

Rising seas are trouble for Charleston's booming community. This method may prevent disaster

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In Charleston, a place where street lines blur with sunny day tidal flooding and major storms dump enough water on downtown that one

can kayak the deluge, Dale Morris is right at home.

After all, water—its function, resource and the very element that threatens to sink the historic city—is what made his career. For decades, Morris has consulted on the East Coast, West Coast and Gulf Coast on all things water, from coastal restoration to flood protection and risk mitigation. Nearly a year ago, the city nabbed Morris for the post of chief resilience officer, a job that's been around for close to five years.

Morris knows Charleston well, that is, the city's battle with rising waters, high tides and increasing storm surge. Even before he took the position, he had a hand in planning management and adaptation strategies for the city as climate change inevitably continues to ramp up Charleston's flooding issues.

Is his help too late?

"It feels right on time," Morris said.

Resting in the hands of Congress is a U.S. Army Corps of Engineers proposal for a \$1.1 billion [sea wall](#) that would encapsulate about 8 miles of Charleston's peninsula in the city that's expected to continue to swell in population. Then there's the expansion and repair of deep underground tunnels that connect to drop shafts that pull in the [storm water](#) and pumps that push it into the Ashley River. The Medical District drainage tunnel extension at Ehrhardt Street is one of those projects that would alleviate sitting water so ambulances can drive through with ease. It comes with a \$14 million price tag.

These are just some of the city's flood mitigation plans. They're huge and intricate undertakings, but Morris is neither a developer nor an engineer. He's an economist and strategist, pulling together local, state and federal leaders to ensure Charleston doesn't become the next New

Orleans.

His answers to the hard questions aren't rooted in American policies; they were formed over 4,000 miles away.

Morris is looking to the place he first got his feet wet: The Netherlands.

The Dutch way

If Morris is spot on, not all the answers, but a more eco-conscious and efficient way to answer the questions to Charleston's flooding dilemma could be found from decades-old Dutch history.

In 1953, a north-westerly storm and a spring tide caused flooding in large swaths of the Netherlands, a country where about a third of the land is below sea level. It caused more than 1,800 deaths and destroyed thousands of homes, according to Rijkswaterstaat, the country's executive agency of the Ministry of Infrastructure and Water Management.

Half a century later stateside, Hurricane Katrina would claim about the same number of lives in 2005. And much like the levees and flood walls that failed in New Orleans, the Netherlands' poorly kept dikes—ridges that run parallel to the water and help regulate its level—weren't substantial enough to bolster against rushing water.

Decades ago, the Dutch poured \$5 billion into creating barriers, dams, dikes, levees and two of the world's largest storm surge barriers, according to Smithsonian Magazine. But in the early '90s, subsequent flooding battered the northwestern European country, and the Dutch realized they'd have to let the water in, that walls weren't a catchall solution to the continually rising North Sea.

No, they didn't do away with barriers, pumps and sand dunes. Experts who talked with Smithsonian Magazine said the Dutch made room for the water, creating parks and lakes to function as emergency reservoirs for when it floods.

But Morris says what made the Dutch method to flood mitigation special, particularly in terms of efficiency, is how its national government, provinces and municipalities swiftly got on the same page.

"That doesn't occur here. If it occurs here, it's by accident in some ways," Morris said. "This Dutch approach brings, ideally, how would we manage storm surge, tidal, riverine, storm water, groundwater, flood risks in Charleston? If we could start over, how would we do that?"

Morris knows firsthand. And it's because he's studied the Dutch way for the past 40 years.

In his early 20s, between 1981 and 1984, the Pittsburgh native was among U.S. Air Force members stationed in the Netherlands, and that's where he'd become fluent in the language. By his 30s, he was in Washington, D.C., working for the Netherlands Embassy. From 1994 to 2018, he served first as senior economist and then, concurrently, as director of the embassy's Dutch Government's Water Management and Adaptation work in the U.S.

After Katrina hit, Morris and New Orleans-based architect David Waggoner co-founded what they called the "Dutch Dialogs," which applies Dutch thinking to flood risk management and adaptation in urban places. The dialogs included workshops and demonstrations that integrate people from curious residents to city leaders.

Six years ago, Charleston's newly sworn-in Mayor John Tecklenburg called on Morris. He wanted the Dutch Dialogs in Charleston. It could be

a particularly vital move to protect the South Carolina city that remains the cornerstone of the state's economy.

The year before, the city had seen 58 coastal flooding events, according to the National Oceanic and Atmospheric Administration. In fact, October 2015 still reigns as the month Charleston had the most flooding events in a month-by-month look over 100 years of data. Rain flooded Charleston's streets 22 of the 31 days that October.

From the late 1950s through 2013, Charleston experienced a 409% increase in flooding, mostly from [high tides](#) causing water to pool up, according to previous reporting by The State. And NOAA data expects sea level rise to increase by as much as 3 feet in the next 50 years.

By the time Tecklenburg called on Morris to prepare documents for the Dutch Dialogs in 2016, Charleston taxpayers had already spent more than \$230 million since 1990 to remedy outworn drainage systems.

Morris and Waggoner knew there was no denying the then-nearly 350-year-old city was in trouble.

Storm surge structure, not sea wall

A 252-page document came from Charleston's Dutch Dialogs by September 2019. It's chock-full of quintessentially Charleston images of mansions on the Battery and lush Lowcountry flora, and it's teeming with maps, data, history and recommendations on how the city should move forward.

Like the Dutch do it, the recommendations called for tighter communication, ranging from regional leaders to local businesses. The write-up, among other things, calls for reducing fill, creating a city-wide water plan, including how public properties must include requirements to

infiltrate and store storm water, as well as updating the comprehensive plan and conducting a groundwater assessment.

Above all were three words: Slow. Store. Drain.

Every action, the Dutch Dialogs report said, must be predicated on those three. Street maintenance, reconstruction and public spaces must be considered, especially as nuisance flooding becomes "the new normal."

But then and even now, Morris is wary about using the words "sea wall."

"There's been a tremendous amount of misunderstanding," Morris said. "Someone shows a picture of a Berlin Wall around Charleston, and I say, 'Hell no.'"

He's not talking about the current multimillion dollar repair to the Low Battery, a centuries-old sea wall noted for the historic mansions it was meant to protect. This is about the \$1.1 billion proposal from the U.S. Army Corps of Engineers that the city would be tasked with paying 35% of the cost—about \$385 million. It asks for the structure to be 8 feet above where the city floods during high tide and include the following:

- Multiple pedestrian, vehicle, railroad and storm (tidal flow) gates.
- About five temporary and five permanent small to medium hydraulic pump stations.
- Approximately 9,300 feet of oyster reef-based living shorelines.
- Flood-proofing or elevating for about 100 structures in residential areas where construction of the storm surge wall wouldn't be realistic.

But the operative words to remember here, Morris said, are a storm surge structure. And within that is the consideration for minimizing

"impacts to existing wetland habitat, cultural and aesthetic resources, and private property," according to the Army Corps Charleston Peninsula Study.

Increasingly, as cities need more help to offset widespread flooding, that help is coming from the federal government, which presents more complicated problems. Considerations for residents, neighborhoods and the surrounding ecosystem need to be front of mind when protecting cities from the deluge.

The Army Corps of Engineers' proposal for the Charleston [storm surge](#) structure is currently in the hands of Congress. If approved, it would move into the design phase.

Changing vulnerabilities

Morris's first week of work, Sept. 7, 2021, was wrapped up in the whirlwind that's placing a conservation easement on land that was poised for development in Charleston. And like some of the development worry in the city, the low-lying property was a concern.

"In the dialogue, we said do not develop unwisely in these low areas that aren't developed yet, because the marsh is in the inter-tidal area, and the marsh wants to grow there as sea level rises," Morris reminded. "If you put people there in an unwise fashion, you're gonna create flood risk for them and lose the benefit of the marshes."

This is what Morris does. Consults. Educates. And communicates across the city, state and with federal entities like the Army Corps of Engineers.

At the top of his to-do list is completing the Coastal Risk Management plan, an updated comprehensive plan and keeping up with the Army

Corps of Engineers to ensure they stay interested in Charleston.

Morris's post is relatively new to him. To Charleston. And to the United States. The chief resilience officer position was cobbled together in cities across the nation after Hurricane Sandy's 2012 aftermath, with a goal to bring together different departments and levels of government to combat climate change more efficiently.

"Climate change is changing our vulnerabilities ... and the hazards are increasing and they're coalescing in some ways," Morris said.

The immensity in tackling what is seen as a sinking city doesn't intimidate him. The 62-year-old has been settled in Charleston, a surprise to the mountain-lover himself, for nearly a year.

And he has no intention of slowing down.

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