

# **PROJECT FINDINGS: GRAVELINE BAY INSURANCE PILOT**

*Briefing to Friends of the Community Resilience Center*

*June 2026*





## LETTER FROM THE DIRECTOR

Dear Friends,

I'm excited to share with you the results from our pilot project that worked to link flood risk reduction benefits of a marsh restoration to flood insurance prices. We leveraged a marsh restoration project, funded by the National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund. This project was located in Graveline Bay on Dauphin Island, Alabama. For two years, The Community Resilience Center has worked with our engineering partner Moffatt & Nichol, our reinsurance partner Munich Reinsurance America, Inc. (Munich Re US), island residents, and their insurance agents to understand the potential impacts of this restoration project on the flood insurance policies of adjacent properties.

**We learned that *the marsh is working*. It is reducing wave heights and water levels for adjacent properties, and that reduced risk made those properties slightly less risky to insure.**

This project started with simple questions about co-benefits: even if a restoration project was designed to create marsh habitat, doesn't it also have flood risk reduction benefits? And shouldn't there be a way to take post-project monitoring data and incorporate it into flood insurance pricing? While these questions sound simple, the answers were complex. This briefing document explains in plain language what we found, what it means, and how we approached the project. It also includes more technical results and methods for our more technical friends.

We hope that this will be useful as you investigate flood insurance questions in your own community.

Sincerely,

Renee Collini

Director, Community Resilience Center at The Water Institute

Suggested citation: DeJong, Allison, Renee C. Collini, Peyton Caraway, Raghuv eer Vinukollu, Meg Goecker (2026). Project Findings: Graveline Bay Insurance Pilot. *Community Resilience Center Friend Briefing*. The Water Institute. <https://thewaterinstitute.org/graveline-bay-insurance-pilot>



## WHAT WE FOUND: MARSH RESTORATION REDUCED FLOOD RISK

Dauphin Island, Alabama is a barrier island community south of Mobile with both vacation homes and long-time residents and family homes. Graveline Bay, on the north side of the island, is a relatively enclosed area where the marsh had degraded. Following the Deepwater Horizon oil spill in 2010, restoration funding was made available for the Gulf Coast. Some of this funding was used to design and construct a marsh restoration project in Graveline Bay, which added approximately 60 acres of marsh to the area in 2023.

While the goal of the project was to restore marsh habitat, **it seemed clear to us that this project would likely have an added benefit of reducing flood risk for adjacent homes.** At the Community Resilience Center at the Water Institute (the CRC), we asked FEMA officials how we should connect reduced flood risk from local restoration projects to nearby residents' flood insurance policies purchased through the National Flood Insurance Program (NFIP). They advised that if we thought the risk assessment was incorrect, we should tell our insurance agent, and then FEMA would reevaluate. In response, we developed a project to test this approach, with funding support from the Gulf Alliance.



*The new marsh mounds in Graveline Bay, while under construction. Photo courtesy of Moffatt & Nichol.*

Our partners at Moffatt & Nichol, who designed and engineered the marsh restoration project, took their existing pre- and post-monitoring data and modeled the new marsh's impacts on waves and water heights for storms of different intensities and likelihoods (ranging from a 2-year storm to a 100-year storm). **They found that the marsh reduced wave heights during minor flooding, like high tides, and major flooding, like tropical events.** The marsh even reduced still water levels, which was a surprising result.

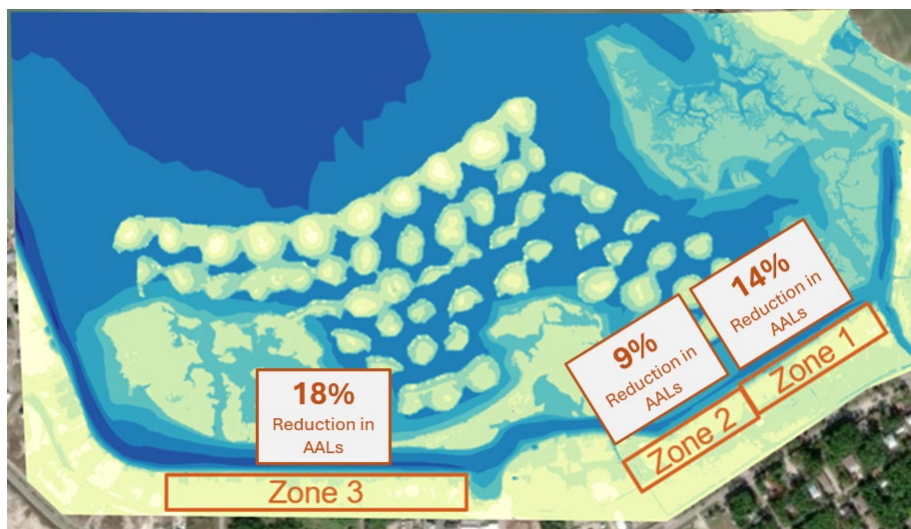


Below is an example of the engineering analysis for a large storm (a 50-year return period, or RP, storm), showing the wave heights, still water heights, and total water levels that would result without the Graveline Bay project in place (WOP) and with the project in place (WP), as well as the difference and the relative change (the delta, or  $\Delta$ ) between the two. Similar results were found in other zones across the project footprint. The negative relative change percentages show the reduction in all of these parameters with the marsh project in place. This demonstrates that the marsh project is reducing the homeowners' risk of impacts by wave and water events.

Zone 1				
Output Parameter	50-yr RP			
	WOP	WP	Diff.	Relative $\Delta$
Wave Height (ft)	1.21	0.66	0.56	-46%
Still Water (ft)	7.35	7.15	0.20	-3%
Total Water Level (ft)	8.20	7.61	0.59	-7%

*An example of the engineering analysis results for one storm.*

We next worked with our other project partner, Munich Re US, to understand what this change in risk could mean for insurance pricing. Munich Re is a global reinsurance firm that supports the private flood market through its insurance clients/partners and the NFIP Reinsurance Program. Munich Re is a trusted partner in the private flood market and other business segments in the insurance industry. For this study, they used the analysis of reduction in wave heights and water levels and assessed what impact this would have on the average annual loss (AAL) for the properties in our study area. **Munich Re US found that the risk reduction from the marsh restoration could lead to a reduction of between 9% and 18% in AALs for these properties.**



*A map of the Graveline Bay study area, showing the percentage reduction in AALs corresponding to each zone of the engineering analysis.*

While AAL is not the only factor in determining the price of a flood insurance policy, the price of risk has a meaningful impact on the premium. The reduction in AALs for these properties should have a positive impact on flood insurance premiums for this area of Dauphin Island.



**In other words, while this doesn't guarantee a 9–18% reduction in the cost of someone's insurance policy, it does show that the properties are less risky to insure, and thus the price of flood insurance should be lower.**

## WHAT THIS MEANS FOR INSURANCE PRICES

The NFIP's Risk Rating 2.0 system, which promises parcel-level assessments of risk and actuarial pricing that reflects that risk, is increasing flood insurance costs in Gulf communities large and small. This is making it more difficult for people to maintain adequate coverage, buy a new policy when they move, or even maintain an existing policy as it increases in cost to the actuarial rate which is called a full risk premium.

Connecting local restoration projects with the pricing system for flood insurance is growing in importance for several reasons. Gulf states like Alabama and Louisiana invest in restoration projects that reduce risk. Projects like the Graveline Bay marsh restoration were funded using RESTORE Act dollars, and similar projects have been constructed elsewhere; **there should be a way to incorporate these projects into the price of flood insurance for adjacent communities.** However, that is harder than it might seem.

The previous pricing system was based on flood insurance rate maps, or FIRMs, and relied on zone designations (such as X, A, VE) to set prices for policies. Under this system, a property owner could challenge their designation in a particular zone through a Letter of Map Amendment, or LOMA. This process was not perfect, but it did provide a process for reviewing and adjusting a risk assessment. Under Risk Rating 2.0, that process is no longer available to property owners, because rates and prices are not derived from FIRMs. FIRMs serve as more of a mandatory policy purchase map and a long-term guidance tool for community development and land use.

In searching for a process to connect marsh restoration with premium pricing, we interviewed and met with partners and colleagues from nonprofit groups, reinsurance corporations, catastrophe modelers, former FEMA staff, and more. In multiple interviews, we were told that the Community Rating System (CRS) program was likely the best place to incorporate this updated risk information, rather than the Risk Rating 2.0 algorithm or its underlying modeling framework. **We do not agree.**

The CRS program holds participating communities to certain commitments to manage their floodplains and reduce their risk. It provides standardized, scaled discounts of a given percentage to every policy holder in the jurisdiction. In theory, this seems like a natural way to provide community-level benefits for community-level risk mitigation. **In practice, there are key challenges that prevent CRS from being an appropriate path to integrate risk-reduction measures into premium pricing.** Participating in CRS requires a lot of administrative work from both municipal staff and, usually, consultants. This serves as a barrier to participation for many local jurisdictions. Communities participating in CRS are generally better resourced, and so a path of risk integration via CRS would advantage the better-resourced communities that are able to participate in the program.

**Additionally, CRS does not generate a change in assessed risk.** While CRS does represent best management practices for floodplains, it is more about preventing risky development moving forward and



does little to reduce risk to what is already built. Participating in CRS can prevent some risk from worsening, but CRS alone does not reduce the current risk. Finally, CRS discounts have a state-level neutrality mechanism for premium discounts. If a community begins participating in CRS or improves their CRS class, the discounts they receive must be offset by other communities in the state—meaning that non-CRS communities’ premiums increase while CRS communities’ premiums decrease. Because this project shows demonstrably lower risk, CRS is clearly not the right path to integrate this risk reduction, as we are looking for a durable mechanism to adjust assessments of risk prior to community-level discounts from broader CRS activities.

The CRS program is a valuable tool, but participation requires high levels of capacity and investment that many communities simply do not have, while also not addressing actuarial risk reduction. **If premium pricing is based primarily on risk, and risk is defined and quantified in terms of AALs, then there must be a way to adjust pricing when the underlying risk has changed.**

While we have not been able to develop the durable process needed to connect restoration with pricing, we are pursuing promising avenues for discussion. Each of these avenues has opportunities but also unknowns and potential drawbacks.

## CATASTROPHE MODEL UPDATES

One way of connecting risk reduction to insurance pricing that we are exploring is trying to work within the cycle of updates to the catastrophe models that underpin the Risk Rating 2.0 framework. This includes understanding how frequently those catastrophe models are updated and how simple or complex it might be to make adjustments to DEMs (digital elevation models) within those models. In the Graveline Bay restoration, the marsh mounds have a different landscape—and thus a different elevation—than the open water that was there before. If a catastrophe model can ingest a new DEM, the modeling framework might replicate the risk reduction analysis that we produced.

This approach has two main drawbacks: the update cycle for catastrophe models is long, upwards of 5 years. Additionally, because Risk Rating 2.0 uses an assemblage of models, the update would need to be made in multiple models to ensure that the predictive capabilities of the model were consistent. Because of the long delays and extensive coordination required, this is likely not a short-term solution.

## POST-MODEL ADJUSTMENTS

Another avenue is to explore post-model adjustments that would occur within the Risk Rating 2.0 framework itself. One type of post-model adjustment is determining whether the parameter “distance to coast” can be adjusted to account for these kinds of projects, and if those kinds of adjustments provide consistent, reproducible changes to pricing. Another possible post-model adjustment would develop a process, similar to the one used for levees, where risk-reduction curves are generated for each restoration project. Finally, an adjustment to the geospatial databases, such as US Geological Survey’s National Hydrography Dataset (NHD) used by the NFIP, may be able to account for important rating factors. We tested this idea with FloCom, a private sector rating company, and think that it may be a promising way to replicate the process of a physical map revision that took place prior to Risk Rating 2.0.



These approaches vary from small tweaks to larger systemic changes to how risk can be adjusted within the Risk Rating 2.0 framework. It is not currently clear if these approaches could scale to other kinds of natural or nature-based risk reduction projects, or whether a tweak that works in the Gulf could also work in other parts of the country. A consistent, clear, and documented process for these kinds of post-model adjustments will take time to test and troubleshoot, but could be feasible with direction and coordination among technical stakeholders and FEMA staff.

Finally, it's important to note that this research project has taken place over the course of a very uncertain time at FEMA and the NFIP. We finished our modeling work for this research right as a government shutdown made it impossible for us to meet with FEMA and NFIP staff. A second shutdown of the Department of Homeland Security continued throughout the writing of this briefing. Recent events, such as statements in the media regarding available resources, recommendations from the FEMA Review Council, and reports of possible executive or legislative action, make the future of the department and the NFIP unclear. We have explored the avenues of catastrophe modeling, the actuarial program design, and reinsurers' risk assessments as the best way to understand how to design a process that fits within the system as it exists today. However, we understand that our avenues of investigation may become less relevant as these uncertainties persist and evolve.

## NEXT STEPS

We think that the next steps should be to:

- **Inform as many stakeholders as we can.** Every stakeholder has their own pathway to help advance this conversation, whether they are a resident, realtor, insurance agent, elected official, civil servant, or just someone interested in risk reduction or natural infrastructure.
- **Continue to find ways to bring together the key technical partners.** To find a process for integrating this information, we are committed to bringing together catastrophe modelers, actuaries and actuarial consultants, NFIP staff, and anyone else with a vested interest in this program.
- **Conduct at least one other pilot.** To prove that this is not a uniquely situated risk reduction project, we want to conduct at least one other pilot in a Gulf community adjacent to newly built or restored natural infrastructure. This would show the repeatability and scaling potential of our analysis and ensure that a process change could be used not just for Dauphin Island, but in other similarly situated communities.



## THE DETAILS

### BACKGROUND AND APPROACH



*A map of the Graveline Bay study area showing the new marsh mounds. An inset map in the top right corner shows the location of Dauphin Island south of Mobile Bay.*

Dauphin Island is a barrier island located south of Mobile off the coast of Alabama, as seen in the inset map to the left. The island has been severely modified by hurricanes, sea-level rise, and development causing erosion, rollover, and breaching.

Graveline Bay, where this marsh restoration project was constructed, is sheltered to the northeast by the airport runway, and to a lesser extent, sheltered to the northwest by the homes that sit on artificial peninsulas. Prior to this project, the bay experienced 75 acres of marsh loss over the past 100 years. The restoration project constructed 10 large and 45 small marsh mounds to create intertidal and high marsh habitat. The overall goal was to restore the ecological function and services of the marshes to remedy ecological harm from the Deepwater Horizon oil spill.

This project was also the perfect site to pilot the process FEMA recommended under Risk Rating 2.0 to integrate risk reduction measures into flood insurance prices. The RR 2.0 methodology, which went into effect for new policies in 2021 and completed rollout for all renewing policies in 2022, has been a source of financial strain for many households. Residents along the Gulf have experienced increases in their flood insurance premiums under the new methodology, which decouples insurance prices from zone designations on FEMA's FIRMs. Instead, Risk Rating 2.0 uses a rating engine comprised of FEMA and third-party data to assess multiple rating factors, such as distance to coast, ground elevation, and more. The intent was to represent a wider array of exposure to hazards beyond the single flood level that was used in the FIRMs, which primarily correlated risk to the 1% annual chance event flood. Under RR2.0, a range of flood events from small and frequent to very large and infrequent are considered in assessing



exposure and pricing risk. In practice, because the methodology is not transparent in how risk or premiums are calculated, homeowners are not able to ascertain why their insurance premium may have changed, and if there is anything they can do to make it less expensive.

Previously, a community or a developer could file for something called a Letter of Map Amendment, or LOMA, challenging their designation on a FIRM using supplemental data or modeling information. These procedures offered a way to change the official designation of risk for a property, and thus, to adjust the price of flood insurance under the NFIP. Under RR2.0, there is no map amendment process that will influence pricing, and no clear understanding of how a risk reduction project may impact the price of a particular NFIP policy. The guidance FEMA provided was that residents should inform insurance agents of potential inaccurate assessments of risks or changes in risk, insurance agents would tell FEMA, and then FEMA would review it.

Graveline Bay's marsh restoration project provided an opportunity to explore this procedural uncertainty under Risk Rating 2.0 because it is a discrete and clear action that reduced risk to between 30 and 40 homes. Further, the substantial and ongoing investments in restoration across the Gulf provide an especially important scaling opportunity. If we are able to find a procedural pathway to address risk reduction in the RR2.0 system, it could potentially be used for multiple projects completed every year.

We engaged Moffatt & Nichol to help with this project because of their familiarity with the marsh restoration project and Dauphin Island. Their team designed and constructed the restoration project and as part of this had already collected pre- and post-monitoring data. Therefore, they did not need to collect new data to create digital elevations or other model inputs. We also engaged Munich Re to support the analysis because of their importance to the NFIP and their standing in the insurance industry. We wanted to make sure that all results would be accepted for integration into any actuarial pricing system.

The project plan included five components:

- Conduct an engineering analysis of the changes in the total water levels, including still water heights and wave heights (Moffatt & Nichol)
- Engage with residents to learn about their history and experience with floods, flood insurance, and their knowledge of Risk Rating 2.0 and the marsh restoration project (CRC)
- Assess the risk reduction benefits (Munich Re)
- Generate individualized content for each home, noting their change in flood frequencies and their corresponding reduction in actuarial risk (CRC)
- Support residents to share with their insurance agent or agency, and track changes or roadblocks (CRC)



## PROJECT RESULTS: MODELING

For the analysis of wave and water heights, Moffatt & Nichol divided the study area into three zones. Together, these three zones contain the homes in our study area. Zone 1 and Zone 2 are on the east side of Graveline Bay, and Zone 3 is on the southwest side. Six different storm probabilities (return periods) were analyzed for each zone: 2-year, 5-year, 10-year, 20-year, 50-year, and 100-year. These represent a range of events, from minor flooding to a larger flood event such as a tropical storm.

Moffatt & Nichol modeled the wave-by-wave propagation through the project site using the MIKE 3 Wave FM model (M3W). The modeling domain covers an area approximately 1,500 meters by 850 meters with a resolution ranging from 1 m<sup>2</sup> offshore and 0.25 m<sup>2</sup> nearshore. Bathymetry sources used include the NOAA Continuously Updated Digital Elevation Model (CuDEM), USGS LiDAR Survey Post-Hurricane Nate, Joint Airborne LiDAR Bathymetry Technical Center of Expertise Post-Hurricane Sally LiDAR Survey, and pre-project, construction progress, and post-construction surveys conducted for the marsh restoration project in 2021 and 2023. Environmental forcings for the analysis were informed by the Coastal Hazards System South Atlantic Coastal Study (output point 30397).

The results show a consistent reduction in wave heights as well as still water levels across all zones and all return periods. The following three tables show the results for each zone.

Here are the terms used in the tables:

- Hs is the wave heights.
- SWL is the still water levels.
- TWL is the total water levels, which is wave heights + still water levels.
- WOP is “without project,” or without the marsh restoration project.
- WP is “with project,” which shows the results post-restoration.
- “diff” is the difference between WOP and WP.
- “relative  $\Delta$ ” is the percentage change in heights from WP relative to WOP.



### Zone 1

	2-yr Return Period				5-yr Return Period			
	WOP	WP	diff	relative $\Delta$	WOP	WP	diff	relative $\Delta$
Hs [ft]	0.43	0.07	0.36	-85%	0.36	0.16	0.20	-55%
SWL [el. m NAVD 88]	2.52	2.28	0.24	-9%	3.72	3.53	0.19	-5%
TWL [el. m NAVD 88]	2.82	2.33	0.49	-17%	3.97	3.64	0.33	-8%
	10-yr Return Period				20-yr Return Period			
	WOP	WP	diff	relative $\Delta$	WOP	WP	diff	relative $\Delta$
Hs [ft]	0.49	0.23	0.26	-53%	0.82	0.43	0.39	-48%
SWL [el. m NAVD 88]	4.71	4.63	0.08	-2%	5.89	5.77	0.12	-2%
TWL [el. m NAVD 88]	5.05	4.79	0.26	-5%	6.46	6.07	0.39	-6%
	50-yr Return Period				100-yr Return Period			
	WOP	WP	diff	relative $\Delta$	WOP	WP	diff	relative $\Delta$
Hs [ft]	1.21	0.66	0.56	-46%	1.51	0.85	0.66	-43%
SWL [el. m NAVD 88]	7.35	7.15	0.20	-3%	8.29	8.03	0.26	-3%
TWL [el. m NAVD 88]	8.20	7.61	0.59	-7%	9.35	8.63	0.72	-8%

### Zone 2

	2-yr Return Period				5-yr Return Period			
	WOP	WP	diff	relative $\Delta$	WOP	WP	diff	relative $\Delta$
Hs [ft]	0.13	0.03	0.10	-75%	0.16	0.07	0.10	-60%
SWL [el. m NAVD 88]	2.30	2.27	0.03	-1%	3.59	3.53	0.06	-2%
TWL [el. m NAVD 88]	2.40	2.30	0.10	-4%	3.71	3.58	0.13	-4%
	10-yr Return Period				20-yr Return Period			
	WOP	WP	diff	relative $\Delta$	WOP	WP	diff	relative $\Delta$
Hs [ft]	0.33	0.16	0.16	-50%	0.59	0.30	0.30	-50%
SWL [el. m NAVD 88]	4.66	4.61	0.05	-1%	5.82	5.73	0.09	-2%
TWL [el. m NAVD 88]	4.89	4.72	0.16	-3%	6.23	5.94	0.30	-5%
	50-yr Return Period				100-yr Return Period			
	WOP	WP	diff	relative $\Delta$	WOP	WP	diff	relative $\Delta$
Hs [ft]	1.02	0.52	0.49	-48%	1.35	0.69	0.66	-49%
SWL [el. m NAVD 88]	7.26	7.11	0.15	-2%	8.21	7.95	0.26	-3%
TWL [el. m NAVD 88]	7.97	7.48	0.49	-6%	9.15	8.43	0.72	-8%



### Zone 3

	2-yr Return Period				5-yr Return Period			
	WOP	WP	diff	relative Δ	WOP	WP	diff	relative Δ
Hs [ft]	0.03	0.10	-0.07	+200%	0.20	0.13	0.07	-33%
SWL [el. m NAVD 88]	2.27	2.29	-0.02	1%	3.54	3.55	-0.01	0%
TWL [el. m NAVD 88]	2.30	2.36	-0.07	3%	3.67	3.64	0.03	-1%
	10-yr Return Period				20-yr Return Period			
	WOP	WP	diff	relative Δ	WOP	WP	diff	relative Δ
Hs [ft]	0.26	0.16	0.10	-38%	0.39	0.26	0.13	-33%
SWL [el. m NAVD 88]	4.61	4.61	0.00	0%	5.76	5.72	0.04	-1%
TWL [el. m NAVD 88]	4.79	4.72	0.07	-1%	6.04	5.91	0.13	-2%
	50-yr Return Period				100-yr Return Period			
	WOP	WP	diff	relative Δ	WOP	WP	diff	relative Δ
Hs [ft]	0.62	0.46	0.16	-26%	0.75	0.56	0.20	-26%
SWL [el. m NAVD 88]	7.11	7.06	0.05	-1%	8.00	7.94	0.06	-1%
TWL [el. m NAVD 88]	7.55	7.38	0.16	-2%	8.53	8.33	0.20	-2%

## PROJECT RESULTS: RISK ANALYSIS

Munich Re’s analysis focused on evaluating the impact of the risk reduction on the Average Annual Loss (AAL) for the study area. They used proprietary analytics and vendor models to evaluate the AALs from natural catastrophes, focusing on flooding and storm surge. They correlated the wave height reductions modeled by Moffatt & Nichol with the surge and wave heights in their own analytics and modeling. To introduce the risk reduction provided by the marsh, they factored in the flood protection parameters/modifiers in the modeling.

The results, also aggregated at the zone level, showed a reduction in AALs of 14% in Zone 1, 9% in Zone 2, and 18% in Zone 3.

The project team also explored quantifying a premium pricing reduction based on these AAL reductions; however, there were significant discrepancies between NFIP write-your-own carriers (insurance companies who write NFIP policies) and private flood insurers. We made the decision not to pursue quantifying a specific anticipated price reduction based on these reductions in AALs.

**AALs form a portion of a flood insurance policy premium, but a percentage reduction in AALs is not equivalent to the same percentage reduction in premium price.** The results of Munich Re’s analysis show that these properties are less risky to insure because of the marsh restoration project. There should be a resulting decrease in price, though it will not be equivalent to the 9-18% reduction in AALs.



## COMMUNICATION AND ENGAGEMENT

Engagement with the Dauphin Island residents living adjacent to the Graveline Bay marsh was critical to the success of this project. The properties from 1400 Cadillac Ave to 1716 Cadillac Ave formed the basis of the study area. Most of these properties are single family residential but there are also a few multi-family structures and a motel. We were able to start the project and the engagement process with a list of contacts from Moffatt & Nichol, who had met with many of the homeowners during the development and construction of the marsh restoration project.

Our goals were to meet with residents at multiple points during the project. At the beginning we wanted to discuss their flood insurance policies, the impacts of Risk Rating 2.0, and their histories with flooding and with the marsh. After the analysis work, we wanted to communicate the impacts of the marsh on their risk and potentially on their insurance policies. And several months after the delivery of the information we followed up to see whether they had been able to work with their insurance agents to incorporate the information or adjust their policies in any way.

### Beginning Engagement

The first engagement period, in spring of 2024, involved several methods:

- Selecting and publicizing a multi-day window we would be on the island and available to discuss the insurance project with residents. We used the Town of Dauphin Island's Facebook page, the town newsletter, communications from the Mayor, emails to residents, and asking for people to spread the word. We were able to meet with several residents during this visit.
- We followed up with phone calls, texts, emails, knocking on doors, and other low-tech methods.

Our interviews were semi-structured and based on the following rubric:

#### Key Questions

1. Do you have flood insurance on your property?
2. Would you be willing to share the details of your flood insurance policy with us?
3. Are you required to have flood insurance on this property?
4. Who is your insurance carrier for your flood insurance policy?
5. Do you use a broker or agent to help you buy your flood insurance policy?
6. How much do you currently pay for your flood insurance policy?
7. Have you (or a previous owner of this house) ever had flood damage to your home from a hurricane or high tide?
  - a. If so, did you file a claim?
8. Do you know if your flood insurance policy is expected to increase over time or by how much? If so, what do you think the increase will be?



9. Have you heard about FEMA's new Risk Rating 2.0 system for pricing flood insurance?
  - a. If you have heard about Risk Rating 2.0, how did you find out?
    - i. Agent or broker, realtor, news, social media, FEMA communications, friends and family, other
10. Do you remember what your flood insurance policy premium was in 2021?
11. Do you have a copy of your most recent flood insurance declaration page? If so, can we look at it together?

#### Nice-to-Have Questions

12. Has your flood insurance policy increased in price since you first purchased it?
  - a. If so, what was the first price you paid?
13. What zone on the flood insurance rate map does your property fall into? If you don't know, that's ok.
14. Have you ever gone for a while without flood insurance, or chose not to renew your policy?
15. Did you inherit/take over your flood insurance policy from a previous owner of the property?
16. Do you think your home will flood (at all, more, more frequently) in the future?
17. How confident are you that your flood insurance policy will pay for you to repair future flood damages?

We learned several things through this process about engagement approaches, insurance decision-making, and risk-reduction actions.

To connect with people, walking the block and talking to people in person was the best method of communicating with residents. Finding people while they were on the island was easier than trying to schedule a visit or a phone call. Our initial contacts were through the town's Facebook page, encouraging people to spread the word, and walking the block; we reached 7 residents in the first visit, most of whom had heard about it through the town's Facebook page or from a neighbor who had shared it with them. For follow up communications after we had initially reached people, texts worked better than phone calls or emails. Residents were able and willing to text their policy declaration page even if they didn't have it on hand at the time.

Overall, we connected with over 80% of the households in our study area and conducted 19 initial interviews. Through this, we were able to understand a few trends in insurance policies. Most people with policies (12 of 19) had flood insurance because a flood insurance policy was required with their mortgage. People whose property was not mortgaged, or who had inherited their property from a family member, had in most or all cases (7 of 19) dropped their flood coverage. A subset of those without flood insurance had also dropped their homeowners' coverage (primarily wind) and were paying for fire and liability perils only. Based on the conversations with residents, this was driven by increased costs,



frustration with prior claims processes, and by a track record of self-financed or self-managed repairs in cases of damage. In total, we were able to look at approximately six declaration pages with residents.

Some people we talked to had moved to the Graveline Bay area from the western end of Dauphin Island. The common theme of why that move had been made was because of the high rate of erosion, the greater exposure to flood and wind hazards, and the repeated experiences of being cut off from services. These residents loved the island and did not want to leave, but did want to live in a safer part of the island.

## Post-Analysis Engagement

To communicate the risk reductions and reduced AALs analyzed by Moffatt & Nichol and Munich Re, we developed a two-page flyer personalized for each homeowner. We developed imagery that communicated how the marsh was reducing wave heights in both minor and major storms—avoiding having to use difficult language around annual exceedance probabilities or confusing “1 in 100” terminology.

**HOW CHANGING FLOOD RISK COULD IMPACT YOUR INSURANCE PREMIUMS**  
INSERT ADDRESS HERE

*Moffatt & Nichol's engineering analysis of the Graveline Bay Marsh Restoration shows what the water height will be under different flood conditions. This information reflects the changing risk of flooding on your property. Your property has risk every year, with different likelihoods of occurrence.*

**Major Storm Flooding**  
Water levels from storms this intense reduce from around 8.20 to 7.61 ft (a reduction of 7%)  
Before marsh restoration  
After marsh restoration

**High Tide Flooding**  
Water levels from storms this intense reduce from around 2.82 to 2.33 ft (a reduction of 17%)  
Before marsh restoration  
After marsh restoration

**HOW YOUR POLICY COULD CHANGE**  
Based on this risk reduction MunichRe, a reinsurance company, analyzed what the change in flood risk could mean for pricing flood insurance in your area. **Their analysis suggests a positive impact on the flood insurance policies in the area, with an average decrease in risk level of approximately 14%.** This is based on expected losses over a given year and does not include other components of your overall insurance premium.

While this analysis is not a guarantee of insurance availability or the price of your premium, **we are giving this information to you to support discussions with your flood insurance company.**

**YOUR CURRENT POLICY**  
Your property at ADDRESS currently has a flood insurance policy.

You shared a declaration page for your policy that shows the following information:

- What you pay today for your flood risk (not including fees or other parts of your flood insurance premium):
- What FEMA will charge you for this risk in the future, increasing 18% per year until you reach this price:

Our analysis shows that the marsh restoration is reducing risk to the properties along Graveline Bay. We recommend showing this information to your insurance agent.

**WHAT YOU CAN DO NEXT**

- Reach out to your agent/company and let them know you have new information about your flood risk.
- Work with your agent to request that NFIP use this information in calculating your premium.
- Please share with us any paperwork or notes from conversations with your agent. We want to know how your agent/ insurance company responds to this information.
- If you decide to pursue a new flood insurance policy, please use this information when you apply and let us know what happens.
- Please share with us any changes in your full risk premium at your next renewal.

**ABOUT THE PROJECT**  
FEMA has implemented a new approach, Risk Rating 2.0, for calculating flood insurance premiums. Risk-reduction projects like the recent Graveline Bay Marsh Restoration project should impact those premiums. FEMA's guidance for ensuring projects like the marsh restoration are considered in the Risk Rating 2.0 pricing was to tell your insurance agent about any mismatch or concerns. The Community Resilience Center at The Water Institute worked with a team of engineers and reinsurance professionals to understand how this project impacted your flood risk and could potentially change your premium. We want to help you share this information with your insurance company.

**QUESTIONS?** If you have any questions or need support, please reach out to us!

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*An example of the communication flyers created for Graveline Bay property owners, showing the impact of the marsh on wave heights and offering suggestions on communicating with their insurance agent.*

We originally wanted to include an insurance quote on the second page of the flyer for properties that did not have an active flood insurance policy. We were going to simply have a quote generated by a local insurance agent; however, during the course of our project, multiple products were released to provide estimates, including FEMA’s Direct to Consumer (D2C) quote tool and at least one private company tool. We explored these tools by trying to quote policies for homes where we did have a declaration page or renewal notice to see if we could reproduce the current price. We could not produce consistent results



with either tool. An interesting finding was that there was not a consistent pattern among multiple sources of information. It was not that one source was consistently higher or lower than the others—instead, they varied from home to home. We made the decision not to include a quote and instead encouraged residents to reach out to an insurance agent if they were interested in purchasing a new flood insurance policy. Supplemental work with FloCom, one of the private companies, helped us identify some of the issues with the rate quoting and tested some promising methods of integration that the lowered risk from the marsh restoration, which are noted on page 6 of this document.

For the homeowners, we also included a supplemental document that included the full tabular risk reduction results. This supplement was intended for residents to give to their insurance agent if the agent wanted to see additional information. To our knowledge, no one we spoke to was able to use this additional information; agents did not have a defined method or process to feed this information into during the quoting or renewal process. They were also unclear as to who they would contact outside of a quote or renewal process.

The flyers were delivered first by email and followed up with in person deliveries—either left in door handles, on car windshields, or handed directly to the homeowner or someone connected to the property. We followed up by phone, email, and in-person conversation with residents. Through this process, we learned:

- Insurance agents did not know what to do with the information. One agent said that “until FEMA does a rate revision, the rate won’t change.” While this might have been the case prior to Risk Rating 2.0, FEMA no longer sets rates by FIRM zone.
- Even if they did not have a current policy, residents were still glad to learn that the marsh was reducing their risk.
- Residents with connections to the real estate or insurance industries were most interested in the information but still did not have a way of incorporating it into their own policy.

Throughout this process, we were committed to implementing FEMA’s original instructions: if you think your risk is incorrect, tell your insurance agent, and FEMA will re-evaluate. **This multi-year investigation demonstrated that insurance agents in the region are not able to communicate misalignments of risk with FEMA or the NFIP, and that there is currently no process adjustment available at the individual or neighborhood scale.** We remain committed to finding a durable process that can reassess where risk is reduced because of investments in natural infrastructure or other risk reduction approaches, with the goal of reducing the cost of flood insurance premiums for residents.

## FUNDING ACKNOWLEDGMENT AND DISCLAIMER

This project was supported by the Gulf of America Alliance through funding provided by the National Oceanic and Atmospheric Administration Office for Coastal Management. The contents of this document do not necessarily reflect the views and policies of the Gulf of America Alliance or its partners.



## FURTHER READING

The following sources provide more information on the topics presented in this briefing:

About the NFIP:

- From the Congressional Research Service: Introduction to the National Flood Insurance Program (NFIP). (2026, April 7). <https://www.congress.gov/crs-product/R44593>

About Risk Rating 2.0:

- From Sea Grant (Florida, Louisiana, Mississippi-Alabama): What is Risk Rating 2.0 and how will it affect my flood insurance? (2022, December). <https://masgc.org/assets/publications/uploads/22-109.pdf>
- From the Congressional Research Service: National Flood Insurance Program: The Current Rating Structure and Risk Rating 2.0. (2022, April 4). <https://www.congress.gov/crs-product/R45999>
- From FEMA: NFIP's Pricing Approach. <https://www.fema.gov/flood-insurance/risk-rating>
- From the Journal of Catastrophe Risk and Resilience: Effects of Risk-based Pricing Reform on Flood Insurance Uptake. (2025, November). <https://journalofcrr.com/research/03-07-gourevitch-et-al/>

About the Community Rating System:

- From FEMA: Community Rating System. <https://www.fema.gov/floodplain-management/community-rating-system>
- From the Adaptation Clearinghouse: <https://www.adaptationclearinghouse.org/resources/fema-community-rating-system.html>
- From FEMA: CRS Discount Guide. <https://agents.floodsmart.gov/sites/default/files/media/document/2025-07/fema-nfip-crs-guide-2023.pdf>

About Catastrophe Models:

- From Milliman: Taking catastrophe models out of the black box. (2022, July 25). <https://www.milliman.com/en/insight/taking-catastrophe-models-out-of-the-black-box>
- From the National Association of Insurance Commissioners (NAIC): NAIC Catastrophe Modeling Primer. (2025, March). <https://content.naic.org/sites/default/files/committees-pending-action-cat-mod-primer.pdf>