turbidity samples
 2. Department-approved methods for the collection, analysis, QA/QC and reporting of turbidity data in Nephelometric Turbidity Units (NTUs)
 3. Description of how turbidity sample sites and frequency will be determined, to include both background sites and "impacted" sites, within the center of any visible, down-current turbidity plume

4. Proposed protocols for the shutdown of operations or other corrective actions, and reporting, to be taken in the event that the IMC determines that an exceedance of state water quality standards has occurred.
- E. Within six months of issuance of the Department License by the Board of Public Works, the Licensee shall submit a complete Environmental Monitoring Plan (EMP) which details the timeline, testing parameters and monitoring locations of all required pre-dredge, during-dredge and post-dredge seasonal monitoring of the identified dredging monitoring site(s) and identified control site(s) to assess potential environmental effects of the proposed project on water quality, benthic habitat, and fish and benthic community structure, to the Water & Science Administration, Tidal Wetlands Division, for review and approval. The EMP shall include, at a minimum:
1. A detailed plan for an initial baseline assessment, to be conducted within Year 1 of the license term, to obtain seasonal data on water quality, oyster populations, and fish and benthic communities at proposed dredging sites and undisturbed reference locations at the shoal.
 2. A detailed plan for seasonal monitoring of water quality, oyster populations, and fish and benthic communities in the initial dredge cut(s) and in undisturbed reference locations at the shoal, to be conducted during Years 2 and 3 of the license term, concurrently and after dredging of the initial, approximately 2 million bushels of shell material authorized to be dredged under this license. This shall include plans for the submittal of a detailed, "Phase 1" monitoring report providing detailed analysis and summary of the monitoring results, to be submitted to the Department's Tidal Wetlands Division no later than the end of Year 4 of the license term.
 3. A detailed plan for seasonal monitoring of water quality, oyster populations, and fish and benthic communities in the initial dredge cut(s) and in undisturbed reference locations at the shoal, to be conducted during the remainder of license term, concurrently and after dredging of the remaining, approximately 3 million bushels of shell material authorized to be dredged under this license.
 4. Supporting documentation describing the study methodologies, site selection criteria, statistical assumptions and other information demonstrating the scientific validity of the proposed study design.

Upon submittal of the required EMP, the Department shall have 30 days to review, and make recommended changes or approve the plan. The Licensee shall not commence baseline study without prior approval from the Department, or the Department fails to respond within this 30-day period.

- F. The Licensee shall monitor project activities, as authorized under this License, in accordance with the Department-approved TMP and EMP, as directed by the Department.
- G. The Licensee shall not commence dredging until the results of the pre-dredge and Year 1 monitoring reports have been reviewed and approved by the Department. Continuous monitoring shall occur throughout the remaining years of the project until dredging has ceased, and post-dredging, in accordance with the approved monitoring plan referenced above. A comprehensive monitoring report shall be submitted to Water & Science Administration, Compliance Division, within six months of completion of the required monitoring.
- H. The Licensee shall ensure that no dredging shall commence in Year 5, until the results of the required monitoring report due by the end of Year 4 have been reviewed and approved by the Department. Continuous monitoring shall occur throughout Year 5 of the project until dredging has ceased and post-dredging, in accordance with the approved monitoring plan referenced above. A comprehensive monitoring

report shall be submitted to Water & Science Administration, Tidal Wetlands Division, within six months of completion of the required monitoring.

- I. The Licensee shall ensure that the proposed dredge cuts shall only occur within the “proposed shell dredging area” as depicted (gray-hatched area) on the attached plan approved by the Department. No dredge cuts shall occur on any area of the Man-O-War Shoal that has been planted with natural or hatchery oyster seed within the past ten years (Coordinates for the concerned seeded areas are included in DNR Attachment 1) or in any other areas of detected spat sets established during the pre-dredge survey.
- J. The Licensee shall limit the total number of dredge cuts to ten “dredge cuts”, as described herein, or 5 million bushels of shell, whichever occurs first during the permit period. If additional dredging is required, the Licensee shall apply to the Department for a license modification.
- K. To protect potential oyster spat in the area, the Licensee shall ensure that no dredging occurs from June 1 through September 30 of any year. The restriction may be waived, with approval from the Department, if shell will immediately be planted at sites that are expected to take advantage of natural oyster reproduction cycles.
- L. To protect spawning anadromous fish from potential noise and turbidity impacts, the Licensee shall ensure that no dredging occurs from February 15 through June 15 of any year.
- M. The Licensee’s equipment shall not obscure or interfere with any aids to navigation in accordance with Coast Guard regulations (33 CFR 70).
- N. The Licensee shall ensure that all vessels used during dredging, backfilling of dredge cuts and transport of useful shell materials shall be maintained and operated in a manner to prevent the discharge of fuels, oils, greases or other pollutants into waters of the State. The Licensee shall ensure that such vessels have adequate measures onboard to prevent, contain and control any such discharge. In the event of a suspected discharge of fuel, oil or other pollutant, the Licensee shall notify the Department as soon as practicable, and in accordance with COMAR 26.10.01.03. The Licensee shall act to resolve the incident as directed by the Department.
- O. Unsuitable dredged materials (i.e. dredge slurry containing shell bits and fine sediments, minus useful shell materials) shall be returned to the dredge cut from which the material was taken, as soon as practicable. Unsuitable dredged materials shall be directed into the dredge cuts via a submerged, suspended tube, placed within and directly above the area to be backfilled. The Licensee shall monitor and control the placement of the tube, rate of slurry discharge, and other aspects of the backfilling so as to minimize the generation of turbidity and loss of suspended solids outside of the dredge cut area.
- P. The Licensee shall not store, stockpile, or place dredged materials, except as explicitly authorized herein, without prior authorization from the Department or Board, as applicable. The Licensee shall not stockpile any material in State or private tidal wetlands. Useful dredged shell material may be stockpiled, provided such stockpile sites are entirely located in uplands and are designed, constructed and maintained at all times to prevent turbid discharges to waters of the State. Such sites shall not be used to contain any materials other than shell material with only incidental amounts of attached fine sediments. The Licensee shall provide the Water and Science Administration, Tidal Wetlands Division, notification of each intended upland stockpile site at least 10 days prior to its use. Such notification shall include documentation of the property owner’s permission for use of the site, a clearly scaled and dimensioned site plan, and description of the intended use with sufficient detail to demonstrate that the site can adequately contain the proposed shell material without discharge.

- Q. To minimize conflicts with commercial and recreational watermen, the Licensee shall provide 48 hours prior notice to the public via the Maryland Department of Natural Resources website, and in local newspapers of general circulation within the vicinity of the City of Baltimore, and Anne Arundel and Baltimore Counties, prior to commencement of any dredging activities. To the greatest practicable extent, dredging shall be scheduled to occur primarily on weekdays, excluding weekends, holidays and scheduled recreational fishing tournaments within the region.
- R. The Licensee shall submit a summary of the disposition of the dredged shell, once the final allocation of the shell has been determined for each of the dredging years, (i.e. Year 2 and Year 5). This summary must include the entities receiving the shell, the approximate volume of shell, and the intended placement site(s), including associated tidal wetlands authorization numbers, if known. The Licensee itself shall not place any shell material until it has obtained all appropriate licenses and authorizations for such activity.
- S. If monitoring results of the 5-year project show no adverse effects, MDNR shall submit an application for a new Tidal Wetlands License no earlier than Year 5 of the license term, to continue the dredging of the shoal, until a maximum of 30 million bushels (1.8 million cubic yards, or approximately 30% of the available useful shell material) of shell has been removed.

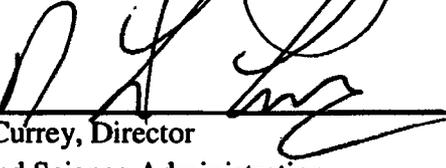
DEPARTMENT OF THE ENVIRONMENT APPROVAL:


 Justin Berezna, Natural Resource Planner
 Tidal Wetlands Division

9/28/17
 DATE


 Andrew J. May, Division Chief
 Tidal Wetlands Division

9/28/17
 DATE


 D. Lee Currey, Director
 Water and Science Administration

10/2/17
 DATE

WETLANDS ADMINISTRATION CONCURRENCE:

William Morgante, Wetlands Administrator
 Board of Public Works

DATE

Attachments

Attachment A: Attachment 1 – DNR Shell Dredging Application 2015 (rev Feb 2017)

Attachment B: 2/2/16 & 2/3/16 Public Informational Hearing Attendance Sheets

Attachment C: Written Public Comments

Attachment D: 6/20/17 NMFS Comment Letter and 8/21/17 MDNR Response Letter

Attachment E: 2/18/16 EPA Comment Letter

Attachment F: 12/30/15 Coast Guard Email

Attachment G: 2/18/16 Councilman Todd Crandell Letter

Attachment H: Plan Sheet dated February 2017