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MALLARD LAKES FLOOD REDUCTION AND SUSTAINABILITY STRATEGY

BACKGROUND:

- Mallard Lakes (ML) is a community of 477 townhouse units in West Fenwick/Selbyville, DE, constructed between 1986 and 1990.
- All of ML's units are situated on man-made tidal (40% of the buildings) or freshwater (60% of the buildings) lakes. All lakes are connected through underground pipes, allowing freshwater lakes to drain excess water into the tidal lake.
- When Mallard Lakes (ML) was developed, its buildings met the then-current flood elevation standards. In 1995, FEMA raised the elevation requirements for new construction, but ML was grandfathered under the previous standards.
- The 2001 Route 54 improvement project, which included the construction of an elevated causeway, modified the culvert that feeds water from Assawoman Bay into the ML tidal lake, increasing tidal water movement into the tidal lake.
- In 2009, ML retained an engineering firm to explore the feasibility of installing a water control structure to address its flooding concerns. It was determined that while it could help against storm surges from the Route 54 inlet, a barrier would not effectively mitigate daily tidal inundation.
- Notably, significant flooding from Sandy in 2012 resulted in four buildings being considered "substantially damaged" by FEMA (repair costs exceeding 50% of the market value of the property). FEMA warned that Sussex County could lose flood insurance unless mitigation measures (e.g., building elevation) were taken to bring the buildings to current standards. The buildings were subsequently reassessed and no longer categorized as "substantially damaged" by the flood, removing the loss of flood insurance threat. As a result, the buildings were not raised.
- Sandy was the fourth flood event that resulted in National Flood Insurance Program (NFIP) claims, causing ML to be designated a repetitive loss site.
- In 2019, a Delaware Department of Natural Resources and Environment Control (DNREC) Wetlands specialist visited the site, and ideas were exchanged, but limited options were considered viable.
- As part of the Delaware Wetland Act of 1973, ML is in the Delaware wetland area, which requires Delaware, and the US Army Corps of Engineers (USACE) permits for construction projects on tidal lake wetlands.
- New construction in the inland bay area is filling and hardening additional wetland areas, reducing the land's ability to accommodate flood surges and raising overall water levels.

- In addition to water inundation due to sea level rise, ML has instances of "subsidence" (sinking of land), which compacts the underlying sediment and lowers the land surface, exacerbating the impacts of rising sea levels and increasing flood risk.

ISSUES:

- **Severe Flood Risk**
    - Rising water breaches the tidal lake banks almost daily in the most vulnerable areas.
    - Buildings on pilings are particularly vulnerable since they are on wooden foundations (vice concrete slabs that are under the remaining buildings), allowing flood waters to rise through their floors ((#1 All Island buildings; #2, 37898 Eagle Lane; #3 38256 Hummingbird Lane; #4, 38420 Cardinal Lane; #5, 37816 Eagle Lane, #6, 37862 Eagle Lane)
    - As sea levels have risen, the tidal water has migrated into the man-made lakes, causing them to become saltwater lakes. Rising sea levels/subsidence and flooding will cause a rise in the water level of all lakes through the underground drainage system.
    - First Street Foundation, a nonprofit research and technology organization that creates models to calculate climate risk, rates every unit in ML at "severe" or "extreme" risk of flooding. Their model shows **every ML building is at risk**, not solely those on the tidal lake:
        - The buildings on the Hummingbird Lane "island" have a 99% chance of at least one foot of interior flooding in the next 30 years, with a 60-80% chance in the next 10 years.
        - Buildings on the north side of the tidal lake have an 80-95% chance of at least one foot of interior flooding over the next 30 years and 30-50% over the next ten years.
        - Most buildings on the other lakes have a 50-75% chance of at least one foot of interior flooding over the next 30 years and a 15-20% chance over the next 10 years.
        - The buildings furthest from the tidal lake have up to a 40% chance of 6 inches of flooding in the next 10 years.
- **Health and Safety**
    - Constant exposure to moisture can lead to health and safety issues in the affected units, which will only increase as the lakes expand. According to climatecentral.org, water-damaged homes provide ideal growing conditions

for molds (types of fungi) and other microbes that can harm respiratory health and contribute to other illnesses.

- **Financial and Property Value Impact**
  - In 2024, ML property insurance deductibles increased from $5,000 to $25,000, partly due to increased flood risk.
  - ML property values have been suppressed compared to similar condos in the area and will only worsen as water levels rise and floods become more frequent.
- **Challenge**
  - Future major storms and rising water levels are unavoidable. ***While the properties around the tidal lake are at the greatest risk, the problem affects the entire community and must be addressed now.***

WHO CAN HELP:

- **FEMA Grant Funding & Other Grants/Cost Sharing:** There are several FEMA grants that can pay for up to 100 percent of our costs (shared between federal and state governments). Applications must be submitted by either Sussex County or Delaware on our behalf. FEMA grants can fund Engineering Studies and specific projects that will help mitigate flood risk (e.g., building elevation, soil stabilization) across our entire community. The Delaware Emergency Management Association (DEMA) and Sussex County have been very supportive of us in pursuing these grants. However, they are competitive and there is no guarantee that we will be approved to receive them.
  - **FEMA Flood Mitigation Assistance (FMA) grants)** help communities identify, prevent, and resolve floodplain management issues before a flood event occurs. This grant opened in January 2025 and closes in April 2025 for this grant cycle. There may be another grant cycle in 2025 (January grant was delayed from 2024).
  - **FEMA Building Resilient Infrastructure and Community (BRIC) Grants** The Building Resilient Infrastructure and Communities (BRIC) program aims to categorically shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience. This grant opened in January 2025 and closes in April 2025 for this cycle. There may be another grant cycle in 2025 (January grant was delayed from 2024).
  - **FEMA Pre-Disaster Mitigation (PDM) Grants** – PDM makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the

risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters. This grant required US Senator support, which would have to be obtained by this summer to apply for this grant later in the fall of 2025 for the 2026 fiscal year.

  - **US Army Corps of Engineering (USACE) Project Funding** – DEMA is working with USACE to determine which flood mitigation grants may be available to ML.
  - **Other Cost Sharing** – Some mitigations described below, such as Living Shorelines, have cost sharing opportunities Living Shoreline Cost Share Program - DNREC. There are other grants through other organizations, like National Oceanic and Atmospheric Association (NOAA) and National Wildlife Foundation, that may be available to us as well.
  - Federal grants generally do not fund 100 percent of project costs, which means we will have to find a source of funds for the unfunded percentage (e.g., state and local government, loans, fund raising, etc.). Some grants take "in-kind" services. Also, grants are generally reimbursable, requiring upfront funding for initial cash outlay.

- **Resilient and Sustainable Communities League (RASCL)**: This coalition of Delaware state agencies, nonprofits, and university partners offers technical expertise and funding options to help communities adapt, mitigate, and react to environmental changes, including climate change. ML is engaged with RASCL to begin the assessment process. *RASCL will provide its initial mitigation options and funding analysis results in February 2025*.
- **Delaware Silver Jackets –** Is a coalition of federal, state, and local government organizations devoted to improving Delaware's flood risk reduction efforts and identify funding sources and grant opportunities for flood risk reduction activities.
- **United States Corps of Engineers (USACE)/DNREC Delaware Inland Bay and Delaware Bay Coast Coastal Storm Risk Management Study):** USACE and DNREC have partnered to study coastal water rise and storm mitigation strategies for inland bays, and ML is within the study's boundaries. The study will result in an assessment and a USACE Chief of Engineers Report for projects that meet or exceed the Corps' feasibility criteria. The report will be used to seek congressional approval to continue developing the projects. Background information on ML's flood concerns has been provided to representatives of these organizations. T*he study is in its early stages, and no completion date is available*.

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WHAT CAN BE DONE:

- **Potential Options**: ML's mitigation will likely include some or all of the options below. The studies will consider these and potentially additional solutions:

  - ✓ **<u>Structure Elevation</u>:** Raising buildings to meet current elevation standards would effectively reduce flood risks. Land Stabilizing would need to occur (as described below) in addition to elevating structures to achieve the best flood prevention outcome. Based on an engineering study conducted in 2016, the cost of raising a six-unit building was approximately $330K to $400K ($430K—$500K adjusted for inflation), without considering land stabilization. The 11-unit buildings would be more costly, making this option financially untenable without government assistance.
  - ✓ **<u>Land Stabilization</u>:** Over time, the banks around the tidal lake became unstable marsh, exacerbated by Rt. 54 construction. Soil stabilization would include hardening the land under the structures, while minimizing impacts to the wetlands. Land Stabilization would be difficult and costly to achieve without elevating the structures during the process.
  - ✓ **<u>Living Shorelines</u>:** Living shorelines addresses erosion through natural methods such as plants, sand, shells, and rocks. DNREC offers 60% cost-sharing upon project completion for any areas that may qualify for this solution. Additionally, water sills (a submerged structure in a body of water that acts as a barrier to control water flow. Living Shorelines and other methods (e.g., sills) would be part of a larger strategy to reduce flood risks, but would not be the sole method for flood reduction.
  - ✓ **<u>Enhanced Drainage:</u>** All ML lakes are connected. Adjustments could potentially be made to the drainage system to drain water across the community more effectively. *DNREC has done a site visit and will bring up our need at an upcoming project meeting.*
  - **Physical Barriers:** Using floodwalls, levees, floodgates, or seawalls to restrict the water. Flood barrier infrastructure could be built at the primary inlet into the tidal lake under Route 54, restricting/regulating water flow into ML during storm surges only. Coordination between federal, state, and county governments is required to determine the feasibility of and for funding for such a project. *A barrier at Rt 54 could potentially help with a significant storm surge, but would not help with day-to-day tidal inundation, unless it is used to restrict daily water flow (which is inconsistent with wetland policies). It would also not address the flood risk from the Treasure Beach canals.*

- ☒ **Dry Floodproofing:** Dry floodproofing measures can seal individual buildings/units to prevent rising tidal water from entering them. These methods might be part of an overall flood mitigation strategy but would likely be cost-prohibitive without funding assistance from the government. *FEMA does not recommend dry floodproofing for wooden residential structures*.
- ☒ **Dredging:** Dredging can remove sediment within the tidal lake to increase the lake's depth and lower the waterline. To determine whether dredging may be effective for the tidal lake, a "bathymetric" measurement and sediment analysis would need to be performed to determine where and how much dredging needs to occur and where. Sediment material removed from the lake could be used to stabilize the wetland shoreline or would have to be disposed of in another manner. *Dredging requires permitting, can be expensive, and is not a permanent solution*.

PROPOSAL:

1. **Recognize There <u>Are</u> Options:** Flood mitigation actions ML would have to implement can be permitted. Although ML has significant challenges that will likely take several years to address using multiple methods, there are many organizations and programs at the local, state, and federal levels available to assist communities with flood mitigation strategies and funding options.
2. **Form an HOA Sustainability Committee**: Instead of managing by crisis after a major event, establish a committee to develop a community-wide sustainability strategy and, upon Board approval, help implement it. The plan would focus on mitigation efforts that would increase personal and property safety while decreasing future risk to the community, improve property values, and ensure ML remains a viable, vibrant community now and in the future. Many communities have these types of committees on their HOA. Deliverables would include developing flood mitigation plans, obtaining funding, and educating the ML community on flood risk and prevention measures.

   ACTION: HOA to provide approval to establish committee. Once HOA approves, develop Sustainability Committee Charter. Proposed purpose and membership is in the ML presentation.

3. **Develop Communication Strategy for Homeowners**: It is very important that the community understands that the HOA is not just focusing on the day-to-day efforts but is also considering ML's long-term future. Even though ML is located within a special flood hazard area, there is no documentation that discusses how ML is addressing those risks. Communication would be refocused to

discuss community-wide needs and why planning for the future will reduce risk and financial burdens on the community. This should help reduce the us versus them issues of the past. Communication would be tempered so as not to give false hope, but also show that the HOA is doing all that is within their power. This committee would work with the HOA Communications lead and webmaster to disseminate information.

ACTION: HOA to provide approval to establish committee. Once HOA approves, develop initial communication, vet with HOA and work with Communications Committee lead and webmaster to distribute. Preliminary communication strategy is included in ML presentation.

4. **Delineation and Feasibility Study:** Although there have been a few one-off, professional assessments of ML in the past (e.g., barrier install at the culvert under Rt 54), there has been no comprehensive study by an environmental or civil engineering firm to determine all the actions that would need to be implemented, community-wide, across ML. Additionally, the more information that is available regarding proposed mitigation solutions, the higher the likelihood of a successful outcome when ML applies for FEMA and other grants.

   A comprehensive site assessment and feasibility study for the entire community would identify not only what types of projects should be completed to reduce our inundation, subsidence, and flood mitigation, but it will also include the estimated cost of these projects. A wetland delineation would have to occur before the feasibility study was completed. A wetland delineation is the process of determining the exact boundaries of a wetland on a property.

   Envirotech, an environmental management services company endorsed by DNREC, has provided an estimate of ~$3K for the Delineation and ~$6K for the Comprehensive Feasibility Assessment.

   Simone is obtaining an additional estimate from a Civil Engineering Firm (Davis, Bowen, and Friedel) for a feasibility study.

   ACTION: Determine if HOA will fund any costs associated with performing this study.

5. **Obtain FEMA , USACE, or Other Grants to Conduct Civil Engineering Study and Specific Projects:** While the feasibility study would give us the basic information we need to reduce our flood risks; an engineering study would provide detailed blueprints and construction plans to begin mitigation implementation. Engineering studies are more comprehensive and significantly more expensive than feasibility studies; likely requiring government funding assistance. An engineering study would have to determine the cost of specific projects and would be required before ML could apply for project-specific grants.

   The ML FEMA grant applications for the Engineering Study could be done separately – apply for study and then specific projects. Or, using the feasibility study information, ML could apply for both the Engineering Study (Phase 1) and the specific projects (Phase 2). Having a feasibility study first would strengthen our application and increase odds of grant approval.

   STAUS:
   - *Sussex County Administrator has indicated that he currently does not have funding/resources to develop FEMA Grant applications; consulting Councilman Rieley, Sussex County Councilman, District 5, regarding options.*
   - *There is some concern that the current Presidential Administration may reduce/eliminate grants.*
   - *DEMA is working with USACE to see if ML would be eligible for their programs.*
   - *Exploring other grants (NOAA, HUD, HOA*

   ACTION: Would the HOA consider hiring an Engineering Firm to prepare the FEMA applications on behalf of Sussex County?

6. **Fund Study Remediation Projects:** Apply for all eligible grants. Determine if some mitigations can be done by ML maintenance to decrease costs. If only a percentage of government funding can be obtained, consider reprioritizing existing ML projects and/or taking out an HOA bank loan and/or other fundraising to fund the remainder of the mitigation.

7. **Community and HOA approval**: Present the proposed sustainment strategy to the ML community and Board for approval.

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BENEFITS:

- **Flood Damage Protection**: Mitigation strategies will protect our properties from further flood damage, preserving ML's long-term durability and sustainability.
- **Reduced Flood Insurance Premiums**: ML can maintain its access to NFIP coverage and reduce the community's insurance premiums by actively addressing flood risks. Premiums may also be reduced by participating in the Consumer Rating Service (CRS), a voluntary incentive program for communities implementing flood prevention measures exceeding the minimum NFIP requirements.
- **Increased Property Values**: Mitigation efforts will boost home values and make ML properties more competitive with similar homes in the area.
- **Government Assistance**: State and federal grants and cost-sharing programs may fund some or all costs, reducing the financial strain on the community.

CONS:

- **Upfront Costs**: Even with grants and cost-sharing, some costs may remain, impacting assessments.

This strategy positions Mallard Lakes to reduce its flood risks, enhance property values, and secure a sustainable future by proactively leveraging available resources and addressing the issue.

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REFERENCES:

Articles:

- DelmarvaNow.com, “Mallard Lakes resident: dispute 'going nowhere'” written by Gray Hughes, published 5/9/2017 (Mallard Lakes resident: dispute 'going nowhere')
- Delaware Online, “Owners seek help to jack up flood-prone condos,” written by James Fisher, The News Journal, published 6/11/14 (Owners seek help to jack up flood-prone condos)
- Independent American Communities, “4 years after Sandy, it’s a no-win situation at Mallard Lakes, “ written by Deborah Goonan, published 7/24/2016 4 years after Sandy, it's a no-win situation at Mallard Lakes • Independent American Communities
- Delmarva Now, “FEMA spurns Mallard Lakes Sandy grant bid” written by James Fisher from the News Journal, published 10/25/2014.
- Delmarva Now, “A Sandy headache that won’t go away” written by James Fisher from the News Journal, published 11/05/2015.
- Climatecentral.org “After the Storm, Damp Moldy Homes,” dated August 9, 2023 (https://www.climatecentral.org/climate-matters/after-the-storm-damp-moldy-homes-2023)

Experts:

- Stacey Selby, Mallard Lakes Maintenance Manager
- Alison Rogerson, DNREC Wetlands Department
- Kathy Potter, DNREC Floodplain Management
- Karl Workman, DNREC Division of Watershed Stewardship, Landowner Liaison – Drainage
- Joel Dohm, USACE Study Project Manager; Stephen Rochette, Public Affairs Officer, and DNREC Director of Community Affairs; Matthew Ritter -- USACE/DNREC Inland Bay Study
- Robert Youhas, US Army Corps of Engineers, Regulatory Branch
- Rachel Ward, US Army Corp of Engineers, Regulatory Branch
- Tim Cooper, County Emergency Manager, Sussex County
- Jamie Whitehouse, Sussex County Floodplain Administrator
- Ed Lewandowski, University of Delaware Coastal Design Studio
- Jana Savini, Coastal Collaboration Coordinator, DelawareEstuary.org (RASCL)
- Phil Cane, DEMA State Hazard Mitigation Officer; colleague Travis Tuscon, DEMA

- Lyle A. de la Rosa, Environmental Project Manager, Envirotech Environmental Consulting, Inc. – DNREC-sponsored Living Seashore provider
- Todd Fritchman, President and CEO of Envirotech Environmental Consulting, Inc.
- John Phelps, Senior Business Development Consultant, Environmental Scientist, Solitude Lake Management Dredging Expert
- Kurt Lueke, Regional Flood Manager, Flood Mitigation Specialist, Floodproofing.com
- Tom Nobile, Environmental Scientist, Davis Bowen and Friedel
- Sharon Cruz, Environmental Engineer, Davis Bowen and Friedel
- Todd Lawson, Administrator, Sussex County Delaware Government

Funding Options:

- Coastal Restoration Toolkit, Coastal Erosion funding (e.g., NOAA Coastal Resilience Grants Program, NOAA's Office for Coastal Management) (restoreyourcoast.org)
- Living Seashores and cost-sharing opportunities (www.delawarelivingseashore.org)
- FEMA Flood Mitigation Assistance Grant, Flood Mitigation Assistance - Individual Flood Mitigation Projects -- ***Best fit with ML's needs and grant's intent. 75 to 90 percent reimbursement by Feds. Sussex County or State has to apply. Working with DEMA and Sussex Co gov't to determine if/when they will submit a request for a civil engineering study on our behalf. Next cycle fall 2025.***
- FEMA Building Resistant Infrastructure and Communities Grant, FEMA BRIC Grant – ***Good fit with ML's needs and grant's intent. 75 to 90 percent reimbursement by Feds. Sussex or State has to apply. Working with DEMA and Sussex Co gov't to determine if/when they will submit a request for a civil engineering study on our behalf (Email sent 1/31). Next cycle fall 2025.***
- Sussex County Flood Assistance and Flood Mitigation Program, **Flooding Assistance and Mitigation Program | Sussex County**; Sussex County Community Development and Housing Office, Brandy Nauman, Tel: (302) 855-7777. ***Only applies to single-family houses.***
- US Fish and Wildlife Service, National Coastal Wetlands Conservation Grants. ***Not a good fit based on intent of grant and ML's needs, only up to $1M, cost share 75 percent. Would have to have State F&WL equivalent submit on our behalf.***
- Delaware Community Development Block Grants through Delaware State Housing Authority, POC Dawn Favors Jopp, dawn@destatehousing.com, (302) 739-0204 ***For low to moderate income communities to repair basic services like street lights and road repairs. Likely not a good fit. Will reach out to Dawn Jopp.***

- HUD Community Development Block Grants (CDBG Mitigation (MIT)) - ***Are grants for mitigation after disasters, so good fit for us. Now done by a CDBG Set-Aside. but appears to be restricted to specific disasters.***
- US Fish and Wildlife Services 5 Star Wetland and Urban Waters Restoration Grants (wetland restoration), Kaitlyn Hill (Kaitlyn.Hill@nfwf.org) – ***Awards $10 to $40K for environmental education and things like volunteer cleanup, living shoreline development, etc. Could potentially fund a portion of costs.***
- US Fish and Wildlife Services, Coastal Zone Management Habitat Restoration and Restoration Grants, ocm.czm.infrastructure@noaa.gov – ***Awards funding to do wetland restoration, to include planning, engineering and design. Could go after this fund to cover some of our erosion problems, like living shoreline development. Can be used with other grants. Will reach out to find out more.***
- US Fish and Wildlife Services National Costal Resilience Fund, contact Arielle Mion, Manager Coastal Resilience (arielle.mion@nfwf.org); ***Allows private entities to apply. Designed to restore or expand natural resources to lessen the impact of natural resources. Requires non-federal match of cash and/or in-kind goods and services. Will reach out to Arielle Mion.***
- US Fish and Wildlife Conservation Fund, Ellie Lerner elerner@conservationfund.org; Miles Kirksey, mkirskey@conservationfund.org; Maryland DE advisor Bill Crouch; bcrouch@conservationfund.org; ***I will reach out to Maryland Rep first to see if our situation could be eligible for the Conservation Fund. There is a project they funded to raise the wetland.***
- USDA Watershed and Flood Prevention Operations Program, Delaware Contact, Diane Gray, State Conservationist, diane.gray@usda.gov; provides planning, design and construction of measures that address resource concerns in a watershed through technical and financial assistance. Requires local government to submit. 50/50 match. Sussex County Delaware Rep; Jonjala Jackson, jonjala.jackson@usda.gov; tel:3028563990;ext=3 Simone to Reach Out to both reps.
- Community Development Block Grant — Section 108 Loan Guarantee Program (HUD) **Potential loan option if we cannot get 100% federal funding. DEMA Rep indicated there are several loan options we can explore.**
- Flood Funding Finder - American Flood Coalition
- Flood Damage Protection (Section 205), US Army Corps of Engineers, Mark Bierman, (415)-503-6508, mark.d.bierman@usace.army.mil. ***Follow up with Travis Tuson to see what his USACE contact said.***

- FEMA PIVOT – Can provide information regarding NFIP claims over the years, contact email fema-nfippivotsupport@fema.dhs.gov; ***Email sent 1/28/25***
- Resilient Communities, Delaware Coastal Communities, POC Kristen Thornton, kristen.thornton@delaware.gov; 302-739-9173. ***Send an initial email to determine if there are some options with this program.***

Key Reference Documents:

- Climate risk financial modeling (firststreefoundation.com)
- Sussex County Multi-Jurisdictional Hazard Mitigation Plan, dated July 2022, prepared by the Olson Group (SussexCounty-Multi-Jurisdictional-Hazard-Mitigation-Plan-2022.pdf)
- Delaware Regulations: Administrative Code: Title 7: 7000: 7502 Wetlands Regulations (7502 Wetlands Regulations)
- Hazard Mitigation Assistance Technical Review for Elevations, Elevation Technical Review Supplement T1.3
- National Risk Index, Sussex County, Community Report - Sussex County, Delaware | National Risk Index
- National Risk Index by Census Track, Community Report - Census tract 10005051309, Sussex County, Delaware | National Risk Index
- FEMA Pre-Disaster Mitigation Grant Program, FEMA PDM Grant
- National Flood Insurance Plan Flood Plain Map for Mallard Lakes, NFIP Flood Map
- Deeds to Mallard Lakes, which include building plans, Deeds to Mallard Lakes
- Wetland Maps to Mallard Lakes, Delaware Wetland Maps
- National Wetland Inventory Links, Wetland Mapper
- Firstmap Historic Imagery, Mallard Lakes Historic Maps