

Town of Edisto Beach, SC

VCAPS Exercise

Tuesday, August 11, 2020

Attendees:

Sarah Watson – CISA and S.C. Sea Grant Consortium, Facilitator
Kirstin Dow – University of South Carolina, CISA Lead PI, Notetaker
Jory Fleming – CISA Climate Solutions Specialist, Diagraming
Amanda Farris, CISA Program Manager, Notetaker

Iris Hill – Town Administrator
Mark Aakhus – Assistant Town Administrator
Denney Conley – Fire Chief
Patrick Zemp – Utilities Director
Patti Smyer – Council Woman

Extreme Rainfall

- Where does it flood?
 - The Town has a partial list of roads that flood during heavy rainfall events. Iris states the town knows where flooding persists and where it drains more quickly.
 - At Councilwoman Smyer’s house it may be 3-7 days before she can get out of her driveway.
 - Specific locations that were identified through the GIS mapping exercise:
 - Dolphin (mentioned a couple of times)
 - Jenkins Street, at the gate, where there is a low-lying area
 - 3007 Myrtle Street
 - Yacht Club Road
 - Palmetto Blvd (500-600 block)
 - Rice Lane
 - 2501 Point Street
 - Town Hall (entering and leaving)
 - Where the lagoons intersect the roadways
 - Portia Street
 - Lagoons were dug out for development, but they are tidal because they are connected to Big Bay Creek.
 - The PUD lagoons are also intertidal, take water that comes from Arc and Billow Streets. (these are owned by the PUD)
 - Piping connects drainage system to the lagoons.
 - Lagoons have three outfalls in the golf course. The internal lagoons have two outfalls. 24” and 48” pipe at Whaley (owned by SC DOT)
 - Marianna St outfall is owned by SC DOT. It does not drain well.
 - Yacht Club road outfall is sedimented in due to alterations in the past to this area.
 - Contextual information:

- Most of the lagoons are privately owned. The Town only owns one lagoon.
 - Homeowners have made changes that impact the functionality of the lagoons, that have impacted other property owners. There has been some tension.
- Why is that happening?
 - If the property is lower than the road, the property will flood
 - Where it floods depends on antecedent conditions
 - Ground water levels (if it has not rained for a while, the water drains much more quickly)
 - High tide levels during the rainfall event
 - Flooding is also impacted by impervious surface. Flooding does not persist as long on dirt roads.
- What is affected?
 - Septic systems will not function properly
 - Lots of septic systems fail during extreme flood events
 - Unable to rent out the home
 - Unable to stay at the home while the septic is not functioning
 - Engineered systems are an alternative, but are not a fail safe
 - The homeowner is not required to tell the Town that the system has failed, but the Town notices the flooding or septic companies at the property
 - Can become a health concern when they dump into a drainage ditch if it contaminates stormwater, which isn't treated
 - Can be a health concern if untreated material spreads across yards, streets, or into lagoon systems
 - Does the septic company need to tell DHEC? Is there a reporting mechanism?
 - Wastewater treatment plant
 - If the house is connected to the sewer system, residents have opened the cap to the sewer systems and let the flood waters into the sewer system which leads to more volume than the system is permitted to hold (not permitted to handle stormwater)
 - Sometimes lawn services break these sewer system caps and that breakage is not reported
 - The Town has conducted smoke tests to try to identify penetrations to the system
 - If wastewater system is overwhelmed
 - Creates a problem with capacity for effluent – pumped to PUD for irrigation. Becomes a flood event with treated effluent.
 - Golf course is a spray field for treated effluent
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 - There is a WWT pond and another pond that are connected to the spray pond that provide some additional capacity
 - During an extreme event such as after a hurricane, the problem is somewhat relieved because there are fewer people adding to the sewer system
 - An overflow of a lift station would lead to environmental hazards to be reported to DHEC

- If they must contact DHEC because of a failure
 - Depending on the amount spilled, requires flushing and clean up
 - Could be fines associated if there are additional impacts
 - Asked if permit could be revoked – possible.
 - Flooding of outbuilding or storage under houses
 - Other impacts:
 - Emergency response effected by flooding
 - Long-term impacts to real estate market as well as the condition of the property (e.g., molding and mildew in houses)
 - Reduced tourism
 - Mosquitos from standing water
 - Public and private property damage
 - Insurance rates impacted because of repetitive flooding
 - Repetitive flooding may also lead to increased costs for rebuilding and remodeling to meet updated design standards
 - Flood map changes
 - When flood maps are updated, impacts building requirements for new construction and renovations which increases costs
 - Trees and vegetation falling because of saturated soils
 - Erosion
 - Sedimentation in stormwater ponds
 - Strain on limited resources
 - People, money, equipment
 - Effects to town resources/equipment damage
 - Waste water system damage because of sedimentation (e.g., lift station pumps burn out)
 - Solids deposited in the WWT plant (dredged and taken to a special landfill because of high metals content)
 - Electrical equipment damaged when WWT plant flooded during hurricanes
 - Speeds up depreciation on vehicles because of the saltwater corrosion
 - Mold and mildew issues in homes
 - Fire hydrants are rusting away, along with other below ground piping
 - Estimated cost to replace approx. \$5k for hydrant and \$5k for piping

Response

- Documentation/Mapping
 - Capture more of the roads that flood during extreme rainfall, and in combination with ground water levels and tidal function.
- Lagoon System Improvements
 - The Town looked at possibly converting lagoons into stormwater ponds but found that DHEC requirements for stormwater retention ponds were cost prohibitive.
 - Roads drain to those lagoons, but DOT has no responsibility for maintaining the lagoons. Must be herbicided and dredged to maintain capacity. One off grants are possible, but do not address the long term issue (note Lagoons are already saltwater)

- Vegetation cannot be cleared by the Town unless it is in the right of way.
 - Would need property owner's permission? Need a definition of a vegetative boundary
- Are 319 grants to help maintain ponds an option?
 - May provide a short-term fix, but not a long term solution
- Look at connections between the ponds
 - What maintenance could be done that would not be as extreme or expensive as dredging that could help?
 - If connections could be made to function properly, it could help
- Organize a mapping effort to better understand the full system.
 - Parts of the drainage system have been studied, but do not have a comprehensive picture
 - Would require extensive coordination to identify and contact all lagoon owners.
 - Would also require working with DOT and homeowners
- Emergency Response/Vehicle Maintenance
 - Use undercoating for undercarriage of vehicles and salt-away to help with rust issues. Helps but does not stop it completely.
 - Limit expensive vehicles going into flooded areas.
 - Military surplus vehicle (Hummer) that was free to the Town has a higher track, so exposure is more limited. But it does not have the lifesaving equipment that the fire trucks have.
 - One squad unit vehicle is used to respond to most calls that are not fire related to limit exposure.
 - Replace with a better equipped vehicle?
 - The Town owns one boat.
 - Town has or has access to 4 pumps
- Fire Hydrants
 - Very expensive to replace (~\$5K for a new hydrant and ~\$5K to install) and time consuming
 - Map hydrants that have been impacted to determine about how many times they are projected to flood (there may already be a shape file)
 - Evaluate longevity and plan maintenance around that
 - Would moving hydrants to higher ground if/when they are replaced be an option?
- Manhole covers
 - Infiltration through manhole covers that impacts the wastewater treatment plant
 - Can affect "bug" composition in the wastewater treatment system. This is usually a short-term problem but can result in effluent that isn't properly treated.
 - Can install barriers to prevent infiltration but their capacity is limited
 - Seals are relatively cheap (~\$30)
- Wastewater Treatment
 - They currently have (or are researching the possibility of) a capital improvement plan for the sewer system because of lift stations that are inundated.

- Standards for roads
 - Engineering firm says they should have been built for a 10-year 24-hour storm event
 - The Town Administrator is not sure that they were built to this standard
 - Challenge because the rain isn't coming in long steady flows over 24 hours, but downpours in very short amounts of time.

Follow Up Questions

- What is drinking water source? Are there vulnerabilities associated with that?
- Map layers
 - PUD
 - Hydrants and manholes
 - Lagoons and connections (ownership)
- Unsure of DHEC's level of awareness about septic failures.
 - Are septic companies required to notify DHEC?