



150 Years New Water Way Symposium

Compare and contrast: Houston/Rotterdam

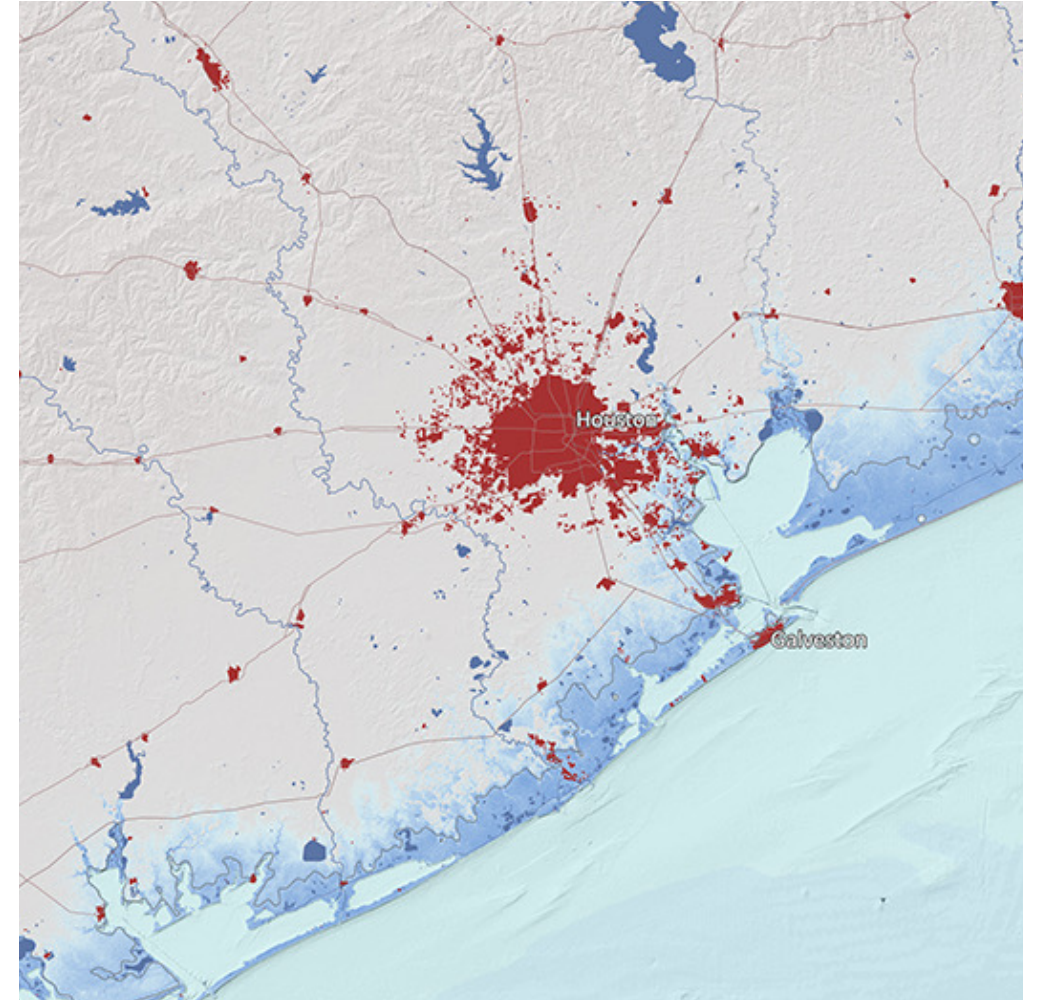
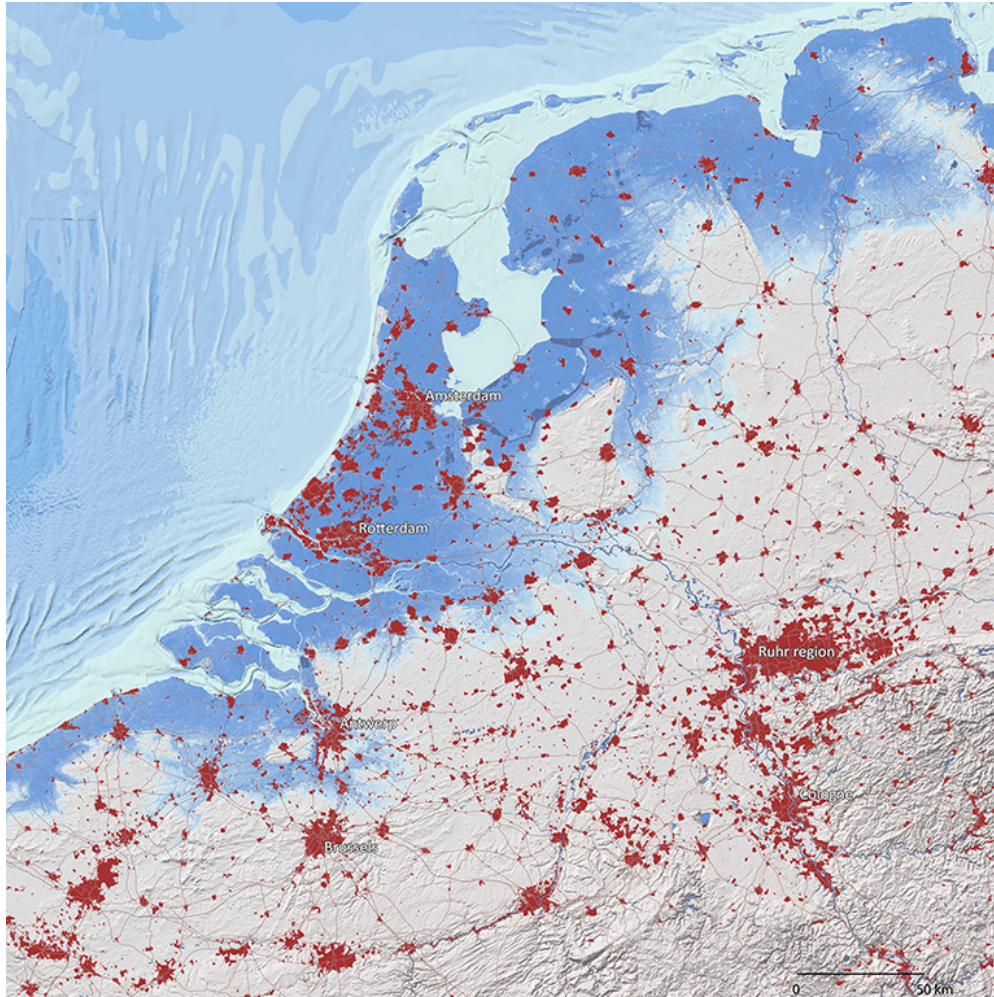


Dr. Baukje 'Bee' Kothuis
Chief Representative
Netherlands Business Support Office Texas

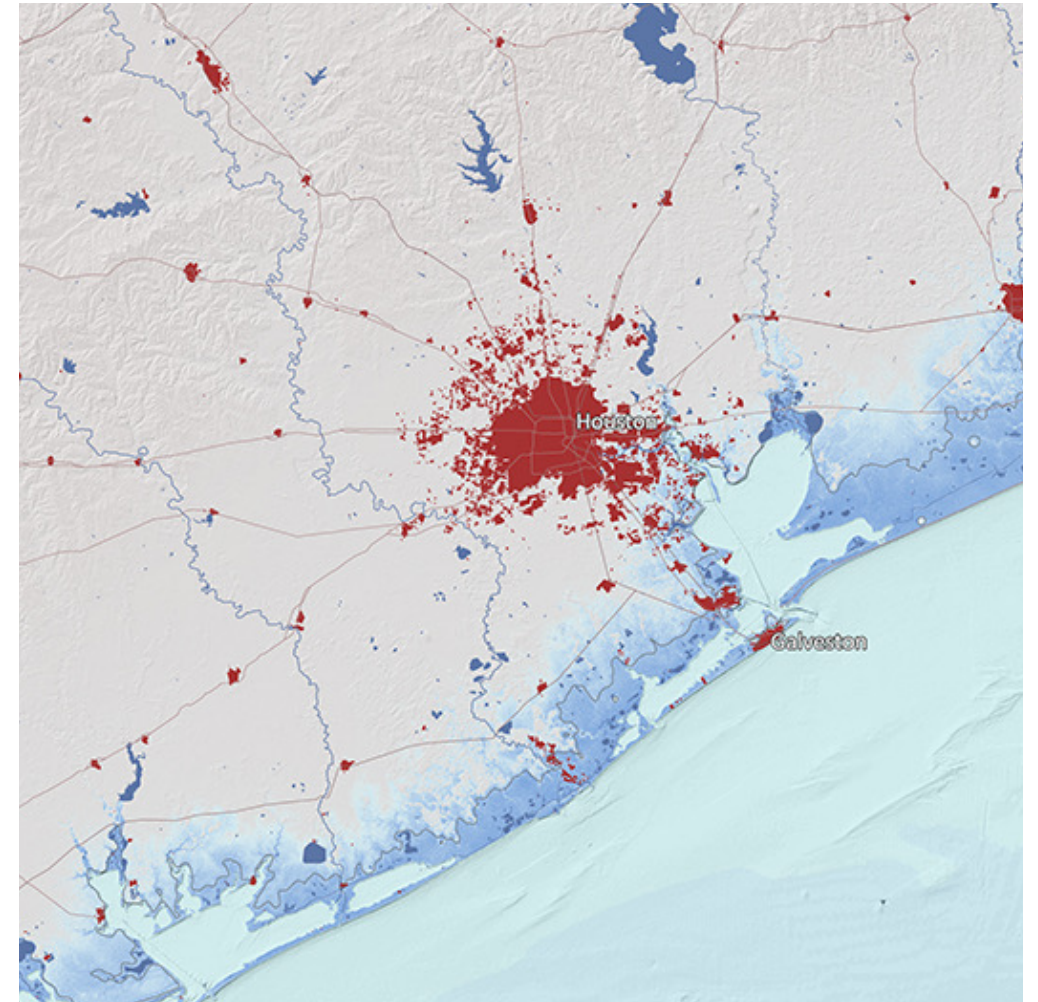
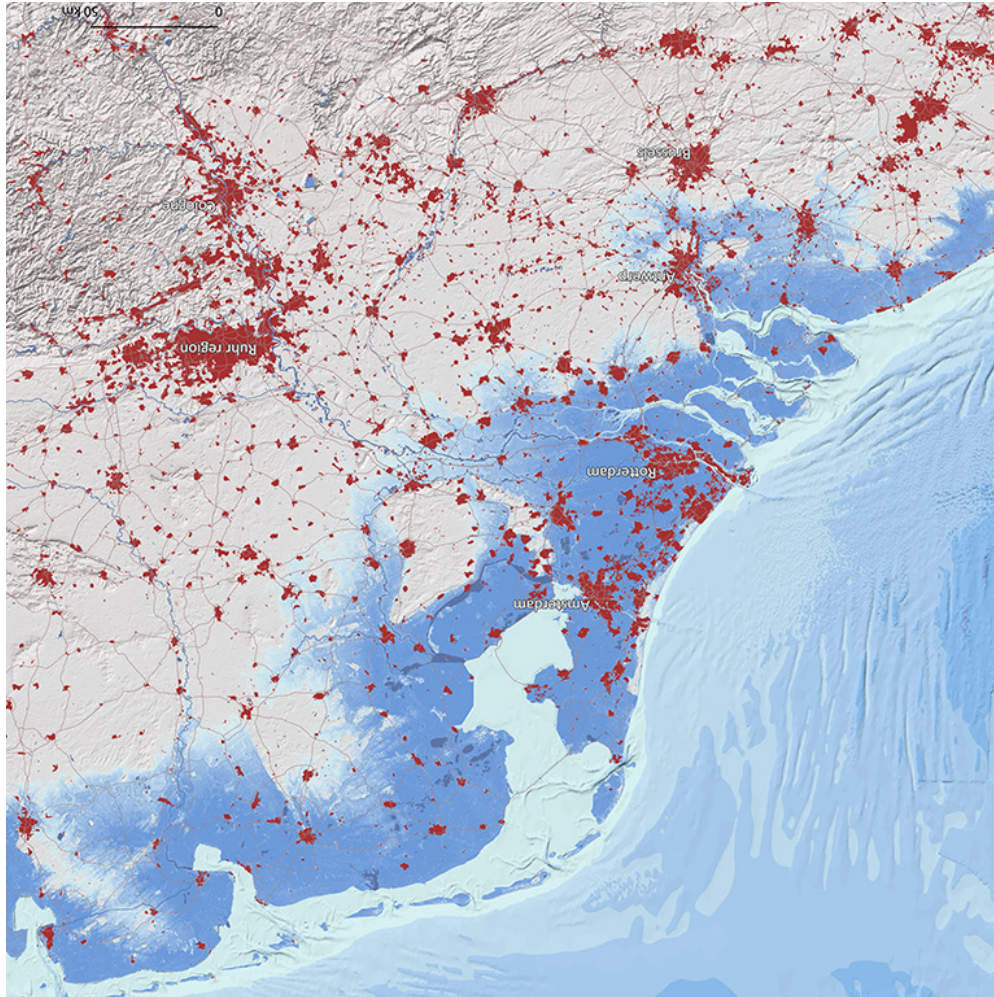
Rotterdam - October 13, 2022



The Netherlands and Texas



The Netherlands and Texas





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The Netherlands and Texas

Rotterdam and Houston

Image sources: Port of Rotterdam
Texas State Historical Association



The Netherlands and Texas

Nieuwe Waterweg | New Waterway



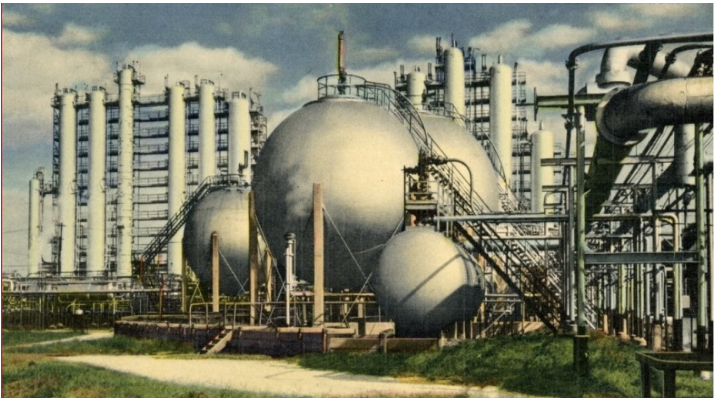
Houston Ship Channel



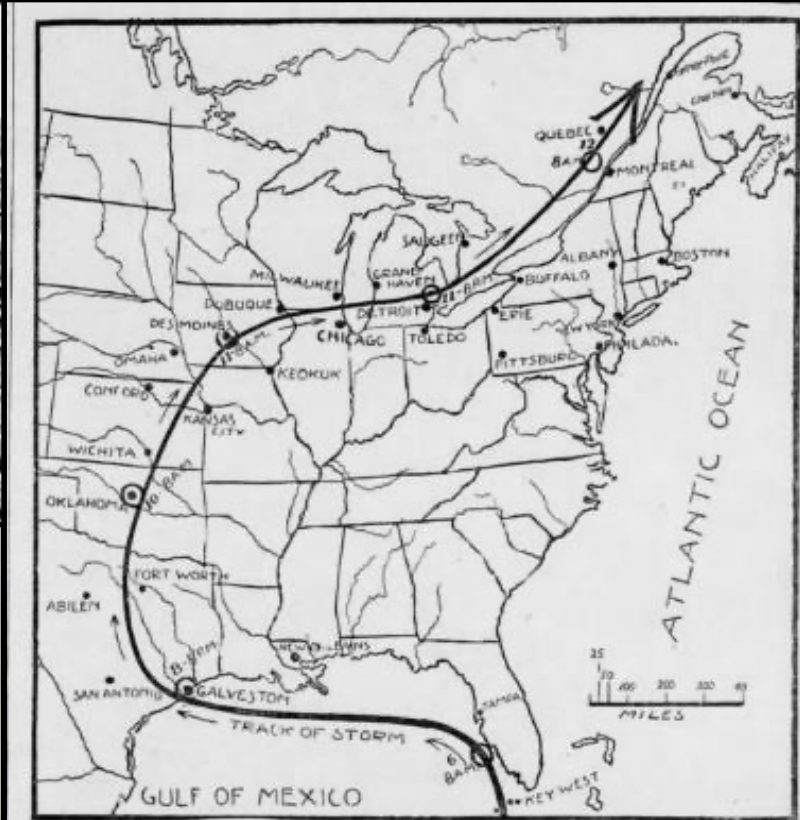


Houston Ship Channel improvement projects

		Width (feet)	Width (meter)	Depth (feet)	Depth (meter)	
PROJECT 1	1853 – 1857					First improvement Buffalo Bayou & Galveston Bay - first time federal funding for state project
PROJECT 2	1870 – 1874	4 ft	1.2 m	70 ft	21.3 m	Deepening and widening of the ship channel
PROJECT 3	1877 – 1882	14.5ft	4.4 m			Deepening across Galveston Bay
PROJECT 4	1897 – 1908	18 ft	5.5 m			Deepening across Galveston Bay + Turning Basin in Buffalo Bayou
	1900					First oil discovered in Texas: Spindletop
	1900					The Big Storm
PROJECT 5	1912 - 1914	25 ft	7.6 m	150 ft	45.7 m	Port of Houston officially established as a deep-water port
	1920					First oil discovered in the Permian Basin
PROJECT 6	1925	30 ft	9.1 m			
PROJECT 7	1935	34 ft	10.4 m	400 ft	121.9 m	Deepening & widening: Unprecedented growth of refining facilities
PROJECT 8	1948	36 ft	11.0 m			ship channel vital artery during World War II, birth of PoH petrochemical industry
PROJECT 9	1958	40 ft	12.2 m			
PROJECT 10	1968-2005	45 ft	13.7 m	530 ft	161.5 m	manufacturing industries /containers + first environmental projects with dredged material
PROJECT 11	2012-2025	46.5 ft	14.1m	700 ft	213.4 m	First time public-private initiative



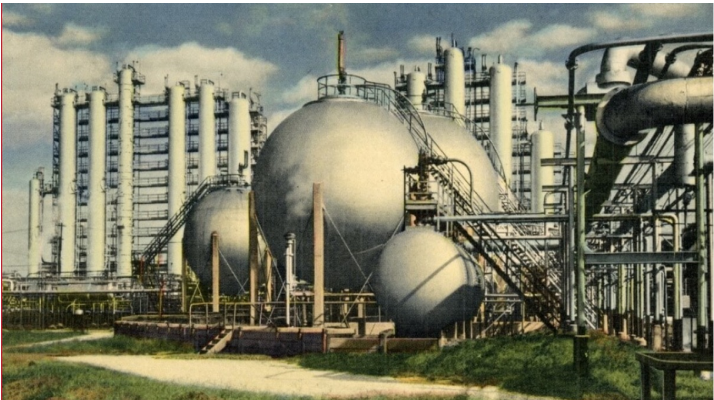
The Great Storm – 1900 Galveston Hurricane



- Deadliest natural disaster in U.S. history
- Destroyed more than 3,600 buildings
- Winds surpassed 135 miles per hour
- Estimated 8,000 to 12,000 fatalities

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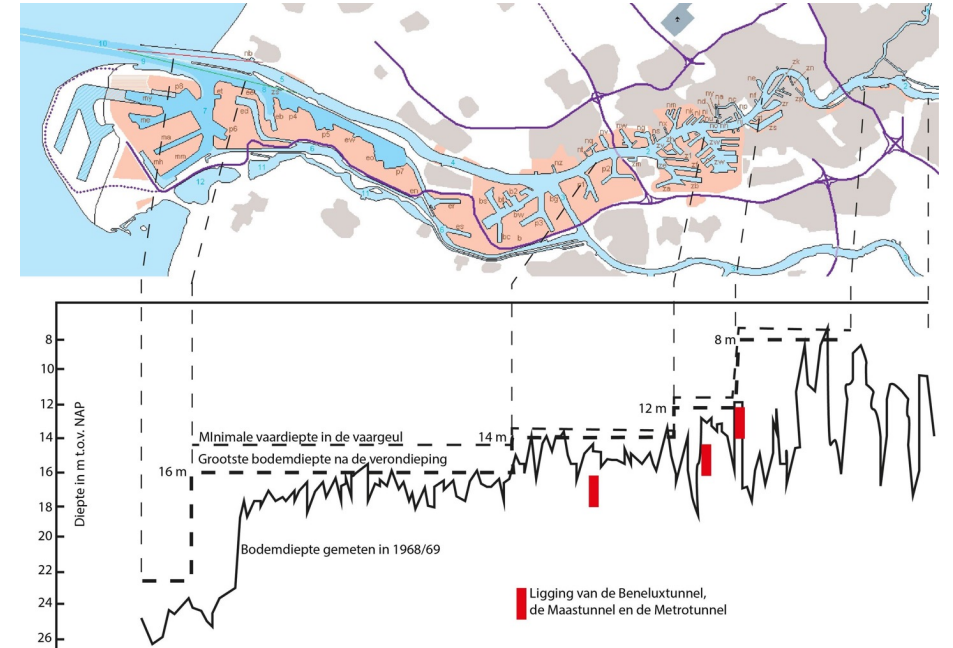




Nieuwe Waterweg | New Waterway



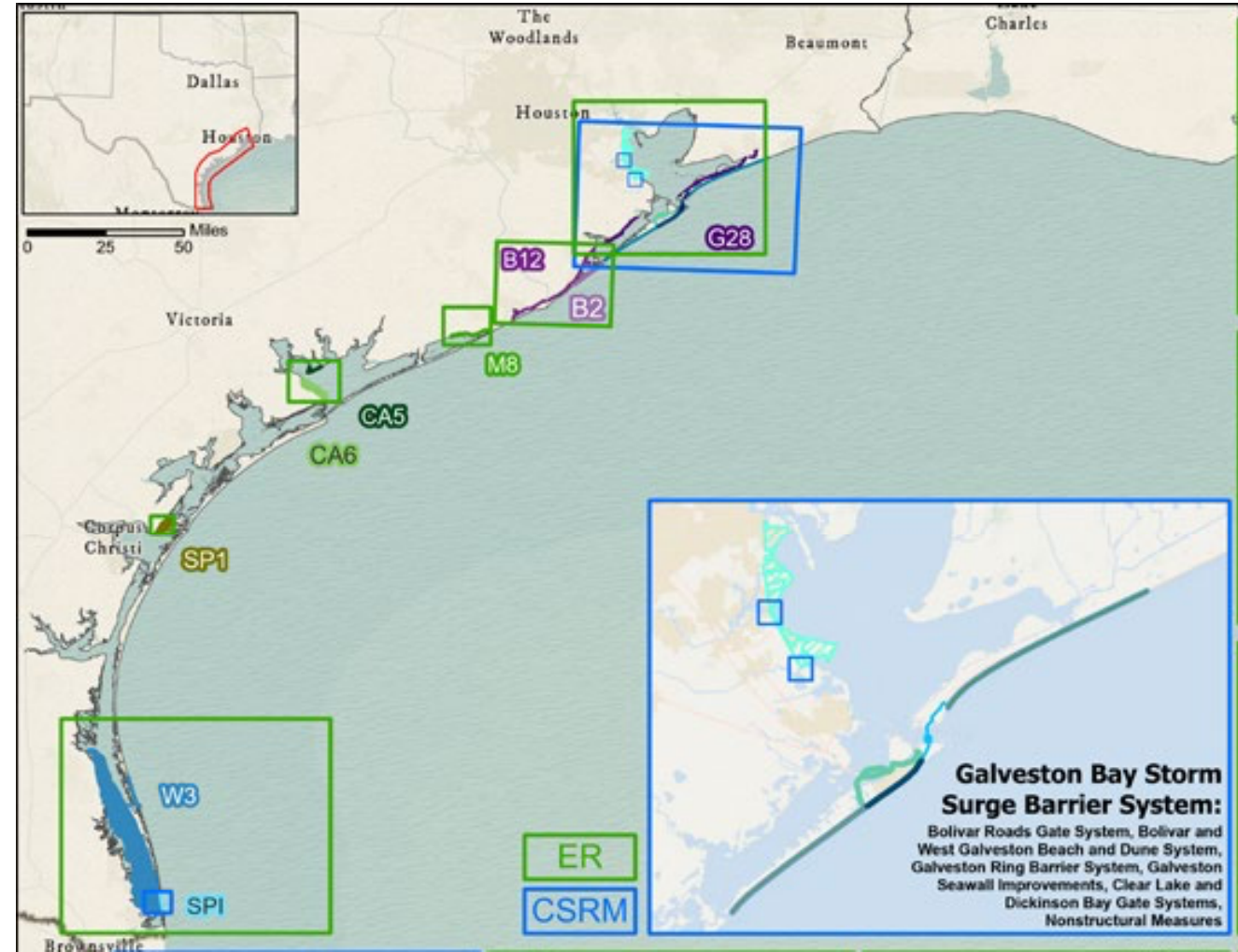
Images: Maritiem NL,
Canon van Nederland,
Nieuwsblad Transport,
Bob van Bruggen

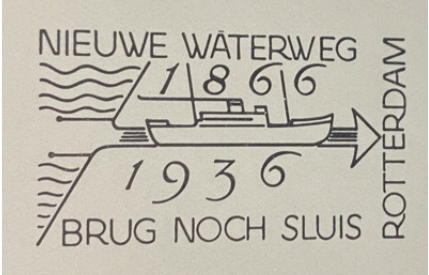


Flood protection strategy: Shortening of the coastline

Delta Works 1953 -1997

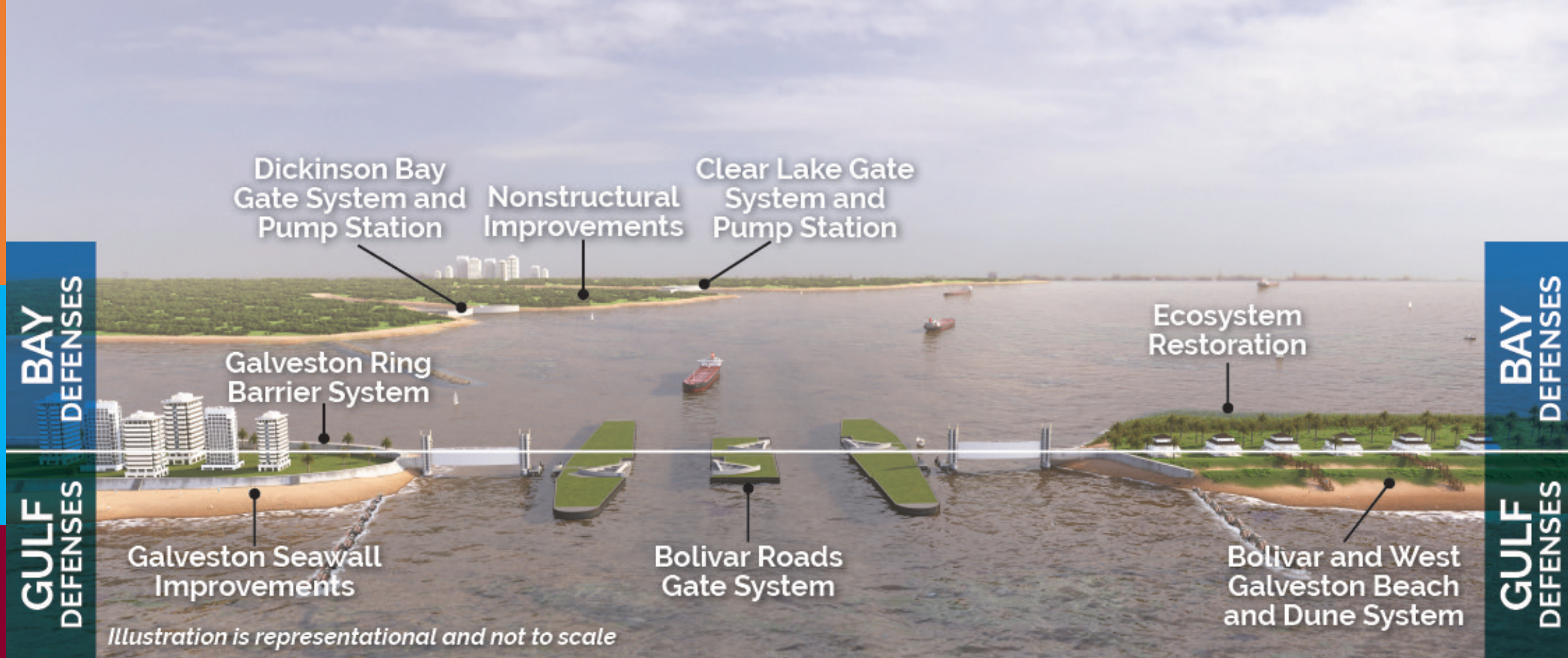
Coastal Texas Protection Plan 2021 - ????







MULTIPLE LINES OF DEFENSE ON THE TEXAS COAST



Source: USACE Galveston Coastal Texas Study

MULTIPLE LINES OF DEFENSE ON THE TEXAS COAST

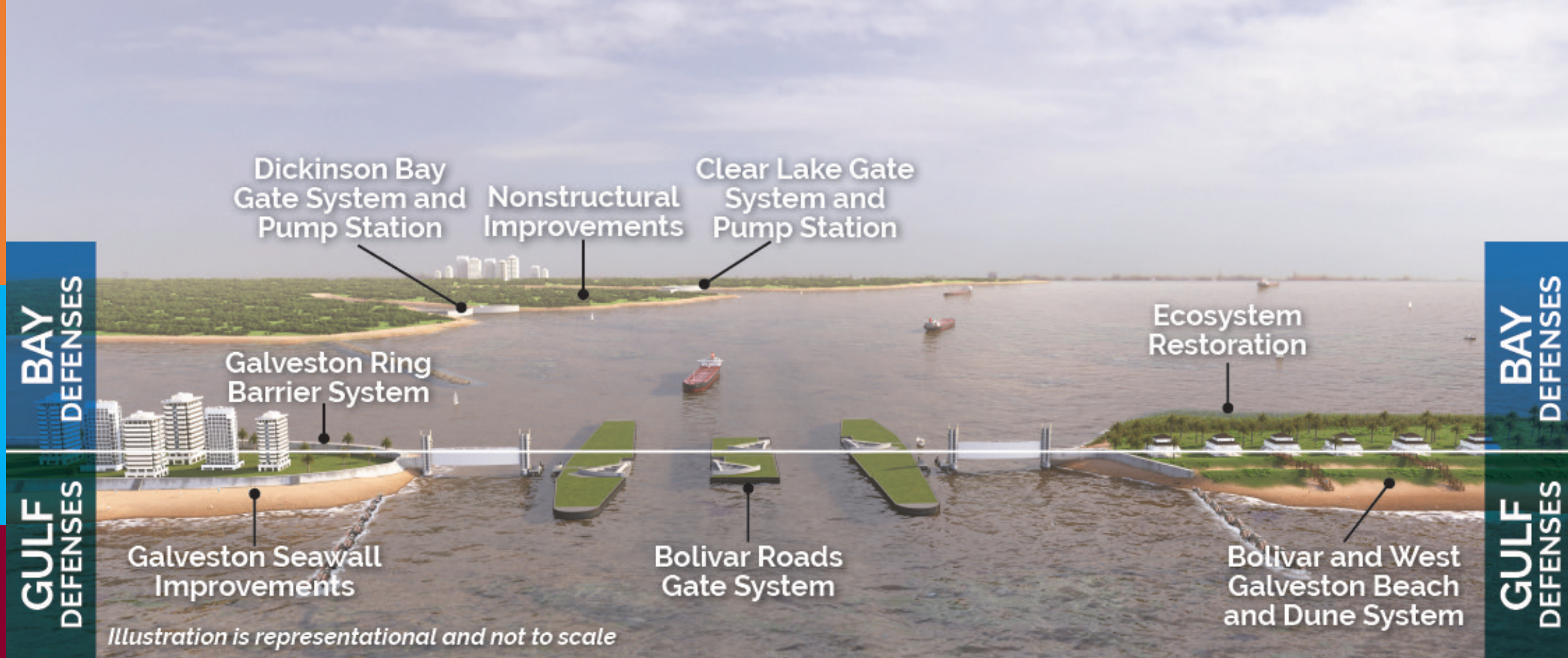


BAY
DEFENSES

GULF
DEFENSES



MULTIPLE LINES OF DEFENSE ON THE TEXAS COAST





BOLIVAR ROADS GATE SYSTEM



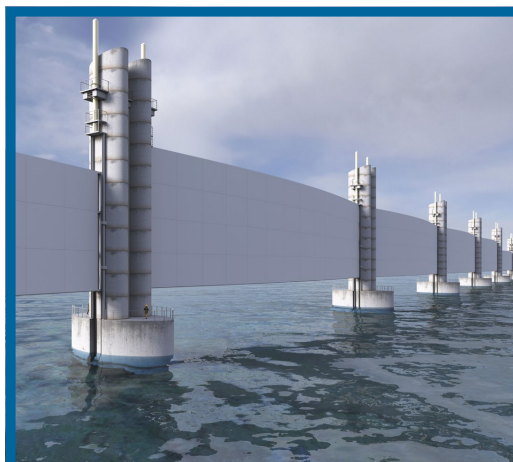
GATE SYSTEM OVERVIEW



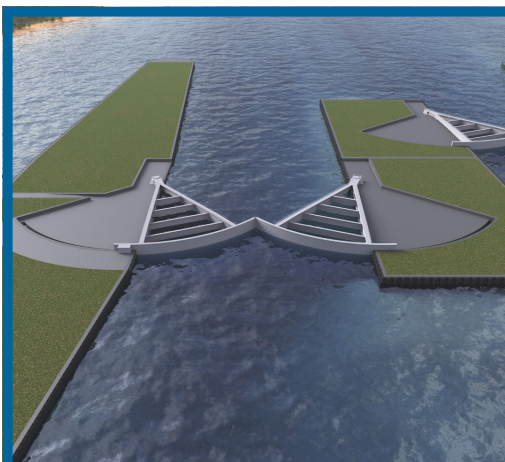
COMBI-WALL



SHALLOW WATER
ENVIRONMENTAL GATES



VERTICAL LIFT GATES



DEEP-DRAFT NAVIGATION GATES

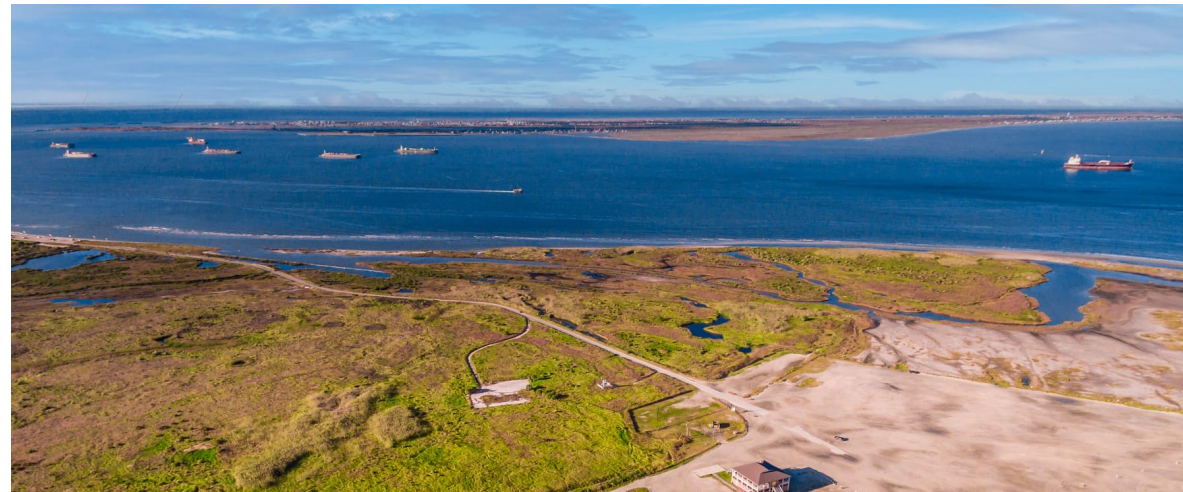
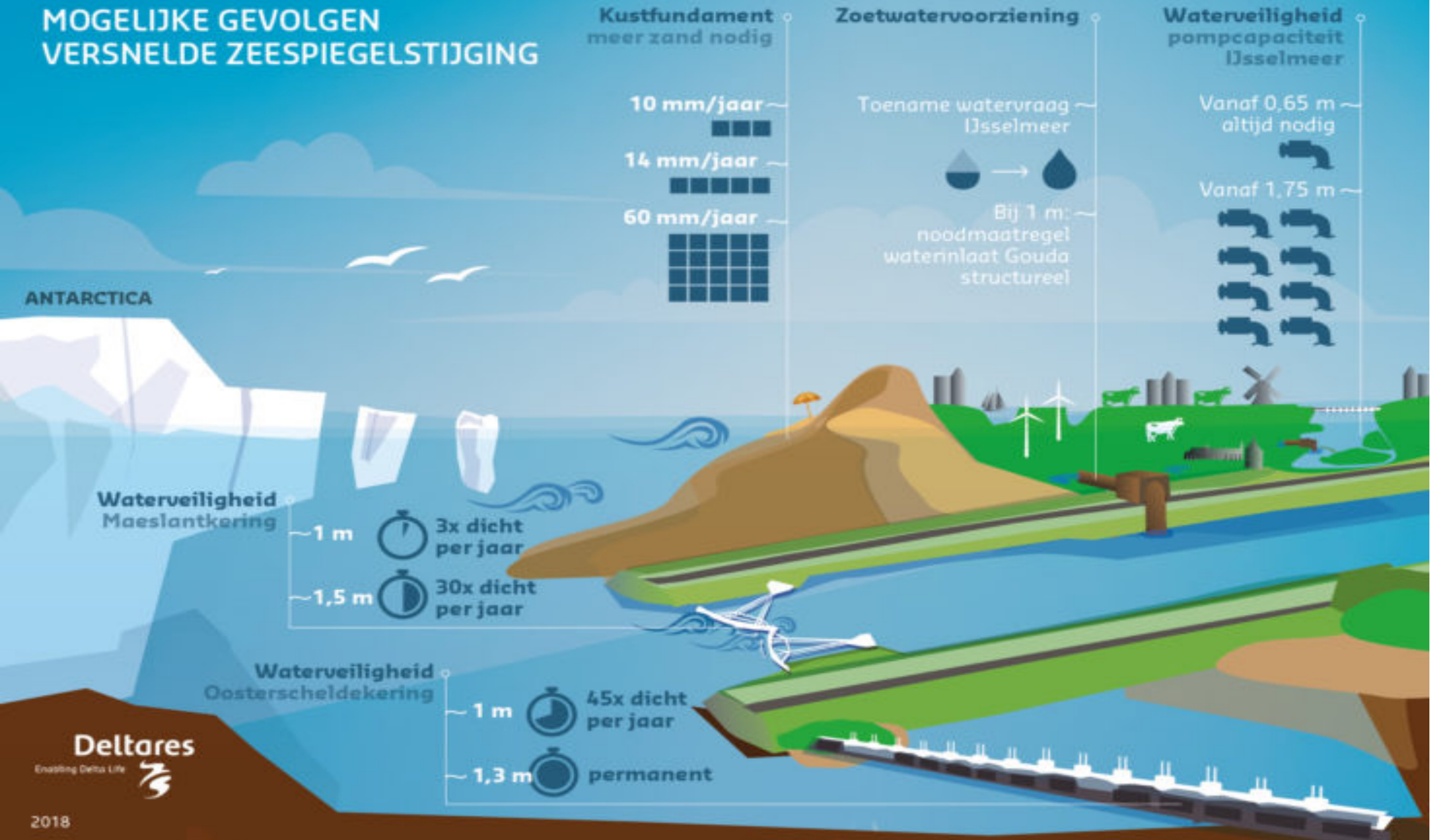


Figure ES-7: Bolivar Roads Gate System



MOGELIJKE GEVOLGEN VERSNELDE ZEESPIEGELSTIJGING





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Texas

Galveston Bay Park



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A VISION

LET'S DO SOMETHING AMAZING, AGAIN

On November 10, 1914, the Houston Ship Channel opened to great fanfare. Rightly so, as the occasion was to be a pivotal one for the future of the region, shifting the Gulf's commercial power to Houston and creating a port that would transform a small town into a global energy leader. This catalytic moment was about a decade in the making and resulted from strong civic leadership. Funding was assembled from a mix of federal and local dollars via private sector leadership from the likes of Jesse Jones to clear the path to implementation.

Today, in the face of a highly probable direct hit by a deadly hurricane to this critical economic infrastructure and the bayfront communities that surround it, the region once again has the opportunity and cause to initiate and demonstrate what transformational public and private investment can do. Without action, the Houston and Galveston Bay region remains on the precipice of imminent devastation. With the support of public and private local leadership, we can protect and bolster the vitality, economy, and health of this vibrant and important community by implementing a regional surge protection system that also provides recreational opportunities for all to enjoy. **It's time to act, again.**



Newspaper Clipping from November 10th 1914 celebrating the opening of the Houston Ship Channel



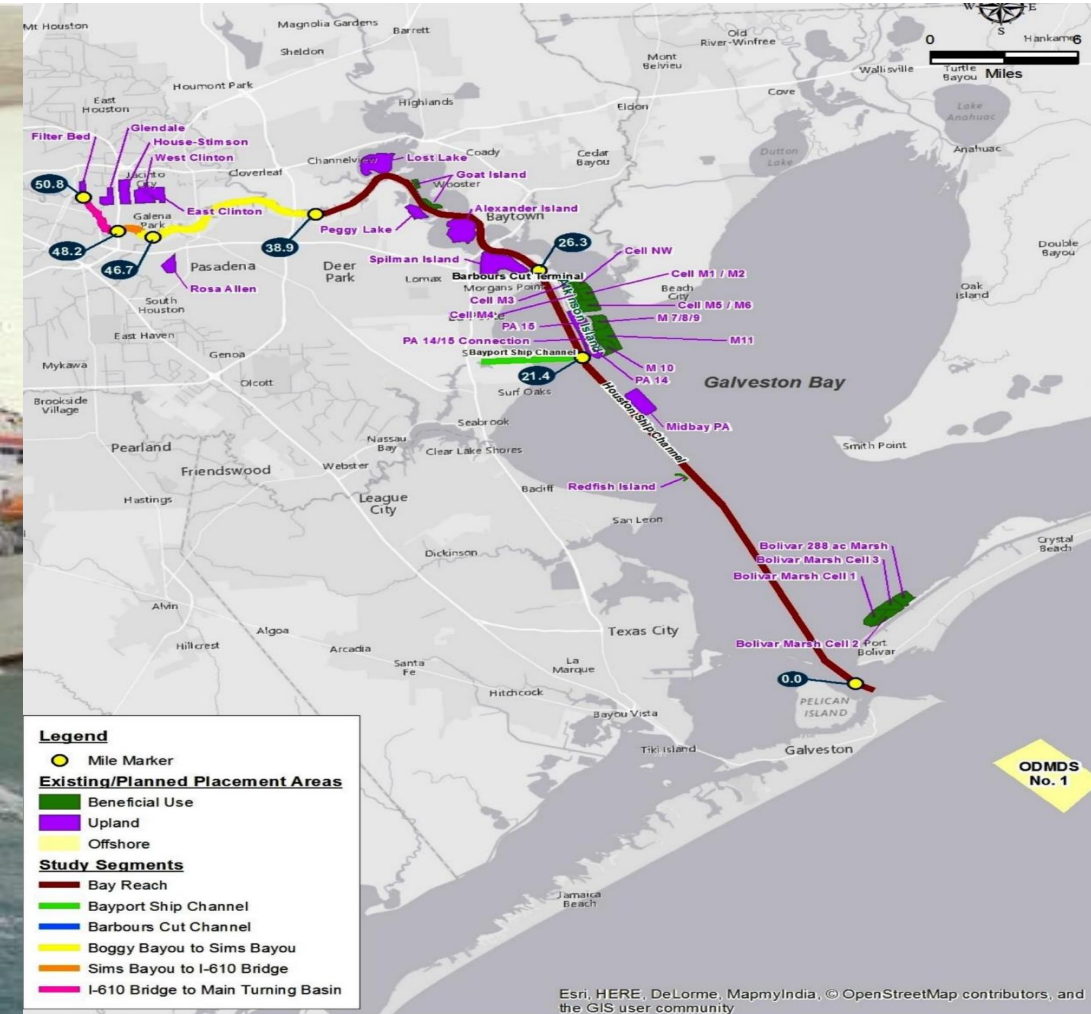


Corps/Port of Houston Project 11

Widening to 700'



US Army Corps
of Engineers.



Source:
Port of Houston

— DREDGE
 ■ DREDGE DEPOSIT
 — COASTAL SPINE

02

A 100 YEAR PLAN A VISION FOR THE FUTURE

In order to serve the region in the most effective way, the new surge protection system will begin with achievable goals, while at the same time be proactive and forward looking to care for the needs of future generations. Understanding that the ship channel will continue to be dredged, the plan anticipates and provides locations for the deposition of dredge material towards a productive use. For the next 100 years, the port will know where the dredge product goes, and the community will see it used to create and sustain bay habitat and recreational facilities. Silt build-up in the channel is a natural process that is exacerbated by runoff from the region's high rainfall flood events. Galveston Bay Park envisions a symbiotic relationship between the economic drivers of the region and its' natural environment.

As part of a comprehensive coastal plan, the mid-bay barrier is an essential early action line of defense in a generational plan for Galveston Bay resiliency.



Dredger depositing sediments



Beach Camping



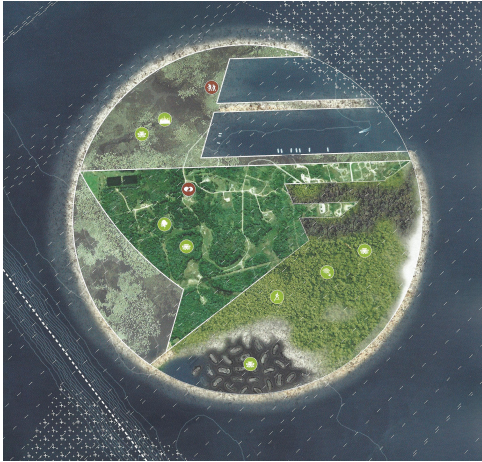
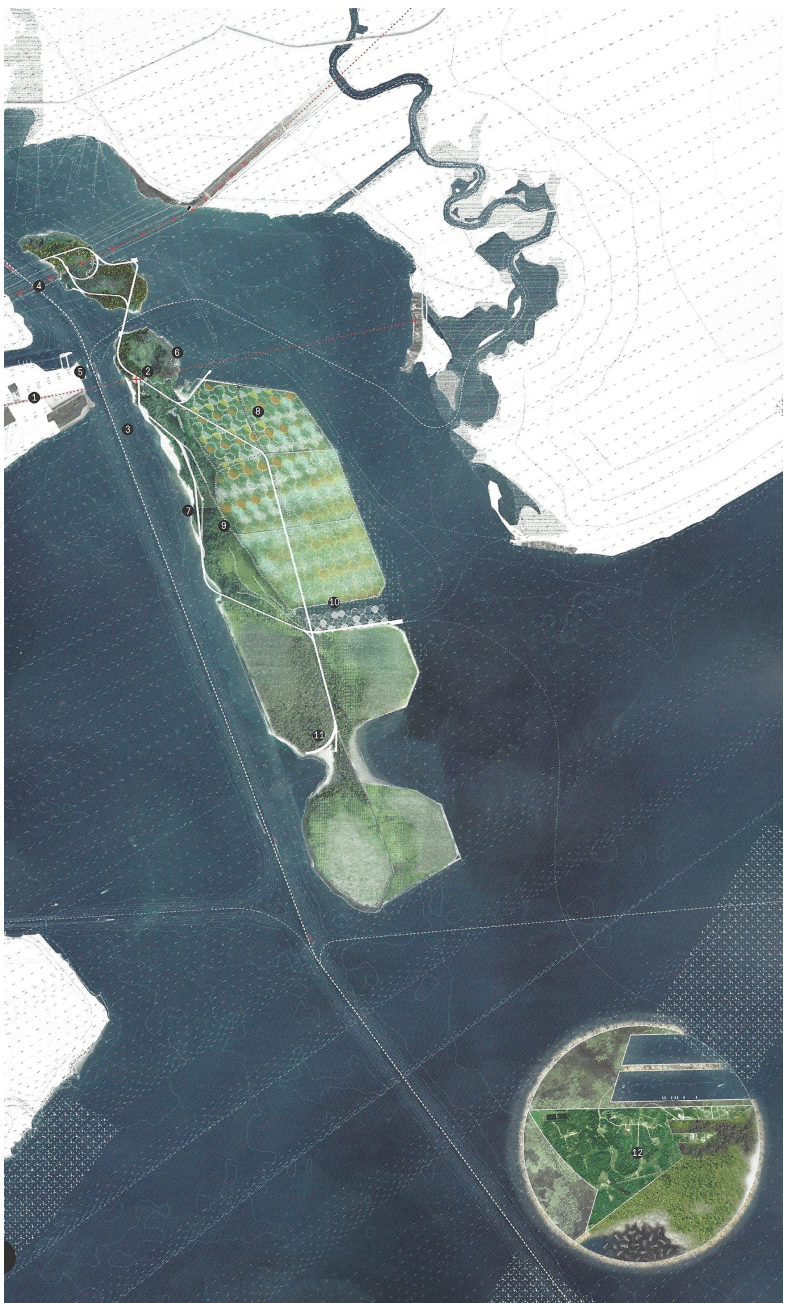




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Source: SWA Group,
Houston Studio



'Ship Channel' mega projects: multi-value, multi-stakeholders, multi-disciplinary expertise



Bouw van de Tweede Maasvlakte kostte zo'n €3 miljard



Strategisch Omgevingsmanagement
(SOM) faciliteert dialoog met stakeholders



Houston Ship Channel Expansion Project 11 Dredging Kick-Off



June 1st, 2022
Images source:
Port of Houston Authority, USACE





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Verondieping Rijnmond

principe:

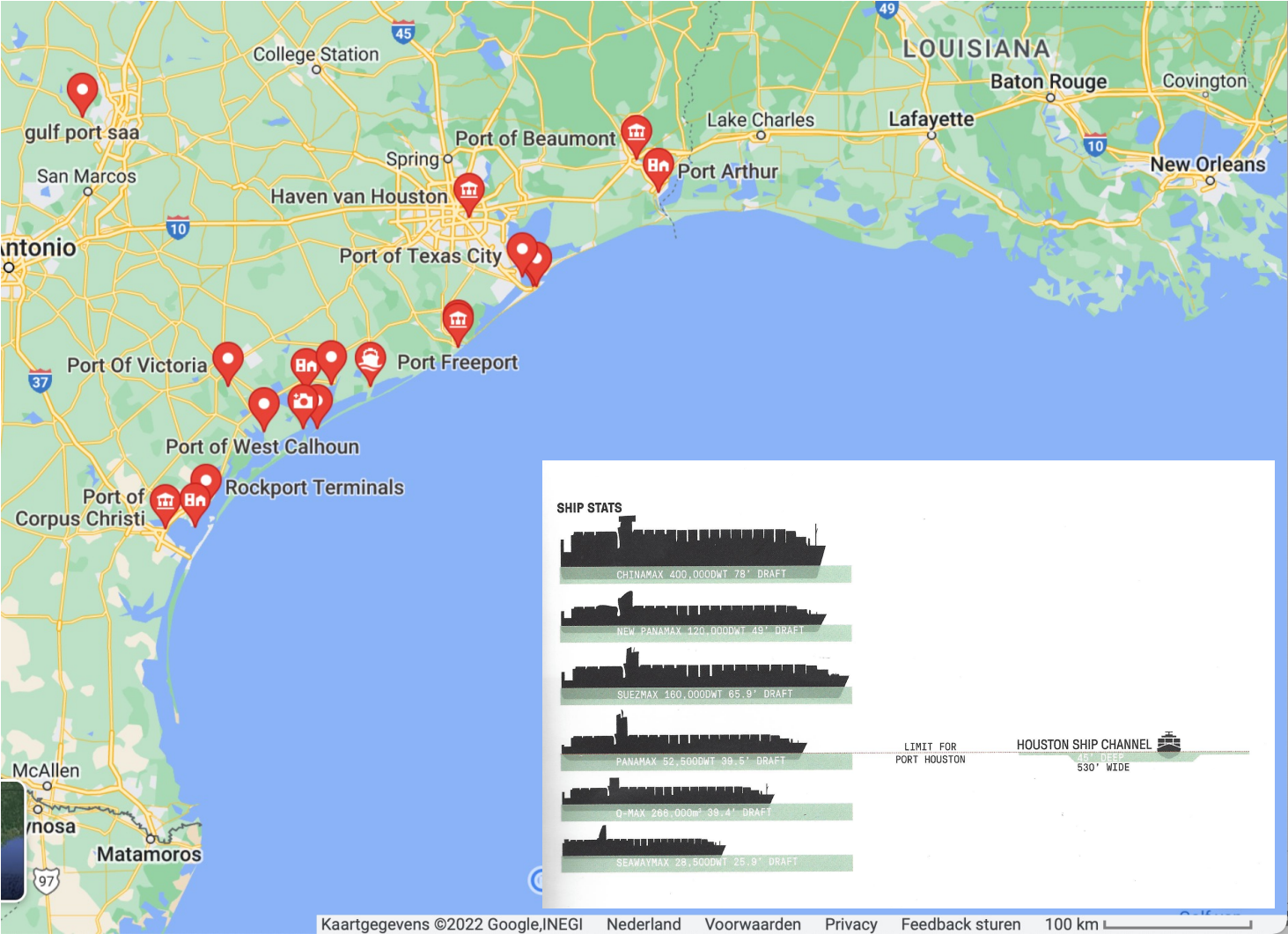


Legenda

- diepte vaargeul 8m
- diepte vaargeul 10m
- diepte vaargeul 14m
- dieptehaven 25m
- overig water (buiten de scope van het project)
- historische kernen en waterlopen
- kansen voor getijdenatuur
- stadontwikkeling langs water
- zeeschepen met diepgang tot 25m
- zee- en rivierschepen met diepgang tot 12m
- rivierschepen
- Meerke baten



Resilient future?





Thank you!



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