

CRS Activity 510

Progress Report on Implementation of Credited Plan

Date this Report was Prepared: 3/31/2020

Name of Community: Hull, Town of

Name of Plan: Town of Hull Hazard Mitigation Plan

Date of Adoption of Plan: 26 April, 2018

5 Year CRS Expiration Date: October 1, 2023

1. How can a copy of the original plan or area analysis report be obtained:

Available on line under the Town of Hull's "useful links" tab at:

https://www.town.hull.ma.us/sites/hullma/files/uploads/2018_hazard_mitigation_plan.pdf

or by contacting the Conservation Department at 781.925.8102

2. Describe how this evaluation report was prepared and how it was submitted to the governing body, released to the media, and made available to the public:

The 2018 updated report was prepared with the assistance of the Metropolitan Area Planning Agency and a steering committee of Town officials during the 2018 Fiscal year. Annual updates are provided to the CRS coordinator and assembled in the attached 2020 update. This update is reviewed by Town Manager before submittal to CRS for recertification

3. Provide a description of the implementation of each recommendation or action item in the action plan or area analysis report, including a statement on how the project was implemented or not implemented during the previous year:

See the following pages 3 – 17 detailing each action item of the Plan.

4. Discuss why any objectives were not reached or why implementation is behind schedule:
As is evident from the attached 2020 update, the Town continues to actively meet most of the mitigation measures schedule proposed in the 2018 Hazard Mitigation Plan (HMP). Only 3 of the 41 proposed measures have not been initiated (cooling center evaluation, relocation of light plant garages, and the implementation of the battery storage project). The only measures not initiated but approaching the schedule target is the implementation of the battery storage project and relocation of light plant garages. The repair to the Crescent Seawall still remains well behind schedule because of the abandonment of the project by the original contractor, however critical flood protection

measures (finished installation of a concrete cap to increase the wall elevation by 2 feet and wall stabilization) have been conducted in spite of contractor abandonment. The Town continues litigate through the surety bond process and has hired another contractor to continue to stabilize the compromised project. This emergency work has resulted in storm protection measures more protective of the area prior to the initiation of the Crescent Seawall Repair project. All other implementation efforts have or are being reached and are on schedule as proposed. (HMP, Table 29, pp 84-86.)

5. What are the recommendations for new projects or revised recommendations?

New projects proposed for the upcoming year:

1. Development of storm and flood protective measure for Hampton Circle, which is frequently flooded do to sea level rise.
2. Improved measure to create a continuous primary dune along N. Nantasket Beach. Two projects are underway and two of the most vulnerable gaps will be addressed by fall of 2020.
3. Designing a nature-based solution to improve flood protect along the perimeter of the Town's Wastewater Treatment Facility continues through funding from the Massachusetts Office of Coastal Zone Management
4. The Town completed its requirements to become a certified member of the Massachusetts Municipal Vulnerability Preparedness (MVP) Program. Funding from MVP has been obtained to conduct work in (1) above.
5. Obtain Massachusetts G.L 91 licenses for all stormwater outfalls to facilitate timely and necessary repairs to the Town's antiquated system. This work continues as there are a number of unknown potential outfalls requiring additional field work/surveys.
6. Development of a Wetlands Bylaw which will have elements that prepare for projected sea level rise.
7. Development of Stormwater Bylaw and Regulations to meet the State's municipal separate storm sewer systems (MS4s) permit requirements. The draft Stormwater Bylaw is completed and submitted as an article on the warrant for Town Meeting.
8. Continue to actively contribute to the NOAA-funded Community Partnership for Resilience which engages middle school students identify climate change impacts significant to the Town from their perspective and demonstrate potential solutions. Attached is the Town's commitment in a letter of support to advancing this effort for the community and its public schools.

http://hulltimes.ma.newsmemory.com/?publink=097a661fe_1343540

Annual Update to the Town of Hull Hazard Mitigation Plan, 2020

The Town of Hull adopted the Hull Hazard Mitigation Plan (the Plan) on April 26, 2018 and received approval by FEMA on May 21, 2018. This is the first annual update of activities on flood hazard mitigation measures identified in Table 29 beginning on page 84 of the Plan.

Participation in the National Flood Insurance Program (NFIP): The FEMA database includes statistics from January 1, 1978 updated to Sept 30, 2018. This data can be found at <http://bsa.nfipstat.fema.gov/reports/1040.htm> and <http://bsa.nfipstat.fema.gov/reports/1011.htm>.

Flood insurance policies in force	1,990
Coverage amount of flood insurance policies	\$469,766,900
Premiums in force	\$3,231,328
Total losses (all losses submitted regardless of status)	2,389
Closed losses (losses that have been paid)	1,984
Open losses (losses that have not been paid in full)	1
CWOP losses (losses that have been closed without	404
Total payments (total amount paid on losses)	\$17,613,431

No new data has been received by FEMA at the time of this report. The Town of Hull has submitted an *Information Sharing Access Agreement (ISAA)* to FEMA to update our analysis of Repetitive Loss information for the Town.

1. **Alphabet Streets Drainage:** The Alphabet Streets area, up to Bay Avenue East, periodically experience flooding caused by insufficient drainage. A portion of this area has been identified for revitalization and redevelopment. The entire area needs further study to improve drainage, identify system upgrades, and development of a plan for implementation. Time frame: 2018
Update 2019: Funding for Bay Avenue East reconstruction including drainage system upgrades has been secured through the Community Development Block Grant program. Work began in the spring of 2018 and is expected to be completed by mid-2019. The Town submitted a proposal to the Massachusetts Vulnerability Preparedness program to evaluate the stormwater management system on the ocean-side and bayside Alphabet Streets. Green infrastructure is being explored for mitigation of flooding prone to this area and further explained in Section 33.
Update 2020: Update 2020: Work on the roadway and drainage system upgrades were completed in May of 2019. Work along Nantasket Avenue from A to X Street have improved grading and stormwater flow so that ponding is minimized on the roadway. As additional roadway work and improve grading is undertaken in the Alphabet Streets area there should be a reduction in flooding caused by stormwater accumulation. See item 6

below, drainage system improvements for D Street pump station and K Street outfall are expected to improve drainage conditions. In addition, catch basins have been cleaned and inspected and, where necessary, catch basins have been rebuilt. Along Beach Avenue, protective walls have been constructed around two catch basins to minimize sand from the adjacent dune from filling the basins.

2. Relocate Aquarion Water Mains: Aquarion Water Company was a privately operated water company that has since been acquired by the Town of Hingham and is now known as the Weir River Water System which continues provide nearly all of the water supply to the Town of Hull. One of Aquarion's water mains runs directly under the primary dune along Nantasket Beach, creating the potential for dune deterioration in the event of a pipe break and repair operations. The dune is an important part of the Town's storm protection system. The Town has proposed that the water company abandon and replace the current main in a less sensitive location. Time frame: 2020

Update 2019: Aquarion received a Wetlands Protection Act (WPA) permit to abandon the water under the coastal dune and has begun replacement by placing the new main about 150 – 200 feet further landward under the old railroad bed which runs parallel to the primary dune of upper Nantasket Beach. This work is underway and over 50% completed.

Update 2020: This project has been completed

3. Encourage Building Elevation: Hull has created a freeboard incentive program that encourages property owners to exceed the minimum required building elevation by at least 2 feet. In some cases this incentive conflicts with height restrictions in the base zoning district. In May 2016, a new zoning initiative was passed at Town Meeting which allows for certain minimal (having a footprint not in excess of 50 square feet) structures housing a building's essential utilities to encroach into 50% of a required side or rear setback in the VE, AO, and AE flood zones. This initiative is intended to help encourage/facilitate homeowners in elevating utilities for flood protection. Town staff will monitor the effectiveness of this change in encouraging home elevations to exceed minimum requirements. Time frame: On-going

Update 2019: The Freeboard Incentive Program is still active and continues to be well received. The Town has initiated a program to submit applications to the FEMA Hazard Mitigation grant program for funding to elevate homes and/or utilities. Applications will need to be submitted to the Town of Hull by October 24, 2019.

Update 2020: Freeboard Incentive Program remains active. The Massachusetts Building Code requires all new and substantially improved buildings to meet certain freeboard requirements. As such, the building code for residential structures requires a 1' above flood elevation in A zones and 2' freeboard in V zones. The Town follows the State Building Code. This applies also to new and substantially improved commercial buildings, however commercial construction under this category of new and improved does have the option of flood proofing instead of elevating.

4. Stormwater Drainage System Improvements: Time frame: On-going as part of all efforts noted:

Updated 2019: The Town is evaluating the number of stormdrain outfalls to Boston Harbor and will be obtaining the necessary permits to maintain and repair this antiquated system. A GIS datalayer containing the number of outfalls and locations has been created. The storm drain outfall for the XYZ Streets received a WPA permit and was replaced with a new PVC pipe to improve drainage and mitigate flooding in the area. Stormdrain repair was also conducted along James Ave where a new catch basin was installed to improve stormwater discharge from the existing outfall through the James Ave seawall. Green infrastructure is being explored to mitigate flooding in the vulnerable Alphabet Streets area and explained further in Section 33.

Updated 2020: The Town is repairing or replacing catch basins and storm drains throughout Town as part of the Roadway Improvement Program. The storm and sewer infrastructure is inspected in roads to be paved and recommendations are received by engineering consultants for improvements to be made prior to paving.

5. Check Valves and Back-Flow Preventers: Within the stormwater drainage system, check valves and back-flow preventers are important for ensuring that lines meant to drain water away do not become conduits for bringing additional flood waters into streets and homes. As with the overall system, repair and improvement is an on-going task. Time frame: On-going

Update 2019: The Town added and/or repaired flapper valves at James Avenue, Moreland Avenue, Main Street, and Fitzpatrick Way. The Town repaired or replaced drain lines and/or catch basins on Pt Allerton Ave, Coburn Street, Touraine Ave, and Kingsley Road to correct or improve drainage in residential neighborhoods

Update 2020: The D Street outfall flap gate (duck bill) has been replaced and a new Checkmate backflow check valve will be installed; estimated in May/June 2020 time frame. A new Checkmate valve is targeted for the K Street outfall; expected to be installed in the May/June 2020. Further, once the Checkmate is in place, the existing flap gate at K Street and Cadish Avenue will be repaired. An existing inoperable gate valve that allows flow between the K Street basin and the D Street outlet during emergency conditions will be replaced once the outlet control at K Street is complete. Note, a second flap gate is needed for James Avenue. Coordination will be made with DPW to get this in place. The Q Street outlet at Cadish Avenue has also been identified as needing replacement due to the poor condition of the outlet pipe. Coordination will be made with DPW to get this in place.

6. Upgrade D St. Pump Station: Hull's topography and location as a peninsula require the use of pump stations in a number of areas to help remove flood waters. Time frame: 2018-2022

Updated 2019: Two 4 inch submersible pumps and level controls were installed at D St Pump Station. A portable diesel pump is available and used as needed during extreme events.

Update 2020: The Town is repairing the flap gate at the K Street outfall as well as adding a checkmate valve for redundancy. The Town is replacing a drain valve at Central and H Street to isolate the drainage basins leading to the D Street and K Street outfalls. The drain valve will allow stormwater to flow from the K Street basin in a flood event to the D Street Pump Station.

7. Repair Nantasket Seawall: This Department of Conservation and Recreation (DCR) owned facility protects adjacent commercial areas and parking which are important to Hull's tourism- and visitor-based economy. In 2017, the Town's Conservation Commission issued a WPA permit allowing the Army Corp of Engineers and DCR to construct a ~ 2,000 linear feet toe revetment along the mid-section of the DCR seawall. Time frame: 2018
Update 2019: Construction began early spring of 2018 and has been completed. Mass DEP required DCR to pursue funding for sourcing of nearly 300,000 cubic yards of beach compatible material for beach nourishment as part of Mass DEP's approval. The Conservation Department continues to work with DCR and its consultants to pursue beach nourishment. An update on the nourishment measures for this portion of Nantasket Beach is provided in section 29.

Update 2020: DCR continues to pursue nourishment sources associated with the US Army Corps of Engineers' Piscataqua River Dredging Project. Dredging is not scheduled to occur this year (according to conversions with the Corps in January). DCR is working with the Corps to line up federal cost-sharing with the Commonwealth to bring the sand to lower Nantasket Beach. Thus, plans for nourishment of lower Nantasket Beach when dredging occurs in the Piscataqua River remain as pending.

8. Repair of Town Seawalls, Dikes, and Jetties: Seawalls, dikes, and jetties form an important line of protection from storm surges in Hull. The Town has a Seawall Maintenance and Monitoring plan to ensure Town seawalls are inspected on a regular basis, and corrective action taken when required. The Town continues its efforts to fund seawall repair and replacement. In 2016, the Town received a \$1.5 million grant and \$1.5 million loan from the state to re-construct the Crescent Beach Seawall and repair the revetment associated with the seawall. In addition to state participation, the Town funds of \$3.5 million dollars to the project for a total cost of \$6.5 million dollars. All applicable permits are in place. Construction of the Crescent Beach Seawall Project began in 2017 and was expected to be completed in early 2018. Time frame: On-going
Update 2019: The Town's contractor abandoned the Crescent Beach seawall project in May 2018 without completion. The Town hired a new contractor to in December, 2018, to the complete work on reinforcing approximately 1,200 feet of revetment that was left in disarray as a result of abandonment. Emergency work put in place over 11,800 tons of stone. The objective of the work was to enhance the storm protection level in the area. The work completed on the project to date provides for a greater level of protection compared to conditions before the project began. A sink hole and failing stormdrain outlet along the James Ave seawall was repaired using a geotechnical polymers injection technique (URETEK) to stabilize the sediment on the landward side of the seawall as well

as in and around breaches in the seaward base of the wall. This work was completed in March 2019. The Town is has also hired a contractor to evaluate the state of the Town's seawalls and other protective structures to help prioritize and estimate costs for repair as part of its commitment to the Seawall Maintenance and Monitoring plan.

Update 2020: The concrete cap of the Crescent Beach seawall has been completed which adds an additional 2 feet vertical to the previously existing seawall. The next step is to seal the concrete gaps. The Town's seawall assessment was completed, focusing on 4 areas: (1) the revetment and walls along Cadish Avenue, including Sunset Ave, from the area of A – X street on the bayside, (2) the bayside coastal structures along Fitzpatrick Way and Nantasket Ave to adjacent to Spinnaker (Hog) Island, including the lagoon area, (3) Nantasket Ave seawall – from 948 Nantasket Ave west to the Stoney Beach revetment, and (4) along the coastal bank east of Stoney Beach and adjacent to Harborview Rd. These assessments contain recommendations for both short- and long-term repairs; the long term repairs to be designed for the 100-year storm, plus 2 feet. This assessment is in draft form and currently under review.

9. **Dune Repair and Protection:** Dunes are an important storm protection feature, not only serving to reduce flooding of adjacent neighborhoods but also as a sediment source for re-nourishing the beach. The Town continues to actively maintain the dunes, including the existing program of annual planting beach grass each spring, and recently during the fall. Time frame: On-going

Update 2019: The dunes suffered significant damage from to storm damage from a series of coastal storms which occurred during March 2018. The Town received a WPA permit to fill in voids in the primary dune due. Much of the work was done during the late fall early winter season to minimized habitat impact during the priority habitat protection period (April – Aug; piping plovers). This work was completed. The Town planted 20,000 beach grass plants in March 2018, 13,000 culms in November 2018, and 22,000 culms in March 2019.

Update 2020: The Town has established clear title to the Beach Avenue right-of-way. The Town received two consecutive Mass. Office of Coastal Zone Management Grants that evaluated the climate change resiliency of the Nantasket Beach primary dune to sea level rise and coastal storms. Two areas that were identified as most vulnerable (an area used as parking for several decades; adjacent to 131-145 Beach Ave and the A Street emergency access and handicap access) have been permitted for repair/restoration (parking area) and under design and prepared for permitting (A Street). The Town planted 20,000 beach grass plants in March 2020.

10. **A Street Fire Station Flood Protection:** The A Street Fire Station is an important emergency services facility and is located in a floodplain area. Improvements should be made to provide flood protection to this building. While the boiler was elevated in 2008, the Fire Department has applied for grant funding to install hurricane doors. Time frame: 2022
- Update 2019:** Currently, new overhead doors are being explored. These doors are quite costly and the logistics of fitting new doors to the old building (circa 1918) are under

consideration.

Update 2020: No work performed during this period

- 11. Paving Reduction Program:** The Town will consider creating a program to reduce the amount of impervious paving in order to allow for greater absorption of stormwater before it enters the storm drain system. As proposed, this program would target both new construction and existing developed areas through a combination of regulation, education, and incentives. Successful efforts in Somerville, MA and Portland, OR can serve as potential models. Time frame: On-going

Update 2019: Individual applications for the WPA permits are encouraged to use permeable solutions for driveways and other hardening structures in Land Subject to Coastal Storm Flowage (LSCF). While no standards exist for LSCF, the Conservation Commission requires any new patios, walkways, and driveways to have permeable solutions in the SFHA and that these installations maintain the permeable nature in perpetuity as part of the special conditions in the issued permits. All permits for new patios and driveways during this review period were required to use permeable measures.

Update 2020: Efforts that advance the reduction of impermeable surfaces continues as described in 2019.

- 12. Open Space Plan Update:** In identifying potential open space and recreation areas in the next update to the Hull Open Space Plan, consider the positive role open space has in mitigating flood hazards and incorporate that into the criteria for selecting parcels for the protection or creation of public open space areas. Time frame: 2020

Update 2019: Open space is critical to providing natural solutions to flood mitigation to the Town. To that end, the Town received a grant to develop a much needed update to their Open Space and Recreation plan. The Metro Area Planning Council has been selected as the consultant to produce the update and guide a newly formed Open Space and Rec Plan Committee.

Update 2020: Update 2020: The Open Space and Recreation Committee has been working closely with MAPC to develop the update to the Open Space and Recreation Plan. The group has held several meetings, a public forum, and conducted a town wide survey to gather data for the plan. The draft plan is currently been written in anticipation of an additional public forum and adoption of the plan in summer 2020.

Measures to Ensure Compliance with NFIP

- 13. Floodplain Management:** Continue to enforce the Floodplain Zoning District (Article XV) and associated building regulations for floodplain areas. Update this district to remain consistent with the building code, FEMA guidelines and floodplain mapping. In May of 2013 Town Meeting approved a new zoning overlay district for the Nantasket Beach area that provides significant incentives for freeboard and other floodplain safety techniques. In 2017, the Town of Hull, through the Hull Redevelopment Authority, solicited the services of Woods Hole Group to develop data and information to request a Letter of Map

Revisions (LOMR) for much of the flood zones along Nantasket Beach. FEMA has approved the LOMR which became effective in December, 2017. Time frame: 2018

Update 2019: A significant LOMR was adopted in December 2017 which addresses nearly 70% of the SFHA in Hull. This LOMR resulted in 3 parcels in the X zone were determined to be in an FEMA AO Zone, 6 parcels moved from AO to AE zones, 64 parcel were removed from the FEMA V zone to an AE zone, one parcel moved from an AO to and X zone, and 31 parcels were removed from the SFHA. These changes were presented to the Board of Selectmen and adopted at the annual Public Town Meeting in the May, 2018.

Update 2020: The Town's GIS datalayers and flood matter reporting and guidance have been updated. Building applications and Wetlands Act permitting utilize the most current and up-to-date data and information.

- 14. Floodplain Mapping:** Maintain up-to-date maps of local FEMA identified floodplains. Time frame: On-going

Update 2019: New FIRM flood maps and GIS data have been updated to incorporate changes presented in the December 2017 LOMR (See Section N. These maps are available on demand at the Conservation Dept. for public review. The latest datalayers from MAGIS for structures, new parcels mapping (L2), and LIDAR data have been incorporated and mapped.

Update 2020: The Town continues to maintain its GIS datalayers with the most current available data. New orthophotos were generated by the Town in April 2018 and these have been incorporated into our tools for floodplain mapping and public information materials.

- 15. Pursue public ownership of beach lots to protect Nantasket Beach.** Time frame: 2021

Update 2019: The Town has conducted a deed search and compiled a list of property lots that have deeded beach rights (90 of 145 total beach lots have deeded beach rights).

Update 2020: No additional work performed during this period

Wind Hazard Mitigation Measures

- 16. Protect Electric Lines:** Reinforce and protect electric transmission lines from weather and tree damage. Time frame: 2019

Update 2019: The Light Plant completed tree-clearing for protection of transmission lines on Nantasket Avenue from Newport Rd to Bay Ave East. Staff from the Light Plant has conducted a field survey with National Grid of the wooded area in Hingham were the main lines that serve the Hull community cross and submitted requests for tree management to reduce the potential for wind damage from tree fall. The Town continues to coordinate with National Grid to ensure the viability of electricity delivery to the Community.

Update 2020: Tree trimming continues throughout town to increase service reliability. The Town continues to pursue working with National Grid to improve service reliability by encouraging upgrades to protecting the feed lines entering into the Town through neighboring community. Hull's Fire and Light Plant personnel coordinate with National Grid to stage repair crews in the event of impending storms with associated high winds.

17. Brushfire Mitigation: Time frame: 2018

Update 2019: The county resources are available to the Town when needed help with brush fires. Hull Fire can also employ mutual aid of area fire boats to try to apply water from the ocean or bay to tidal or coastline areas as applicable.

Update 2020: No addition work, other than maintaining existing partnerships and protocols, was performed during this period.

Winter Storm Hazard Mitigation**18. Evaluate public buildings for ability to withstand snow loads; retrofit to greatest degree feasible. Time frame: 2022**

Update 2019: All public buildings have been assessed for structural loads as required by code. The school buildings have been assessed and retrofitted to comply with building code requirements for structural loading, including snow and wind threats.

Update 2020: This work has been completed.

Earthquake Mitigation**19. Public building seismic assessments. Time frame: 2022**

Update 2019: The school buildings have been assessed and retrofitted to comply with building code requirements for structural loading, including seismic threats. Seismic assessments for all other public buildings are on-going.

Update 2020: This work has been completed.

Dam Mitigation**20. Maintain alarm system for Straits Pond tidegate. Time frame: On-going**

Update 2019: The Town, through its DPW and Conservation Dept., continue to maintain the alarm system of the Straits Pond tidegate. The Town continues to contract annually for maintenance and cellular telemetry, The radar transducer for the on-line datalogger was found to be faulty and is in need of repair. However this is separate from the alarm system maintenance.

Update 2020: The Town is working with a contractor to complete an Emergency Action Plan (EAP) for the Straits Pond Tidegate (i.e., Dam). Through this process the DPW is evaluating its needs (equipment and materials) for use in an emergency to fix problems with the dam or to help manage traffic and relief efforts. Currently the Town of Hull has equipment and materials that would be available for emergency repair of the dam and traffic control. The available materials include: gravel, sand, sandbags, granite blocks and boulders, concrete barriers, wooden sawhorses, electronic message boards. Available equipment includes: Pickups, Dump Trucks, Bucket trucks, Backhoes, Front Loader, Loaders, Excavators, Utility Trailers, Pumps, etc.” In addition, the tide gate control mechanisms are in need of repair (automatic controls, water level sensors, and the near real-time data reporting. A contractor has been hired, and repair and maintenance is on-going.

Extreme Temperature Mitigation

21. Consider establishment of a cooling center for extreme heat days. Time frame: 2022

Update 2019: No work was done on this measure.

Update 2020: No additional work performed during this period. We have noticed in the short-term that our spring seasons are wetter, but very dry through the summer and early fall. The Town will revisit the need for a cooling center in anticipation of these new climatic norms.

Drought Mitigation

22. Encourage drought resistant landscaping Time frame: On-going

Update 2019: Individual applications for the WPA permits are encouraged to use drought resistant plantings when landscaping is proposed in Land Subject to Coastal Storm Flowage (LSCF). While no standards exist for LSCSF, the Conservation Commission recommends landscaping in the SFHA during the WPA permitting process to consider changes in precipitation predicted by the most current climate change models (more intense rainfall storms during winter, greater periods of drought during summer). Most of the coastal landscape projects require salt-tolerant species which reduces the number of options for landscaping in the SFHA of Hull.

Update 2020: Work continues as described above during this period

Multihazard Mitigation

23. Public Education Continue efforts at public education addressing all potential natural hazards in Hull. Take advantage of existing State and Federal public information materials that can be made available to residents and businesses in the Town. Continue to reach out specifically to residents and businesses in areas particularly prone to flooding and provide them with information on steps they can take to reduce their vulnerabilities to property damage during flood events. Use public education efforts around hazard preparedness to build support for efforts to implement hazard mitigation measures. Time frame: On-going

Update 2019: In addition to the annual outreach work noted in CRS Activities 330 and 503, the town has established a presence on social media. The town maintains an Emergency Management Facebook site. The Police, Fire, DPW and Conservation Departments also have presence on Facebook, Twitter and the Town maintains a blog. Both the Light Plant and the Fire Department conduct education in the Hull Public Schools for fire and electrical safety. The Conservation Department continues to complete new homeowner mailings throughout the year which explains the WPA and focuses on the important role our natural resources play in protecting against flooding. The mailing is sent out regularly to new homeowners. The Conservation Commission established a sandbag guidance letter which was provided in all residents' light bills. This guidance prohibits the redirecting of water onto abutting properties. The Town of Hull became certified as a member of the Massachusetts Vulnerability Preparedness Program (<https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program>) through a grant that funded a Community Resilience Building Workshop (CRB) that was held in

February 2019. The CRB provided an over view on climate change, discussed recent hazardous events, and expected changes exacerbated by climate change. Local stakeholders were present at the CRB and identified local strengths and hazards pertaining to climate change. The Town of Hull conducted a televised public listening session in early March 2019 which presented an overview of the CRB and welcomed further input from the community. A final report outlining the CRB and the identified hazards and solutions was adopted and approved by the state. In addition, the Town of Hull received a CZM grant to evaluate the vulnerability of, and design measures for improved flooding resilience of the primary dune along Nantasket Beach (as discussed above in Section 9: Dune Repair and Protection). The first public meeting on this project occurred on 4/24. This project will be completed in June 2019 and will identify components for implementation via further grant funding that enhance and protect the functions of the dune and beach system for flood protection.

Update 2020: The Hull Public schools participated in an Environmental Literacy Grant from NOAA to initiate a Community Partnership for Resilience. Their effort was captured in the local newspaper http://hulltimes.ma.newsmemory.com/?publink=097a661fe_1343540 and will continue to take the development and application of the newly created Project-Based Learning strategies for 4-8th grade students and expand and deepen the available resources for climate resilience work in formal education settings, and align with social studies standards and the focus on civic education projects.

24. Rehabilitate Village Fire Station Time frame: 2020

Update 2019: The Town has begun discussion with residents about the feasibility of rehabilitating and maintaining the Village Fire Station. An article has been submitted to the Town Warrant for the May 2019 Town Meeting. These discussions began with a review of the article by the Town's advisory board and will receive further discussion and recommended action at the upcoming 2019 May Town Meeting.

Update 2020: No new work performed during this period

Climate Resilience/Adaptation

25. Relocate light plant garages to higher elevation. Time frame: 2020

Update 2019: No work was done on this measure.

Update 2020: No new work performed during this period

26. Implement battery storage project. Time frame: 2020

Update 2019: No work was done on this measure.

Update 2020: No new work performed during this period

27. Develop evacuation plan considering sea level rise. Time frame: 2019

Update 2019: There are essentially three routes by which evacuation can occur; Atlantic Avenue, George Washington Blvd, and Nantasket Avenue. During moderate to greater storms some of these routes become flooded to the extent that they become impassable.

Emergency communications and operation is important to the development of the Town's evacuation plan and effective hazard mitigation. Eight high definition WiFi's were installed at the Hull Public Schools to enhance communication in the event the buildings would be used during an emergency. All uninterrupted power supplies were updated in all main and independent distribution facilities for the schools, Town Hall, and Police. Four spare uninterrupted power supplies were purchased and are fully charged. The firewalls for the Town and all schools were upgraded. The Memorial Middle School (which is where the Emergency Operations Center is located) Firewall has been replaced. Wireless printers have been installed in general areas in all the schools and at Town Hall. The doors in the Police Station, as well as all schools, have been installed with a FOB system and the Police and Fire Departments have been issued FOBs and Codes for easy access. The Hull Fire Dept. has taken steps to gather floodwater depth at over 30 locations throughout the town of Hull. In these locations a series of color coded reflectors at 1 foot increments from the ground have been mounted. The reflector at one foot is blue, 2 feet is amber, and 3 feet is red. This simple evaluation tool will allow Town Emergency Management to document the height of the floodwater and avoid putting lifesaving and expensive equipment in a position where they will receive damage from floodwater exposure. It will also enable responders to modify traffic and evacuation routes in a more expedient manner. The town of Hull received a surplus military LMTV 1078 at \$0 acquisition cost from a federal military surplus program and was added to the Emergency Response equipment. This valuable piece of equipment will be used as a "High Water" rescue vehicle in order to affect and assist with rescues and evacuations of people who are caught in the flood water or people who have to be evacuated from flooded area. This vehicle will be used to access flooded areas in order to conserve our newer and most expensive, town financed equipment.

Update 2020: This work has been completed.

28. Elevate electricity and HVAC at sewer plant. Time frame: 2019

Update 2019: The Sewer Department has established design flood elevations for various areas around the treatment facility and remote pump stations for planned upgrades to provide greater resiliency. In 2018, the underground fuel storage tank was removed and a new elevated above ground fuel storage tank was installed. CZM grant funding was obtained to remove the ground level electrical service transformer pad and install an elevated transformer platform. Work for this project is in progress and is expected to be complete by mid-2019. The Sewer Department is also pursuing a FEMA Hazard Mitigation grant to relocate critical below ground electrical equipment to the second floor of the administration building and is performing final design to relocate and elevate the facility's HVAC equipment to the second floor. All future improvements and upgrades are focused on providing greater resiliency to make the facility less vulnerable to extreme storm events and sea level rise (SLR). This wastewater treatment facility was identified as high vulnerability to Climate Change and SLR.

Update 2020: The WWTF electrical service transformer was replaced with a pole mounted transformer through a CZM grant. The FEMA grant application for the relocation of the critical electrical equipment in the WWTF has advanced to the national level. The HVAC project is in final design and planned to go out for bid early summer

2020

- 29.** Encourage beach nourishment on State portion of Nantasket Beach (MA Dept. Conservation and Recreation). Time frame: 2018
Update 2019: The Town of Hull's Conservation Commission reviewed DCR's March 15, 2018 Notice of Intent for a WPA permit to nourish the Commonwealth's portion of Nantasket Beach and issued an Order of Conditions on 5/3/2018 for the placement of up to 760,000 cubic yards of suitable beach material to compliment the revetment toe stabilization project which was completed in 2018. DCR has obtained all necessary permits to receive suitable sand. A beneficial reuse of dredge material from proposed ACOE dredging of the Piscataqua River along NH and ME borders has been targeted and favorably evaluated as a compatible sand source. No nourishment has commenced as the dredging project has not begun and cost-share details and funding to bring this material to the beach remain undetermined.
Update 2020: No new work performed during this period as the Town and DCR are waiting for the ACOE to initiate the Piscataqua River dredging project to begin. The Town continues to check in with DCR's consultants on the status of the ACOE project.
- 30.** Consider future climate impacts in all capital planning, (master plans, open space plans, etc.). Time frame: On-going
Update 2019: The Town has contracted with MAPC to update its Open Space and Recreation Plan.
Update 2020: The new update to the Town's Open Space project continues and is expected to be completed in this Fiscal Year (June, 2020).
- 31.** Consider plan to protect DPW barn from future flooding. Time frame: 2021
Update 2019: No work was done on this measure.
Update 2020: Preliminary evaluation is underway and the Town is looking to submit applications to Coastal Zone Management's Coastal Resiliency Program and the Executive Office of Energy and the Environment (through its Municipal Vulnerability Preparedness Program) to evaluate flooding mitigation for the DPW facility.
- 32.** Promote bicycle/pedestrian transportation to reduce auto use. Time frame: On-going
Update 2019: The Town continues to engage in discussions with residents about the feasibility/use of the abandoned railroad bed to establish a bicycle thorough way through a major portion of the Town. An article has been submitted by residents to the Town Warrant for the May 2019 Town Meeting. These discussions began with a review of the article by the Town's advisory board and will receive further discussion at the upcoming May Town Meeting. Recent major road repairs have been completed and are underway that incorporates a bicycle lane. These have been incorporated along sections of lower Nantasket Ave (in the area near the Nantasket Beach Resort) and along the repairs done and currently being done on Nantasket Ave from A – Z Streets.
Update 2020: Work continues as major road repairs are underway and incorporates bicycle

lanes.

33. Pursue opportunities to extend and expand Nantasket Beach dune. Time frame: 2018
Update 2019: The Town also received CZM grant funding to develop conceptual designs to enhance the resiliency and protective value of the coastal beach and dune system on North Nantasket Beach, including both near-term dune rehabilitation strategies, promote a healthy continuous dune while balancing beach access, and long-term, large scale beach and dune nourishment. As part of the planning for long-term beach and dune nourishment, the town will estimate sediment quantities, costs, and evaluate potential upland and offshore sources of sand.

Update 2020: The Town has completed a Notice of Intent under the Wetlands Protection Act to restore the primary dune in the area adjacent to 131-145 Beach Ave where nearly 8 decades of parking use has occurred. This project will return the dune to the heights and vegetation quality of the adjacent dune. In addition, the Town received a CZM grant to restore the primary dune at the A Street ending – town maintained access point – while designing a new American Disability Act considerate access (up and over walkway) and to retrofit emergency access vehicles that would allow for the continued construction of the primary dune along N. Nantasket Ave. The Town also has draft plan for closure of non-permitted pedestrian access paths and will seek a WPA permit to implement these closures. Anticipated hearing for both the A St ramp and Emergency Access as well as non-permitted path closures for WPA permits are expected to occur in the Summer of 2020.

34. Continue to incorporate recommendations form the Coastal Climate Change Vulnerability Assessment and Adaptation Study. Time frame: On-going

Update 2019: The Town of Hull became certified as a member of the Massachusetts Vulnerability Preparedness Program (<https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program>) through a grant that funded a Community Resilience Building Workshop that was held in February 2019. The Town of Hull conducted a public listening session in early March 2019, and a report was submitted an approved as certification into the MVP program a few weeks following. In addition, the Town of Hull received a CZM grant to evaluate the vulnerability and design measures to improve flooding resilience of the primary dune along Nantasket Beach as discussed above in Sections 23 and 32: Extend and expand Nantasket Beach dune. This project will be completed in June 2019 and will identify measures for further grant funding to enhance and protect the functions of the dune and beach system for flood protection. In addition, the Town has submitted a proposal for funds to evaluate the use of natural systems to rising groundwater and sea levels, increased effects of storm surge, and more severe wet weather and drought events on vulnerable stormwater drainage system prone to severe flooding (Alphabet Streets: bay and ocean side). The assessment will identify green infrastructure opportunities to reduce long-term flooding risk while considering future impacts of climate change.

Update 2020: This assessment has served as a springboard for state funding to reduce the community's vulnerability to climate change. These efforts are captured in #33 above and

the follow #35 below.

- 35.** Evaluate options to protect sewer plant from future flooding risk. . Time frame: On-going

Update 2019: Staff from the sewer plant and Conservation met with CZM and the Executive Office of Energy and Environment (EEA) in Feb. 2019 to discuss a potential proposal to fund the implement green infrastructure measures to reduce storm overwash and flooding to the sewer plant.

Update 2020: The Town was awarded a CZM grant to design green infrastructure measures to provide greater resiliency during storm events for the facility with a vegetative berm/wall around the site perimeter. The project is currently in design and expected to advance the design and start the permitting process in the summer 2020. There are expected to be final design and permitting requirements that extend the timeframe of this project. In addition, there is a Facilities and Resiliency Plan as well as design projects to address pumping station and treatment facility improvements to provide greater resiliency to flooding.

- 36.** Develop formalized property owner flood protection and flood insurance education program. Time frame: 2018

Update 2019: The Conservation Department continues to complete new homeowner mailings throughout the year which explains the WPA and focuses on the important role our natural resources play in protecting against flooding. The mailing is sent out regularly to new homeowners. The Conservation Commission established a sandbag guidance letter which was provided in all residents' light bills. This guidance prohibits the redirecting of water onto abutting properties. Additionally, the Conservation Commission encourages homeowners requesting a permit to elevate their homes to consider cost savings in insurance premiums provided by elevating beyond the required freeboard.

Update 2020: The Town has updated its grant program to elevate structures and utilities as part of the FEMA Hazard Mitigation grants program. Two projects were submitted to the State for their application to FEMA.

- 37.** Install flood protection to vulnerable segments of the Memorial School. Time frame: 2020

Update 2019: No work was done on this measure.

Update 2020: No work performed during this period

- 38.** Research ownership and status of WBZ dike tidegate to determine repair options. Time frame: 2018

Update 2019: No work was done on this measure.

Update 2020: Research into ownership continues.

- 39.** Install cameras in shoreline areas to monitor storm conditions. Time frame: 2018

Update 2019: Camera project completed fall of 2018 with four cameras up and running; two located at Hull gut, one at A street bay side, one between Edgewater and Bay Street that rotates its view from ocean to bay side.

Update 2020: This work has been completed.

- 40.** Purchase a drone to facilitate documentation of pre- and post- storm shoreline conditions. Time frame: 2018

Update 2019: The feasibility of a Town-owned drone system was investigated and, because of the need of an FCC license, in part, a town-owned drone system was deemed not feasible. Rather, use of consultants with the capacity for this work was pursued and found to be more feasible for logistics and cost effectiveness. A drone mapping effort was funded and conducted this spring and the dune topography was obtained. This data is currently being calibrated and validated.

Update 2020: No further work is needed.

- 41.** Investigate options to protect against flooding along Cadish Avenue. Time frame: 2020

Update 2019: Preliminary internal discussions have begun about measure that may be pursued to improve flood protection to a segment of Cadish Ave (between O and P streets). This area would require expensive mitigation measures (e.g., revetment gap project) and would be beneficial to 3 or 4 parcels. The Conservation Dept. will continue to work with residents that have expressed concern about potential options. The revetment south of O Street is in need of repair and a pre-proposal to use geotechnical polymers injection technique (URETEK) for stabilization has been developed for the Town. Funding sources are currently being explored.

Update 2020: This area is incorporated in the Seawall assessment conducted by the Town during FY 2020. (See #8 above).