

Leveraging Public Data for Visual Storytelling, Community Mapping and Engagement

10/24/2024

Presented by:

Mashal Awais and Uilvim E. G. Franco



Presentation Topics

Presenters

Diluvial Initiative

Basic Navigation of the
Tool (Wetland Watch
Hub)

Learning Objectives

Spatial Studies Lab/CRC

Justice in the Sewers

What is BCWK

Introduction to Mapping
Tools

Q&A and Wrap-Up



Presenters



Mashal Awais

Masters in Environmental Analysis

Bachelor of Science in Chemistry

Community Science Manager



Uilvim Ettore G. Franco

Environmental Engineer

GIS Specialist

Research Computing Facilitator

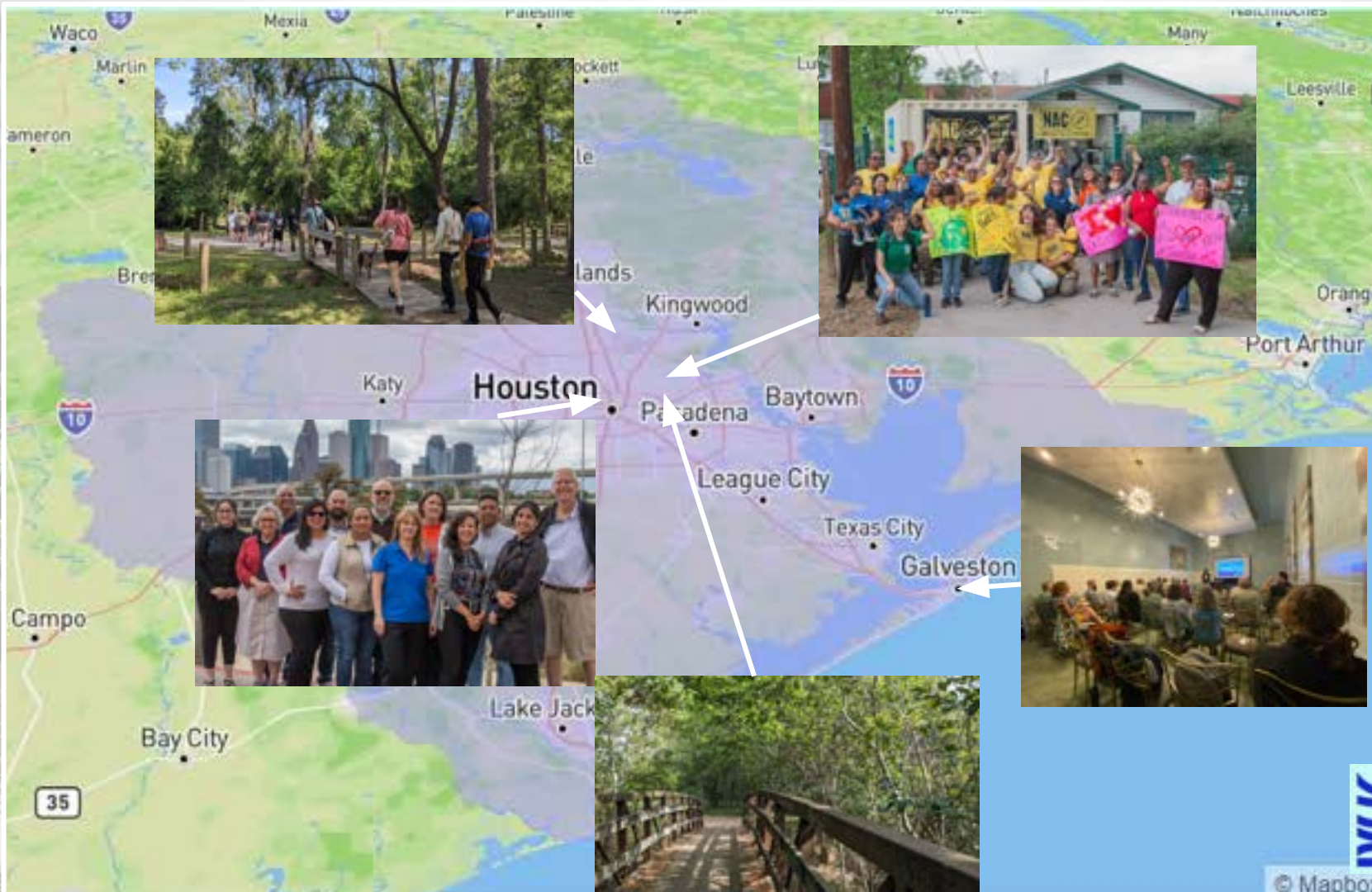


Learning Objectives

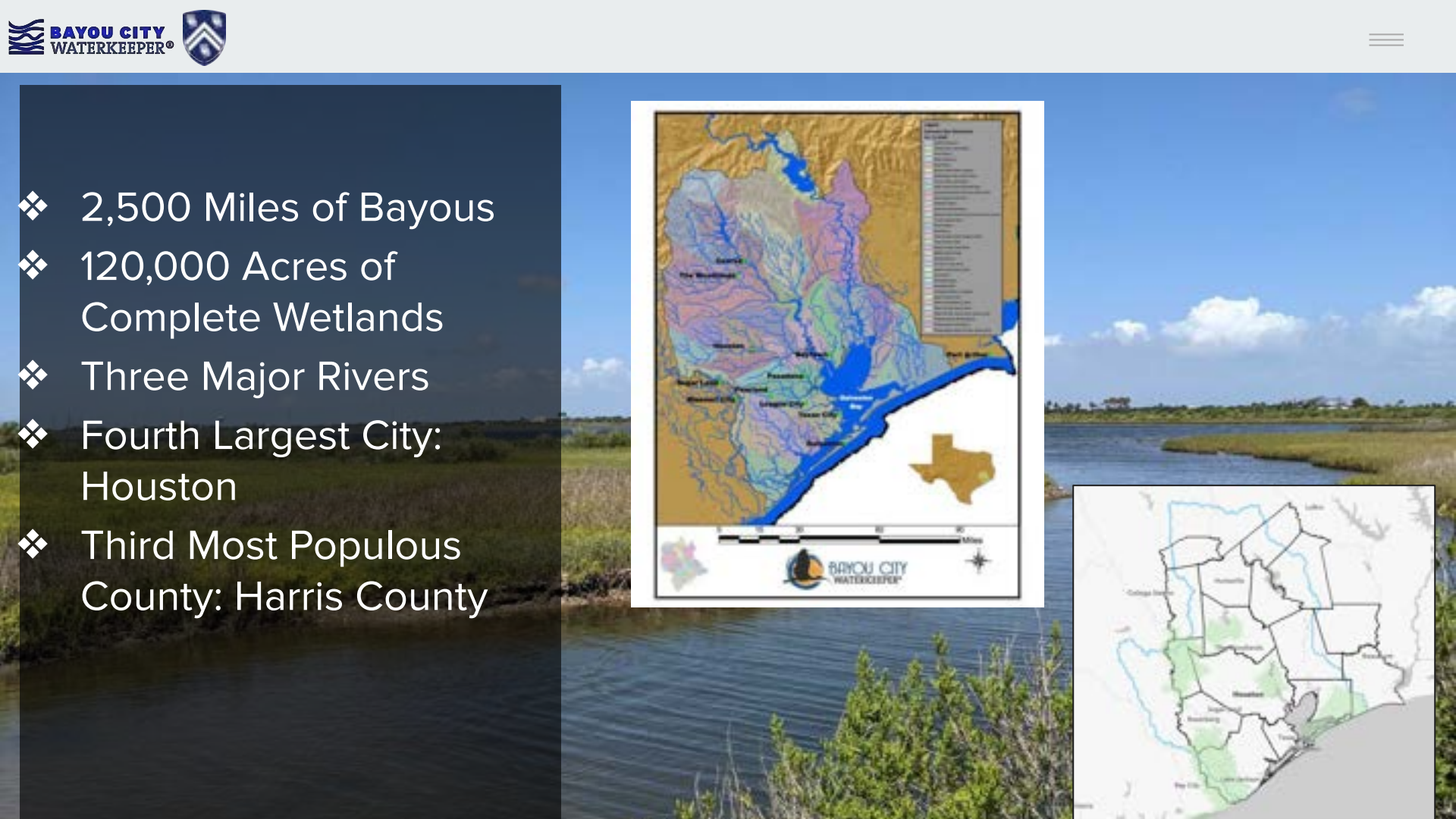
- 1 Learn practical skills and tools needed to initiate wetland preservation efforts in their own communities.
- 2 Have a clear understanding of how to use our mapping tools, interpret data layers, and empower community members to actively monitor and protect their local wetlands.
- 3 Showcase the mapping tools to local leaders, enabling them to submit informed comment letters to regional and federal agencies, thus amplifying the community's voice in

About BCWK



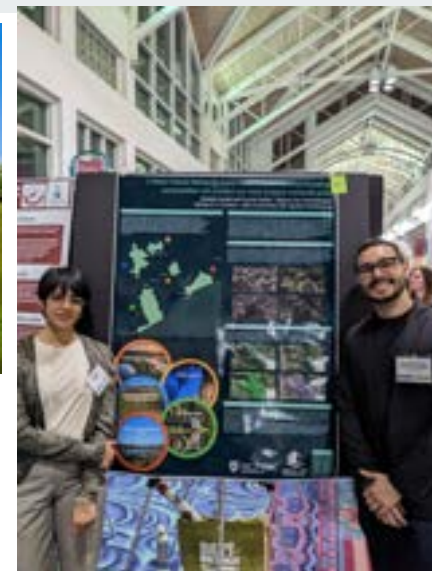


- ❖ 2,500 Miles of Bayous
- ❖ 120,000 Acres of Complete Wetlands
- ❖ Three Major Rivers
- ❖ Fourth Largest City: Houston
- ❖ Third Most Populous County: Harris County



Project Objective

BCWK partners with local communities and academic institutions, to identify and translate communities' needs to understand **data through community mapping projects**, story maps, and data visualizations. The more recent collaboration between Spatial Studies Lab (Rice University) and the organization has developed and launched a **Wetland Watch Hub**, and a **Justice in the Sewers Mapper** that allows communities to continue to understand data in real time, and advocate for their communities right to Clean Water.





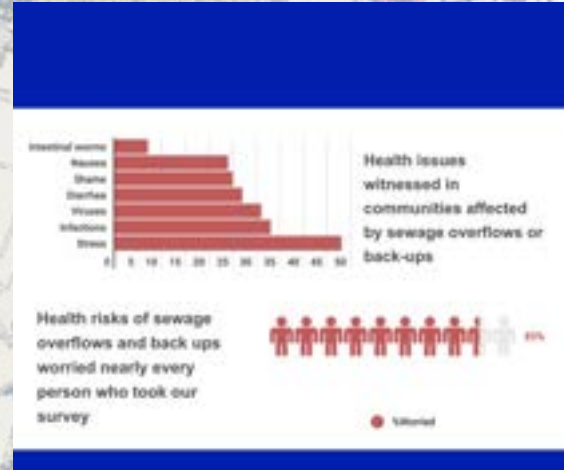
Information Justice, Environmental Justice and Community Centered Advocacy

Community Centered solutions require real time data collection, and monitoring to communicate real time risks to the general public so community can make informed decisions, advocate for stronger policy and decision makers center community needs



Community Science

- ❖ Community driven and community centered
- ❖ Local knowledge, collective empowerment - **place based**
- ❖ Rooted in **data to action**, transform and inform decision making
- ❖ **Interconnectivity** - social learning and external partnerships



Galena Park



Diluvial Houston

Diluvial Houston: Rescued Histories, Engaged Humanities, and Imagined Futures proposes a new model for engaged humanities research and pedagogy focused on local partnerships that addresses the specific challenges Houston faces in times of environmental disaster.

This initiative is funded by the Andrew W. Mellon Foundation.



Spatial Studies Lab - Center for Research Computing

“We locate diverse sets of data in both time and geographic space in order to create novel web experiences and insights.”



Cloud for Research



High-Performance Computing



Facilitation and Training



Research Data Storage



Research Proposal Support for Computing Resources



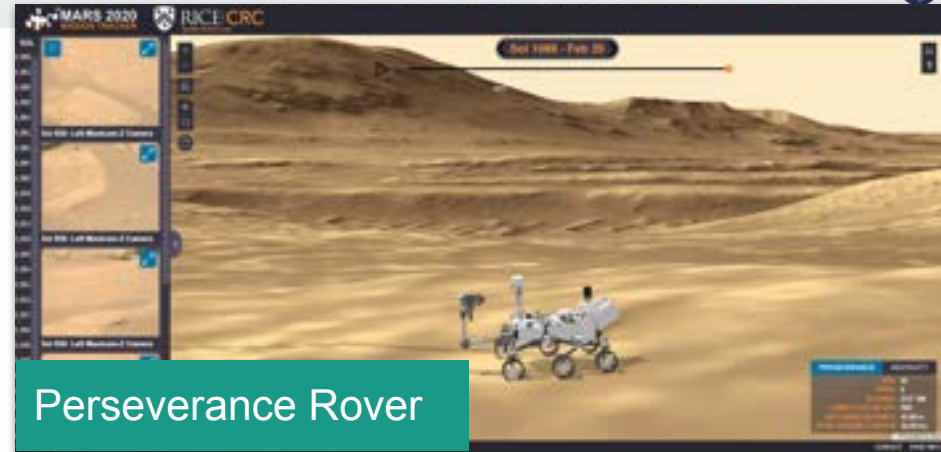
Research Systems Management



Data Analysis,
Mapping, and
Visualization



Eclipse Viewer



Perseverance Rover



Cumbre Vieja Eruption

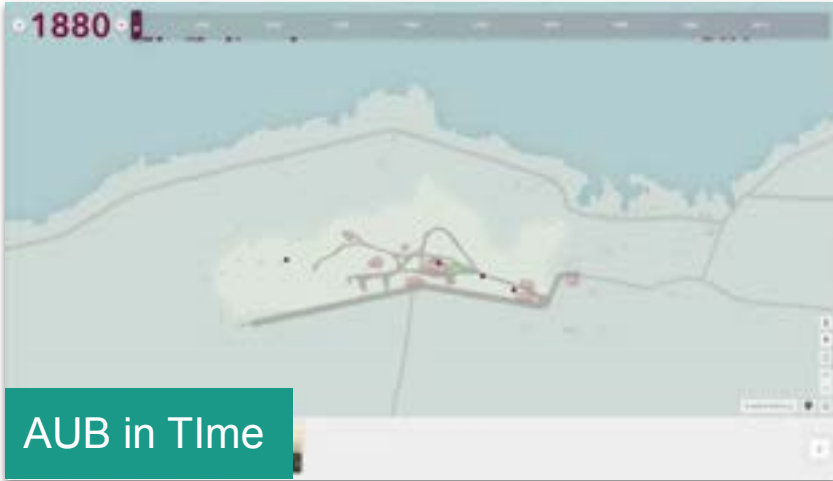


Rice 3D Twin



Covid Waste Water

Varner-Hogg Plantation



AUB in Time



Covid-19 in Brazil

Mapping Platforms

ArcGIS Online



ArcGIS Pro



QGIS



Google Earth Pro



Google Maps API



Leaflet



Mapbox



CARTO



OpenStreetMap



Tableau



ESRI StoryMaps



MapInfo Pro



Introduction ArcGIS Solutions.



ArcGIS Online

Cloud-Based GIS Platform: A web-based GIS solution for creating, sharing, and analyzing geographic data.

- Access Anywhere: Users can create interactive maps and dashboards via any web browser, with easy sharing capabilities.

Key Features:

- Hosted services (maps, data layers, apps)
- Collaboration tools for teams
- Real-time data visualization and spatial analytics

Ideal For: Collaboration, quick deployment of web maps, and cloud storage of spatial data.

Introduction ArcGIS Solutions.



ArcGIS Pro

Desktop GIS Application: A powerful, professional-grade GIS software designed for detailed geospatial data analysis and 3D visualization.

- Advanced Capabilities:
- 2D/3D mapping and analysis
- Integration with ArcGIS Online for seamless data exchange
- Customizable workflows with Python and model building

Key Features:

- Geoprocessing tools for advanced analysis
- Supports multiple map layouts and high-quality print outputs
- Deep integration with local and cloud data sources

Ideal For: High-performance GIS projects, data-intensive tasks, and detailed geospatial modeling.



Wetland Watch Hub

Visit our Wetland Watch hub



Lower Galveston Bay Watershed Wetland Watch

How can we protect our remaining wetlands?

[WETLAND
WATCH
SURVEY](#)

[WETLAND
WALKS](#)

[5 CRITICAL
WETLAND
STORY MAP](#)

[WETLAND
MAPPER](#)

[WORKSHOP AND
PRESENTATIONS](#)

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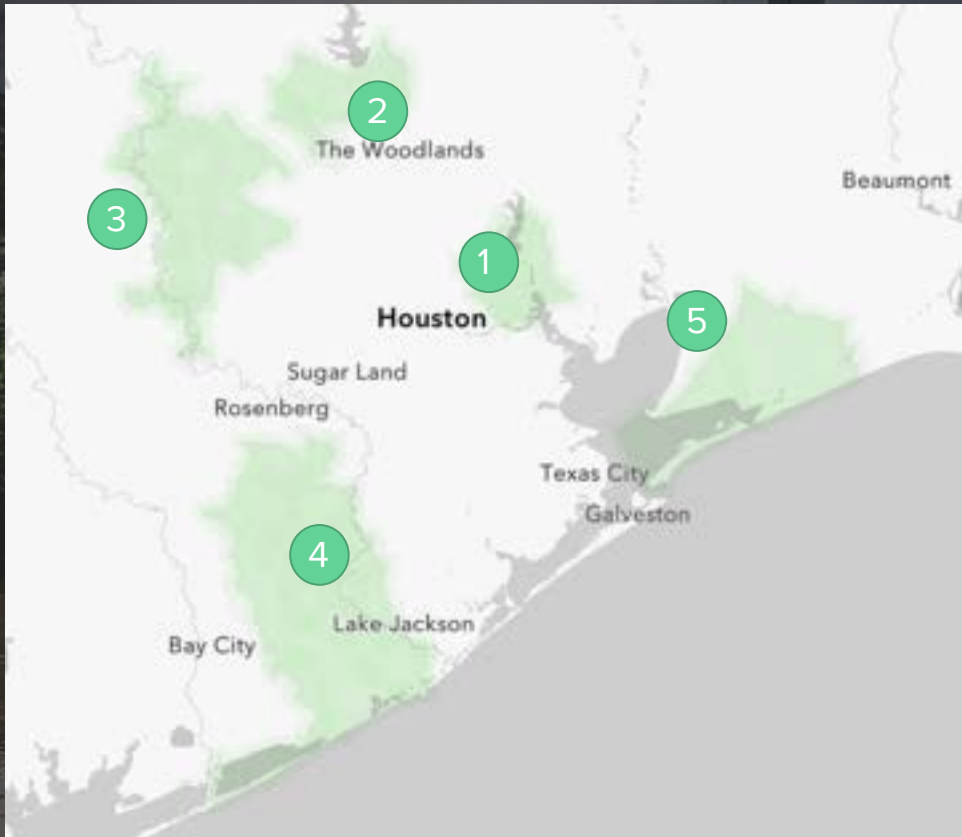
What is a Wetland?

Wetlands are unique natural areas that lie between land and water. Unlike places that are always dry or always underwater, wetlands can change with the seasons, sometimes wet and sometimes dry. This dynamic environment supports plants and animals not found in completely dry (upland) or fully water-covered (aquatic) areas. One of the key benefits of wetlands is their ability to improve water quality, among other important functions.

Just as trees in the rainforest serve as the "lungs" of our planet, wetlands serve as our planet's "kidneys." Wetlands function like a natural sponge or filter for our planet. They absorb, store, and cleanse water, improving its quality by capturing pollutants, filtering out harmful substances, and breaking down



Geographic Focus



1. Lake Houston Wetlands
2. Greater Lake Creek
3. Greater Katy Prairie - Pothole Pimple-Mound Complexes
4. Trans-Brazos Region
5. Anahuac Coastal Marsh and Prairies



Why these five regions?

- ❖ Vast areas remain untouched but under threat of intense development
- ❖ Large tracts to support functionality and diversity of ecosystems
- ❖ communities downstream experience flooding

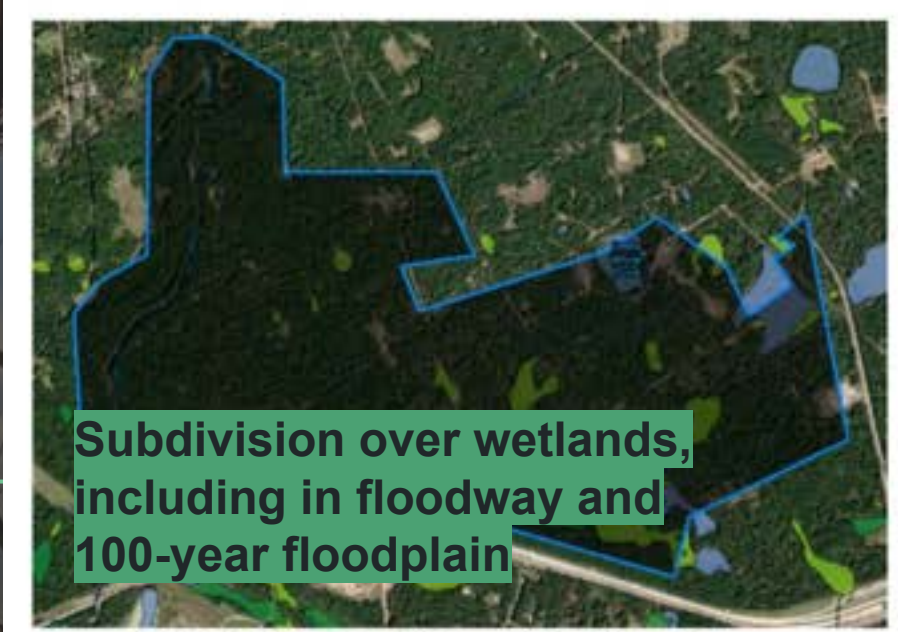


HGAC Local Experts Ecoregion Layer (left) shows more than wetlands on FWS National Wetland Inventory (right)



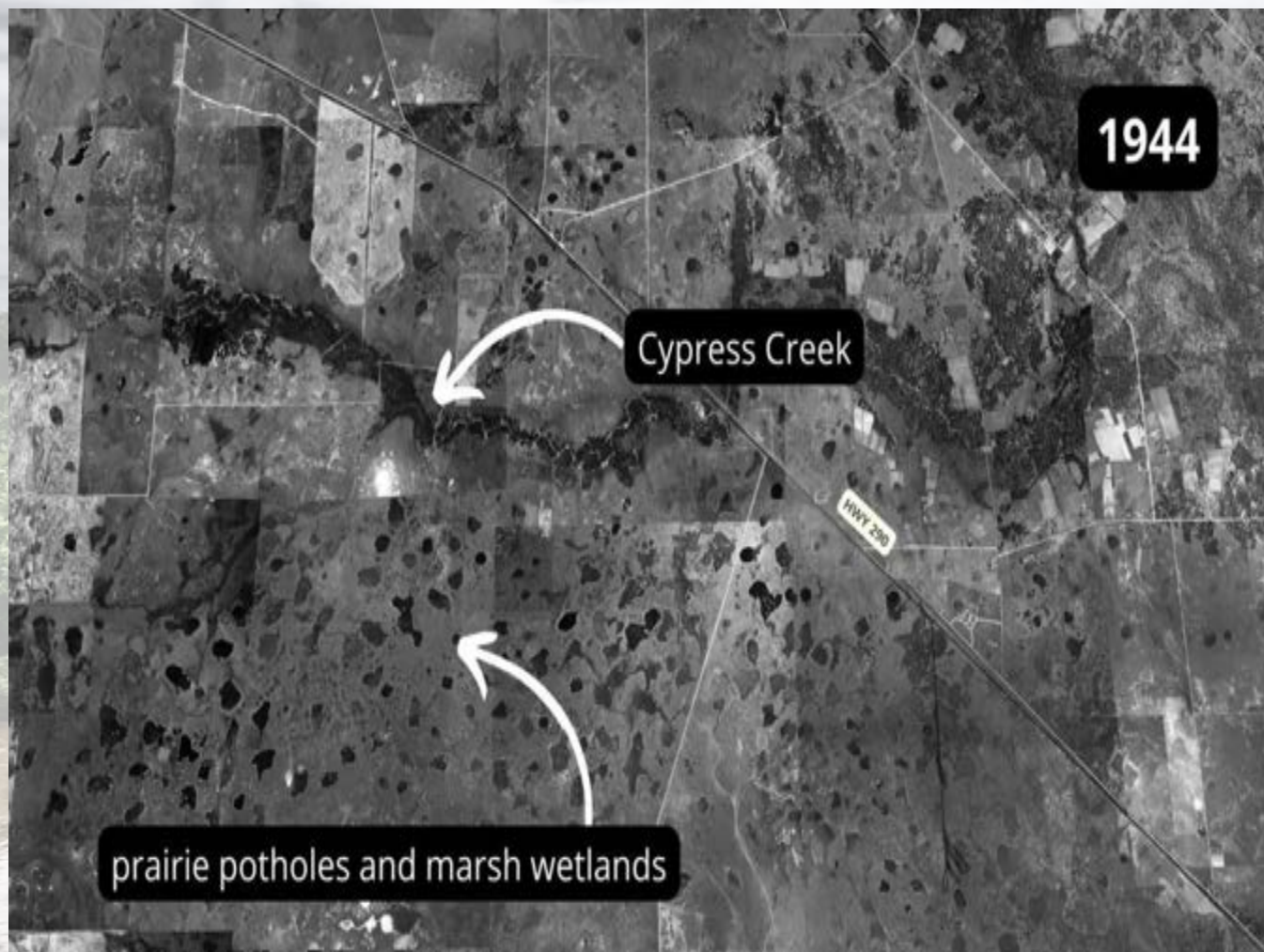


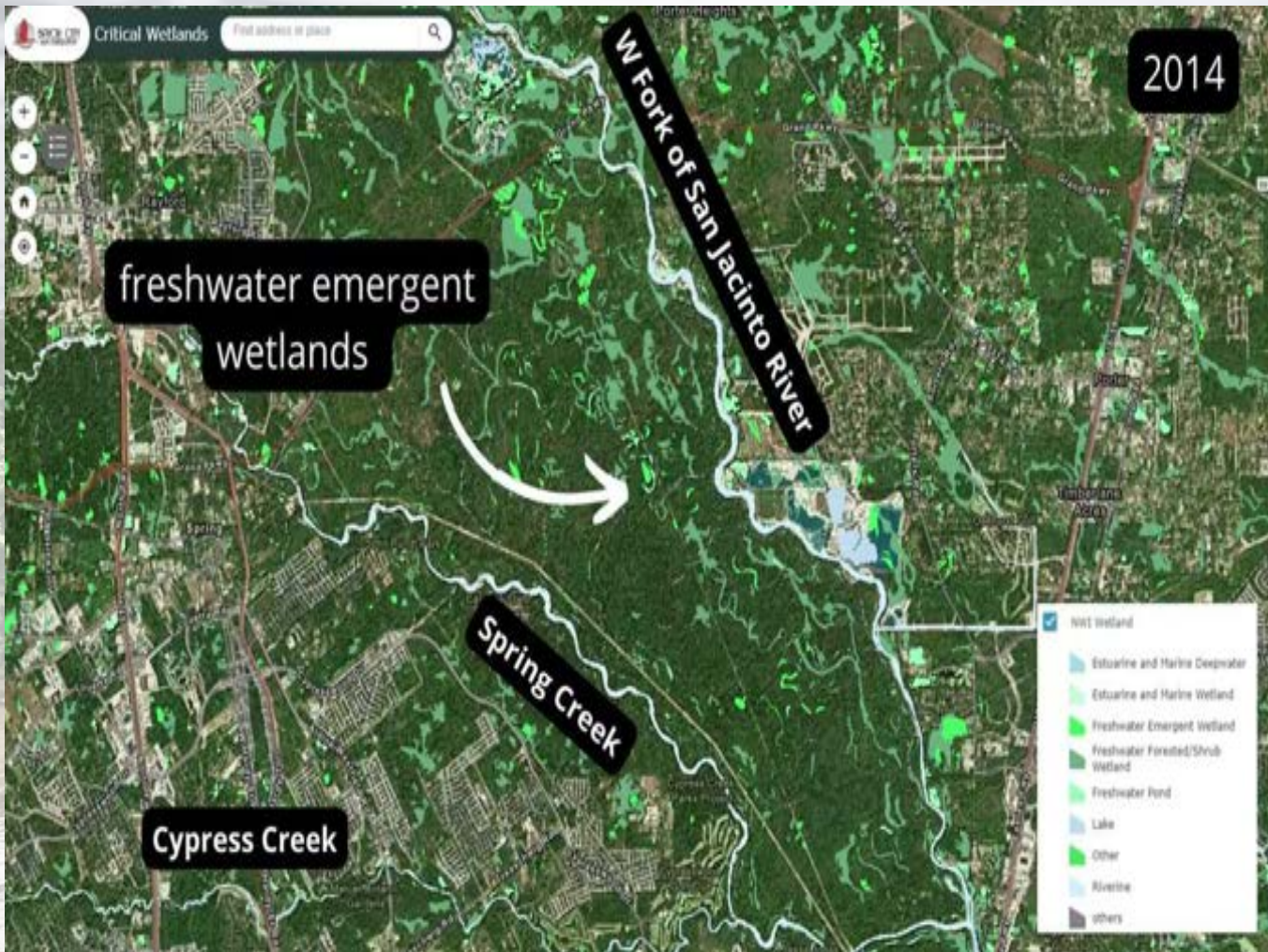
Publicly-subsidized housing over wetlands in 100-year floodplain



Subdivision over wetlands, including in floodway and 100-year floodplain



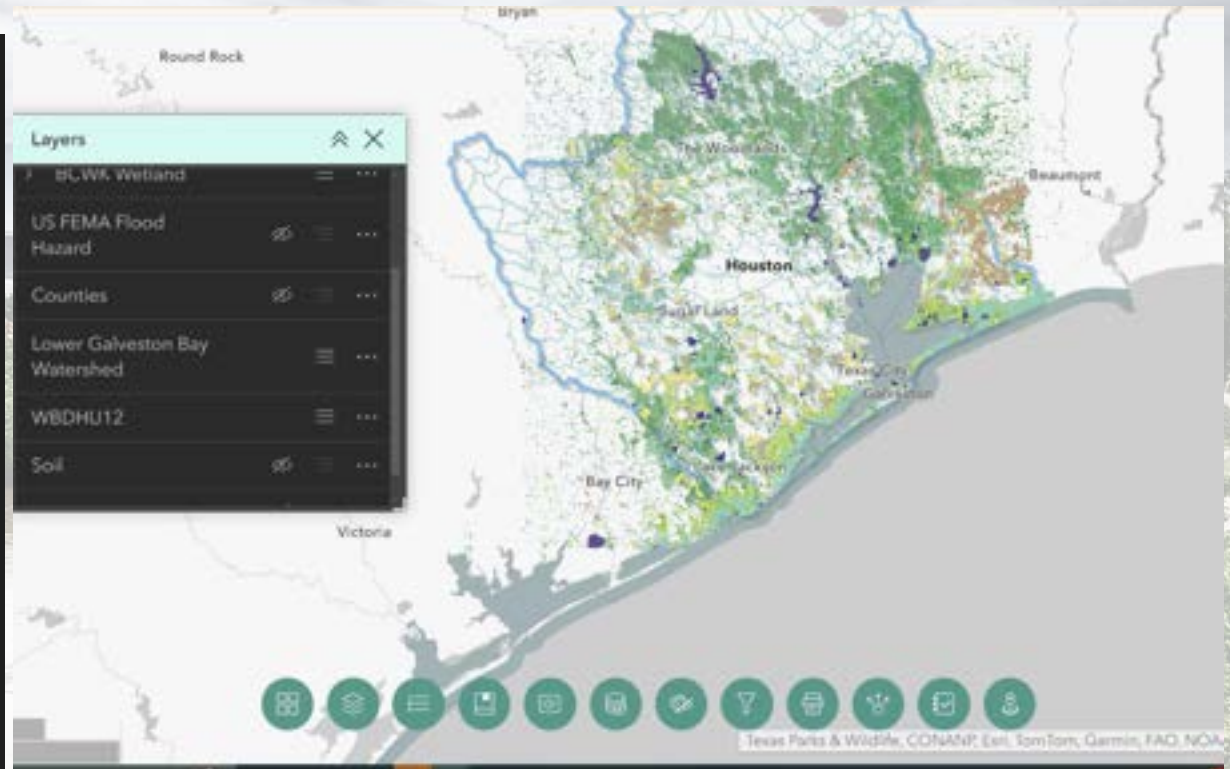




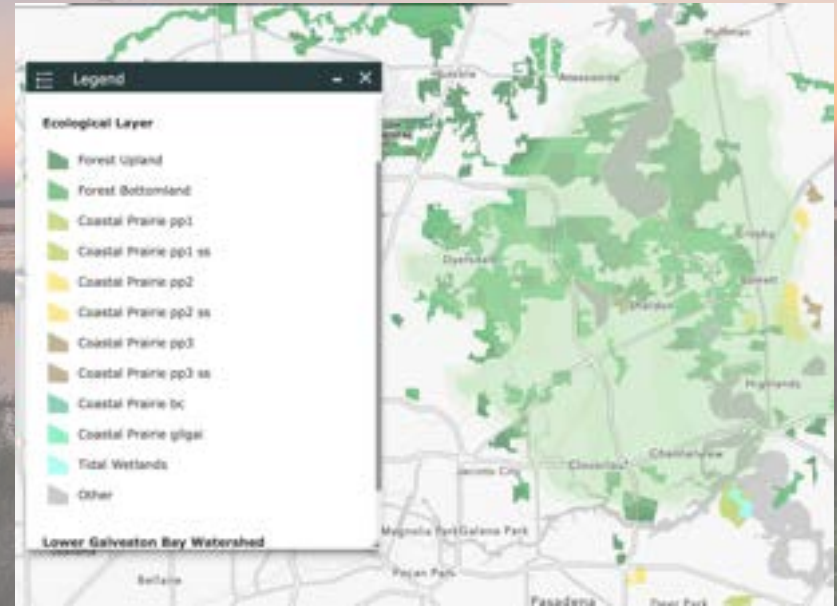
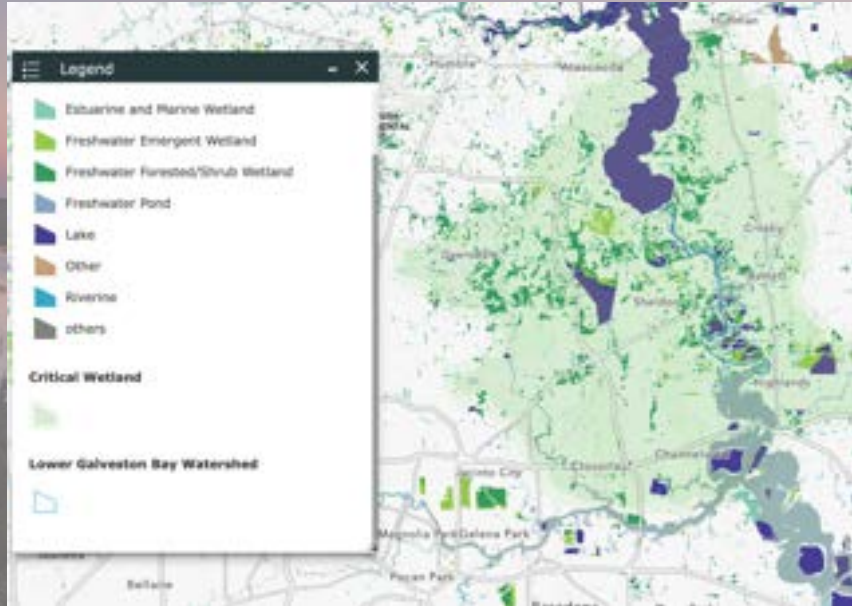
BCWK Wetland Mapping Tool



- Layers snipped for our watershed
- Submit a 123 survey to BCWK
- Draw over the map and take screenshots
- Add additional layers of interest using Arc Online or Add Data function



Focusing on the Lake Houston area



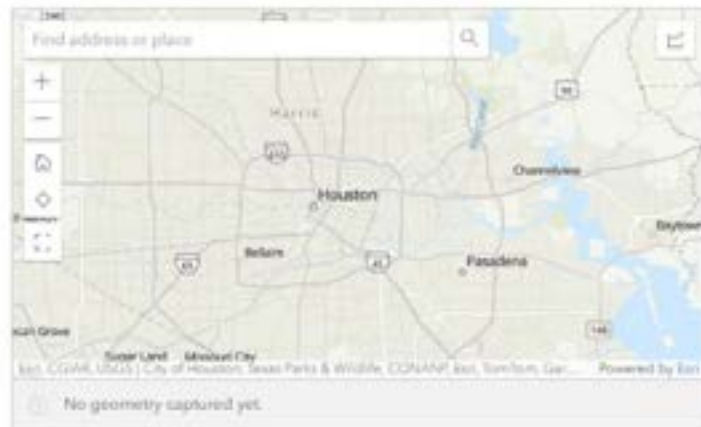
What is a wetland watch survey?

This map survey includes a map and drawing tools so that people can share where wetlands are being destroyed in our region.

This survey will take no longer than 2-3 minutes to complete and we will maintain confidentiality when using this information.

Where is your wetland site of concern

Either add a point, draw a line, or create a shape to show you where the wetland area is.



What information and description would you like to share?

Question optional. Add space for optional comments.

1000





5 Critical Wetlands Presentation: Information Session

We're excited to collaborate with you! This form is designed understand your needs and preferences for our presentation or workshop. Kindly fill in the details to help us tailor our engagement to best fit your community or organization. We'll review your submission and get in touch to finalize the arrangements.

Contact Information:

Name: *

Title/ Position: *



Organization/ Company: *

Email address: *



Wetland Watch: Community-led enforcement

An official website of the United States government. [Here's how you know.](#)

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US Army Corps of Engineers Galveston District Website

[Home](#) / [Media](#) / Public Notices

Public Notices by Year

- 2024 (58)
- 2023 (102)
- 2022 (60)
- 2021 (63)
- 2020 (109)
- 2019 (130)
- 2018 (106)
- 2017 (86)
- 2016 (83)
- 2015 (93)
- 2014 (102)
- 2013 (125)
- 2012 (63)

[Click here](#) to view USACE Galveston District Planning and Environmental documents for public review.

Viewing & Comments

1 2 3 4 5 6 7 8 9 10 236

22
OCT 2024

SWG-2024-00119 (Whitecap Circulation Canal Connections) - Laguna Madre - Nueces Co

Expiration date: 11/23/2024

The applicant proposes to construct a bridge and culverts in three (3) locations.

15
OCT 2024

SWG-2005-01730 - WR Production, LLC - Galveston Bay - Galveston County, Texas

Expiration date: 11/15/2024

The applicant proposes to discharge approximately 573 cubic yards of fill material.

15
OCT 2024


SWG-2017-00120 (Fordyce Holdings, Inc./Spring Bayou/Victoria County)

Expiration date: 11/15/2024

The applicant proposes to modify an existing permit to expand the facility's existing pit and overburden storage capacity for tailings resulting from its sand and gravel mining operations in order to continue mining at the current location.

10

Re-Issuance SWG-2009-00123 - Harris County Flood Control District



Wetland Watch: Community-led enforcement



VIA EMAIL

February 27, 2024

U.S. Army Corps of Engineers, Galveston District
Regulatory Branch, Compliance Section
Attn: John Davidson, Chief of Compliance
CESWGRegulatoryinbox@usace.army.mil

EPA Region 6, Enforcement Division
Cheryl Seager, Director
Bryant Smalley, Chief of Water Enforcement
U.S. Environmental Protection Agency,
Region 6
seager.cheryl@epa.gov
smalley.bryant@epa.gov

U.S. Fish & Wildlife Services, Texas Coastal and
Central Plains Ecological Services Field Office
Chuck Ardizzone, Project Leader
chuck_ardizzone@fws.gov

**RE: Complaint of unauthorized activity with impacts on protected wetlands and
endangered & threatened species: [REDACTED]
County**

To the Army Corps' Compliance Section, EPA Region 6's Water Enforcement Division, and the
U.S. Fish & Wildlife Services' Texas Coastal and Central Plains Ecological Services Field Office:

Bayou City Waterkeeper and Turtle Island Restoration Network' submit this complaint of
unauthorized activity within the Galveston District for development activities that have begun



Why is this important?



Where states are strengthening and weakening protections for wetlands and streams

Good legislation:

California, Maryland, New Mexico, Washington, Wisconsin

Creating wetlands programs:

Colorado, Illinois

Executive action to protect wetlands:

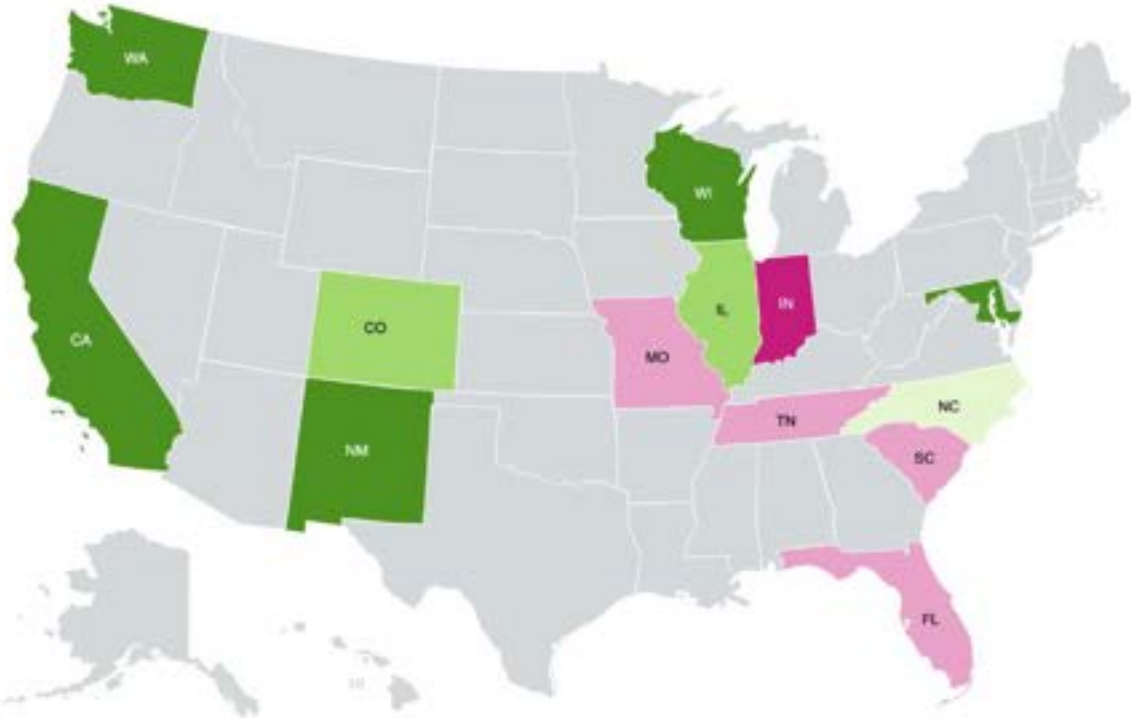
North Carolina

Passed rollbacks in 2023–2024:

Indiana

Introduced rollbacks that failed to pass:

Florida, Missouri, Tennessee, South Carolina

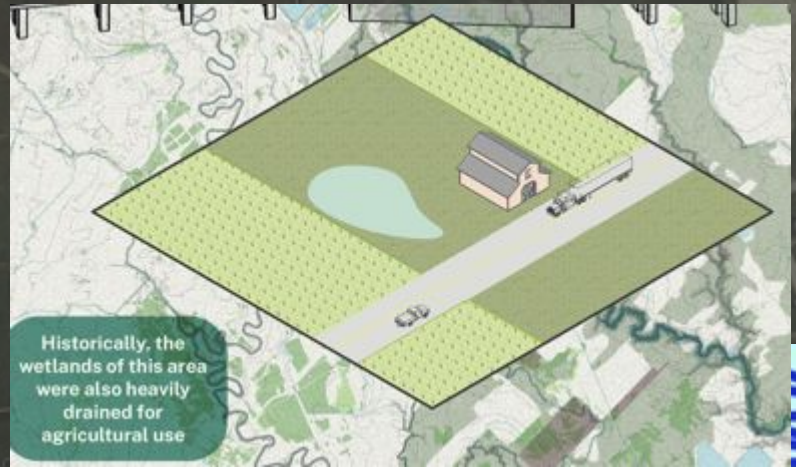
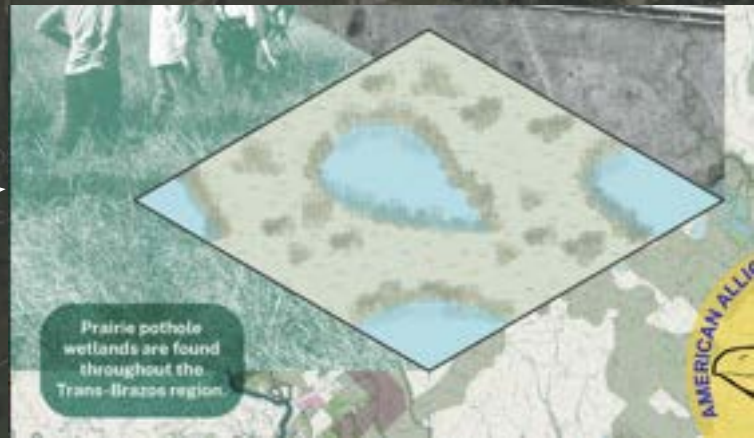


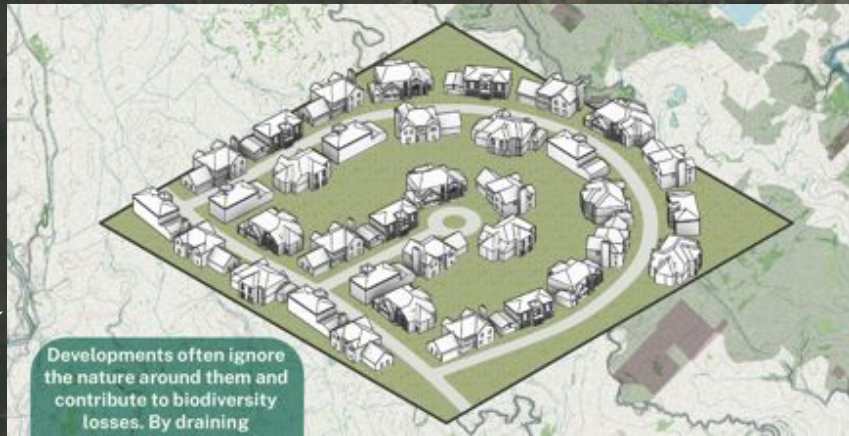
EARTHJUSTICE



What we envision







What does this look like?



Texas Land Conservancy is proud to announce our newest partnership with the Galveston Bay Foundation, an organization dedicated to safeguarding Galveston Bay's ecological health and vitality since 1987. Together, we are working to ensure the permanent protection of a 306-acre property known as Taylor Bayou Forest, the largest remaining natural forest in La Porte, Texas.



The company, which is currently under federal investigation for possible violations of monkey-importation laws, planned a monkey-importation and -breeding facility four times as big as any currently operating in the U.S., targeting 500 acres of ecologically sensitive land that **abuts the San Bernard National Wildlife Refuge.**

Charles River's proposal would have held more than three times as many monkeys as humans held at Rikers Island, the infamous prison in New York City. The largest similar monkey facility in the U.S., also located in Texas, currently cages about 7,000 animals.



Community Flood Resilience Task Force & other community-driven flood equity policy

TABLE 1

CFRFF ASSET LOTTERIA

DISASTER RECOVERY	ENGINEERING	EQUITY + SOCIAL JUSTICE	EQUITY TOOLS	FINANCIAL STRUCTURES
FLOOD SURFACES	HOUSING	FLOOD RISK + FLOOD PLANNING	COMMUNITY LEADERSHIP	MARGINALIZED COMMUNITIES
FLOOD RISK MITIGATION	NATURE-BASED SOLUTIONS	URBAN DESIGN + PLANNING	POLICY FRAMEWORK	PUBLIC HEALTH
QUALITATIVE TOOLS	QUANTITATIVE DATA	RESILIABILITY	ARTS-BASED PRACTICE	THE TASK FORCE
RELATIONSHIP BUILDING	COMMUNITY BUILDING	HUMOR	OUTSIDE THE BOX THINKING	OPEN-MINDED





Justice in the Sewers: Mapping Houston's Sewage Overflows



Background

City Of Houston SSOs



In 2021, Bayou City Waterkeeper served a notice of intent to sue over how more than 9,000 of these overflows violated the Clean Water Act, the Environmental Protection Agency filed a federal enforcement action. In Spring 2021, a federal judge in Texas approved a legal settlement requiring the City of Houston to spend \$2 billion on its sanitary sewer system over the next 15 years. In 2018, Bayou City Waterkeeper uncovered these violations after combing through five years of data submitted by the City of Houston to the Texas Commission on Environmental Quality. We identified thousands of illegal overflows that had occurred across the City's massive sanitary sewer system and had polluted our local bayous and creeks, as well as neighborhood parks and school playgrounds. This led us to serve the City of Houston with a notice of intent to sue under the Clean Water Act, which prompted the United States and State of Texas to file an enforcement action two months later.



Visual Storytelling SSL Structure - Data Visualization

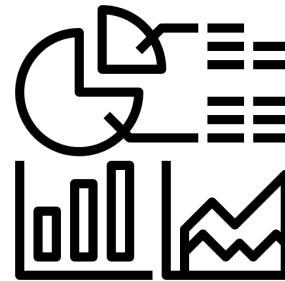
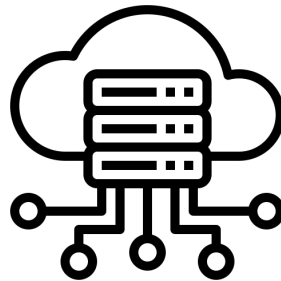
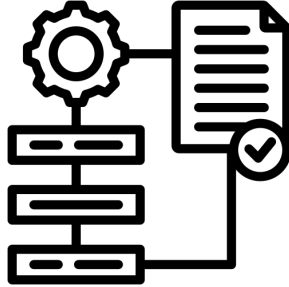
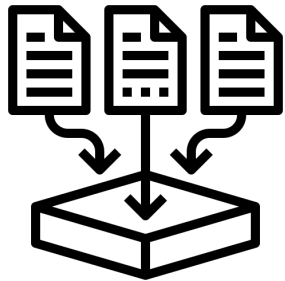
Data

Standardization

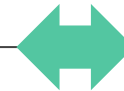
Storage/Hosting

Visualization

Web Application



Story/Message





Data

Address

Estimate Volume

Challenges?

Work ID	Work #	Address	Description	Workshop Status (Y/N)	Est. Volume (MG)	Estimate Type	Equipment Used	Start Date	Est. Cost	End Date	Est. Cost	Percentage (Y/N)	Equipment Status
54528	WSP0000000	206 LAUREL DR	Work Order Job completed	Yes	0.0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/1/2023	\$1.00	0	Checked and Inspected, Checked and Inspected
54568	WSP0000000	506 SAUNDERS ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected, Checked and Inspected
54567	WSP0000000	601 HOLLISTER ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54570	WSP0000000	2221 FORTUNE DR	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected, Checked and Inspected
54571	WSP0000000	5554 MAY ST	Work Order Job completed	Yes	1.0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected, Checked and Inspected
54572	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected, Checked and Inspected
54573	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54574	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54575	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54576	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54577	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54578	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54579	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54580	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54581	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54582	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54583	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
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54586	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54587	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
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54590	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54591	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54592	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54593	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54594	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54595	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54596	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54597	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54598	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54599	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected
54600	WSP0000000	3254 BURNING ST	Work Order Job completed	Yes	0	Actual	Crane Hoistage	11/1/2023	\$1.00	11/2/2023	\$1.00	0	Checked and Inspected

Standardization

ID	Year	Complete Address	Address	City	State	Zip	Flow Location	Flow Location (corrected)
2	10428	2021 5115 HAMMERLY BLVD Houston, Texas	5115 HAMMERLY BLVD	Houston	Texas	77056	Storm Sewer (not contained)	Storm Sewer (not contained)
3	10428	2021 7296 LA PASSEO ST Houston, Texas	206 LA PASSEO ST	Houston	Texas	77087	Storm Sewer (not contained)	Storm Sewer (not contained)
4	10430	2021 1502 DARLINGHURST DR Houston, Texas	502 DARLINGHURST DR	Houston	Texas	77045	Storm Sewer (not contained)	Storm Sewer (not contained)
5	10438	2021 5871 PARDEE ST Houston, Texas	471 PARDEE ST	Houston	Texas	77026	Bayou/surface water/Drainage Ditch	Bayou/surface water/Drainage Ditch
6	10436	2021 12817 PALMCREST ST Houston, Texas	2017 PALMCREST ST	Houston	Texas	77024	Contained On Site, not within 5 ft. of Bayou/Surface Water/Drainage Ditch	Contained On Site, not within 5 ft. of Bayou/Surface Water/Drainage Ditch
7	10440	2021 7523 KINGSLEY ST Houston, Texas	523 KINGSLEY ST	Houston	Texas	77087	Storm Sewer (not contained)	Storm Sewer (not contained)
8	10447	2021 13668 ELLA BLVD Houston, Texas	3656 ELLA BLVD	Houston	Texas	77014	Storm Sewer (not contained)	Storm Sewer (not contained)
9	10447	2021 9695 STELLA LINK RD Houston, Texas	605 STELLA LINK RD	Houston	Texas	77025	Storm Sewer (not contained)	Storm Sewer (not contained)
10	10451	2021 8990 CHIMNEY ROCK RD Houston, Texas	904 CHIMNEY ROCK RD	Houston	Texas	77096	Storm Sewer (not contained)	Storm Sewer (not contained)
11	10466	2021 2674 ANTONIO DR Houston, Texas	274 ANTONIO DR	Houston	Texas	77055	Contained On Site, not within 5 ft. of Bayou/Surface Water/Drainage Ditch	Contained On Site, not within 5 ft. of Bayou/Surface Water/Drainage Ditch
12	10489	2021 4085 34TH ST Houston, Texas	608 34TH ST	Houston	Texas	77092	Storm Sewer (not contained)	Storm Sewer (not contained)
13	10481	2021 8198 BALDWIN ST Houston, Texas	818 BALDWIN ST	Houston	Texas	77078	Storm Sewer (not contained)	Storm Sewer (not contained)
14	10485	2021 1061 HERSCHE ST Houston, Texas	603 HERSCHE ST	Houston	Texas	77029	Within 5 ft. of Bayou/Surface Water/Drainage Ditch	Within 5 ft. of Bayou/Surface Water/Drainage Ditch

ID	Condition / Asset / Component	Start Date	Start Time	End Date	End Time	Age	Flow ID	Comments / Action	Start Date, Commented	End Date, Commented	lat	long
2	Grease Blockage	4/1/2021	9:36	4/1/2021	10:11	1	Cleared Main Line	Cleared and Disinfected	20210401	20210401	29.51054543	-95.49915877
3	Grease Blockage	4/1/2021	10:48	4/1/2021	10:48	8	Cleared Main Line		20210401	20210401	29.47862965	-95.30012751
4	Grease Blockage	4/1/2021	12:26	4/1/2021	13:47	2	Cleared Main Line	Cleared and Disinfected	20210401	20210401	29.42481107	-95.40827485
5	Grease Blockage	4/1/2021	13:44	4/1/2021	13:44	8	Cleared Main Line	Cleared and Disinfected	20210401	20210401	29.38597515	-95.31664225
6	Collection system structural blockage	4/1/2021	14:55	4/1/2021	14:55	8	Set bypass Pump	Cleared and Disinfected	20210401	20210401	29.52796231	-95.27052624
7	Rags/Wipes	4/3/2021	7:54	4/3/2021	18:24	2	Cleared and Disinfected	Cleared Main Li	20210403	20210403	29.68788889	-95.29186325
8	Grease Blockage	4/3/2021	9:15	4/3/2021	11:22	1	Cleared Main Line	Cleared and Disinfected	20210403	20210403	29.96883948	-95.43819847
9	Rags/Wipes	4/3/2021	9:30	4/3/2021	18:07	2	Cleared Main Line	Cleared and Disinfected	20210403	20210403	29.67877101	-95.43882388
10	Grease Blockage	4/3/2021	13:05	4/3/2021	17:28	3	Cleared Main Line	Cleared and Disinfected	20210403	20210403	29.68836217	-95.47788888
11	Rags/Wipes	4/3/2021	18:15	4/3/2021	18:15	8	Cleared and Disinfected	Cleared City Or	20210403	20210403	29.30923951	-95.47918429
12	Grease Blockage	4/3/2021	13:37	4/3/2021	16:06	6	Cleared and Disinfected	Cleared Main Li	20210404	20210404	29.81773167	-95.68985381
13	Collection system structural failure	4/3/2021	14:47	4/3/2021	16:35	3	Cleared and Disinfected	Cleared City Or	20210404	20210404	29.75324304	-95.37675162
14	Collection system structural failure	4/3/2021	9:58	4/3/2021	9:58	8	Cleared and Disinfected	Cleared Service	20210405	20210405	29.77805634	-95.31996638



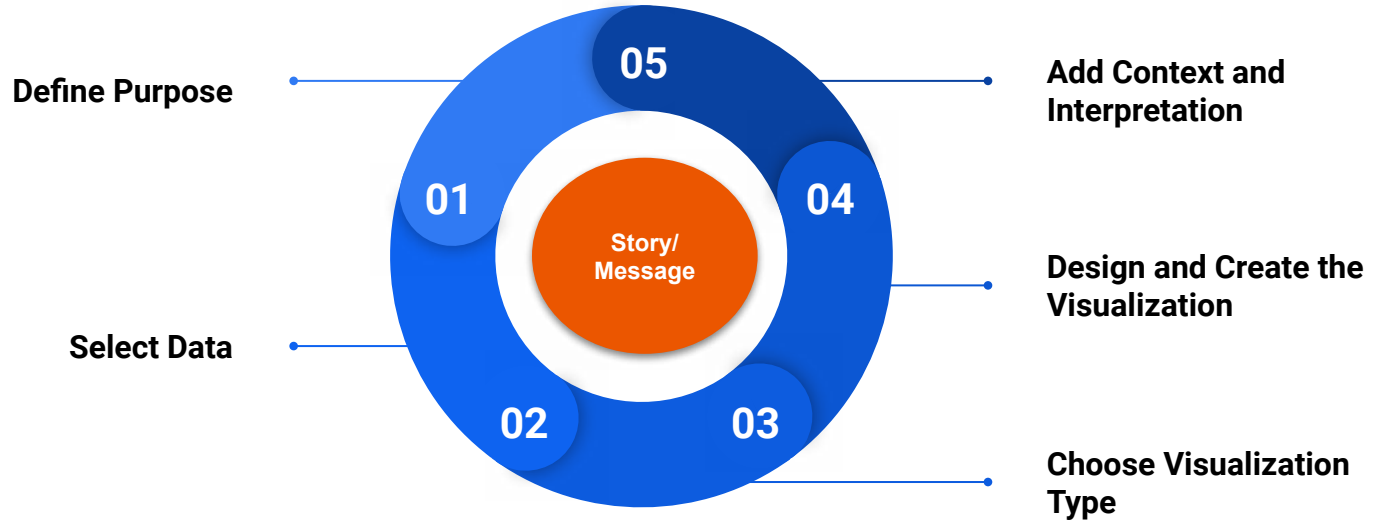
Storage/Hosting



ArcGIS Online	Data Hub
Amazon AWS	Github
Google Drive	BOX



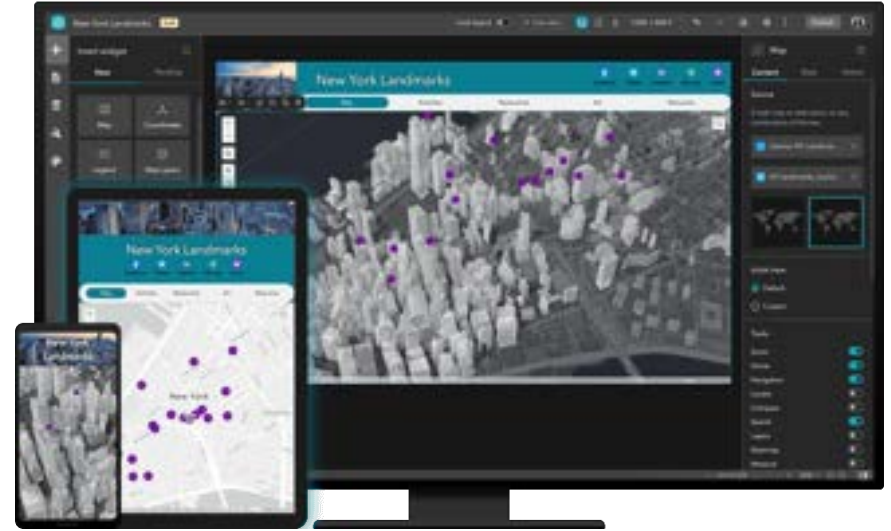
Visualization



Web Application

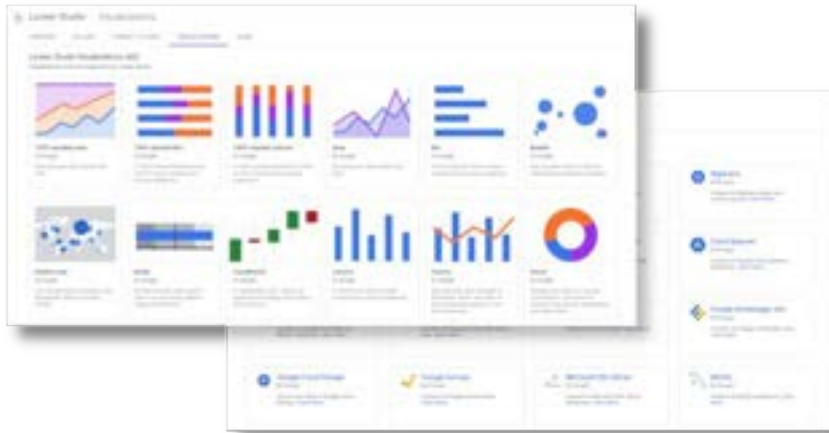


Storymap

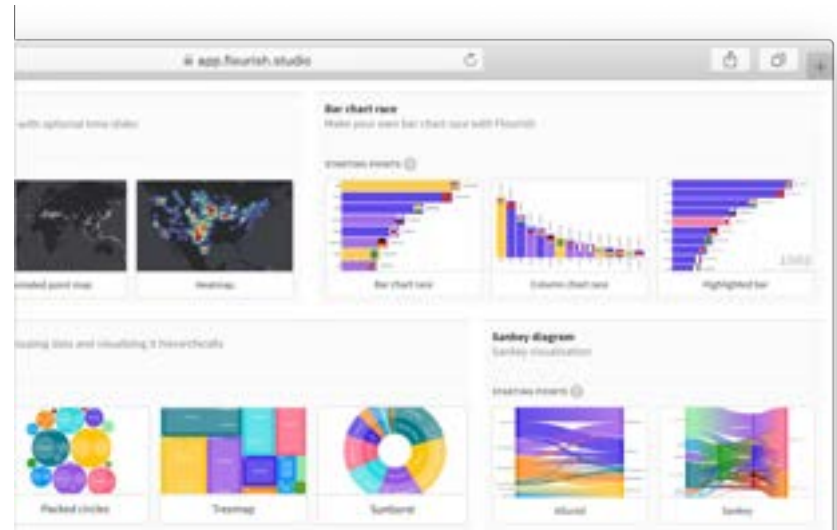


Experience Builder

Web Application



Looker Studio



Flourish

Why does this matter?

Sanitary sewer overflows and sewage releases on private property expose residents of Houston to unhealthy pollution. Raw sewage is a public health concern; sewage contains harmful levels of bacteria and viruses that can cause illness.

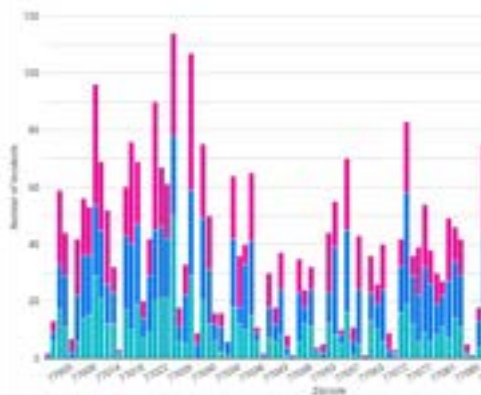
With the advances made by modern wastewater treatment plants to be heated and brought to safe standards without being treated and ends up in local bayous.

As the city of Houston continues with infrastructure upgrades made in the communities that are most vulnerable and at



What does this map show?
This map illustrates sewer overflow locations and can be used to understand why the basemap switcher some excursion types. Read more

Number of overflows by zip code



About these Graphs

These two graphs show us, by zip code, the largest overflow information seen in the map above. Hover over the graphs

Overflow over time

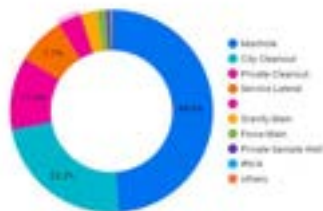
This graph shows the volume of overflows over time. The city of Houston makes this data available to the public, which can be found in monthly reports here. Click on the graph to see the overflow sites for that date flash in yellow on the map.



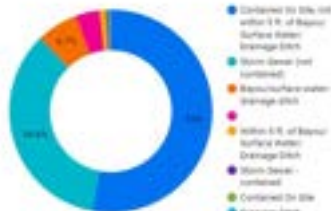
Excursion Cause



Structure Type



Flow Location



What do these graphs show?

The city of Houston reports sewer overflows and lists details on what caused the overflow (Excursion Type), what structure was impacted (Structure Type), where the overflow occurred (Flow Location), and whether the overflow was contained or drained into our waterways, bays, and communities. You can see this information displayed in the graphs above. These graphs show greater blockage as the number 1 cause of overflows (7-50%). Regs and improper wipes were responsible for 15% of the reported overflows. The city also reported that 48% of overflows occurred within five feet of a waterbody or drained to a storm sewer, continuing to make our waterways unsafe for human exposure. This is an ongoing violation of the Clean Water Act and a reason why Houstonians can't fully enjoy the bayous and waterways surrounding their communities.



SSO's

Whats next: how is this map/materials/story map connected to our advocacy or sewage demands

Number of Incidents

4.5K

From 2021 to 2024

Total Overflow

5.6M

Gallons

Incidents with no flow recorded

2.5K

Multiple incidents did not
have flow recorded

A group of diverse people, including children and adults, are gathered outdoors in front of a white building with green trim. Many are wearing yellow t-shirts with the NAC logo. They are holding up various signs and banners. One banner on a white container reads "NAC WE WANT EQUITY AND WE WON'T STOP". Another banner says "NAC NORTH EAST NILES COLLECTOR". A sign in the foreground says "I ❤️ Segregation". Another sign says "ENVIRONMENTAL Justice NOW". A sign with a globe says "The Right to Health". A sign with a heart says "Free SALLY". A sign with a heart says "Justice NOW". A sign with a heart says "ENVIRONMENTAL Justice NOW". A sign with a heart says "Justice NOW". A sign with a heart says "Justice NOW".

How is this connected to our work?

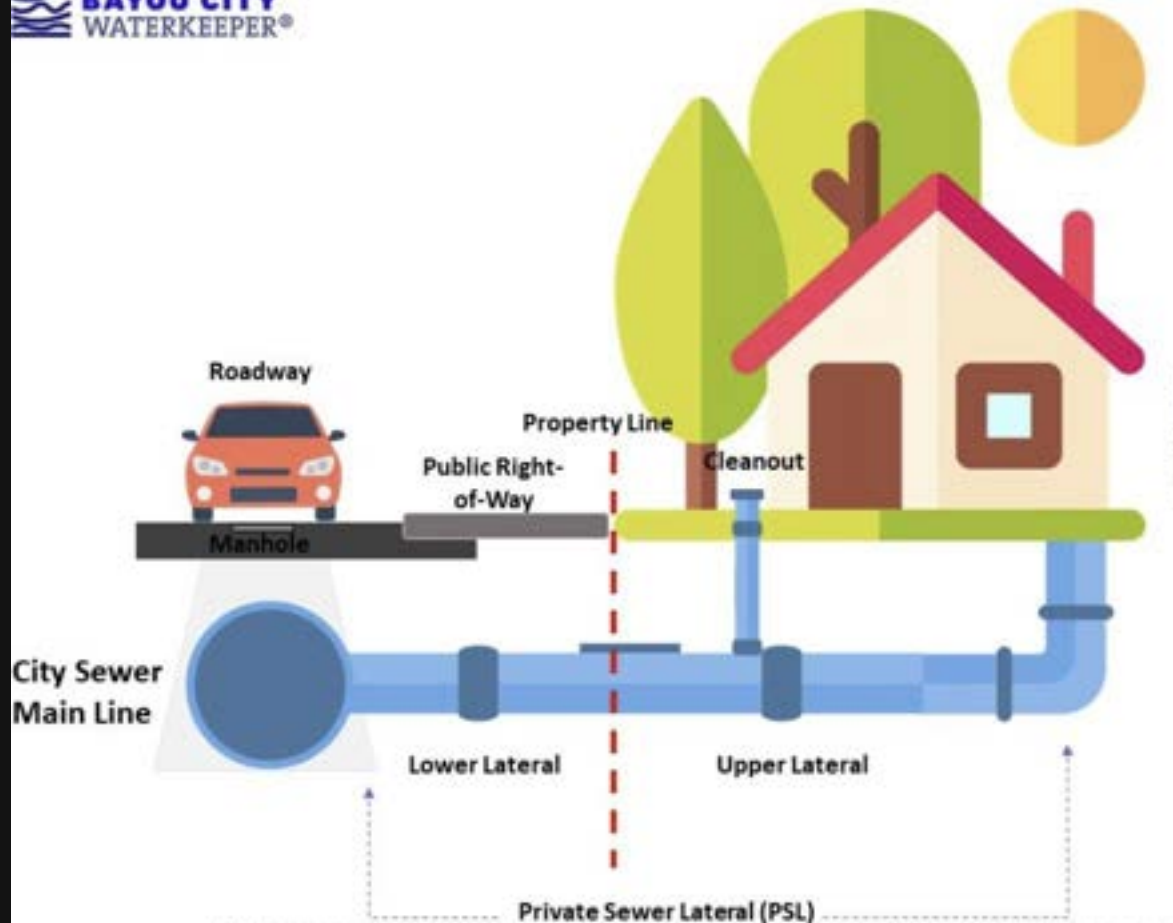


image: flickr.com

It is the property owner responsibility to maintain the sewer lateral that connects their home to the sewer main

Those neighborhoods receiving the lowest grade of "D" were colored red and considered hazardous.



North Houston

Aldine

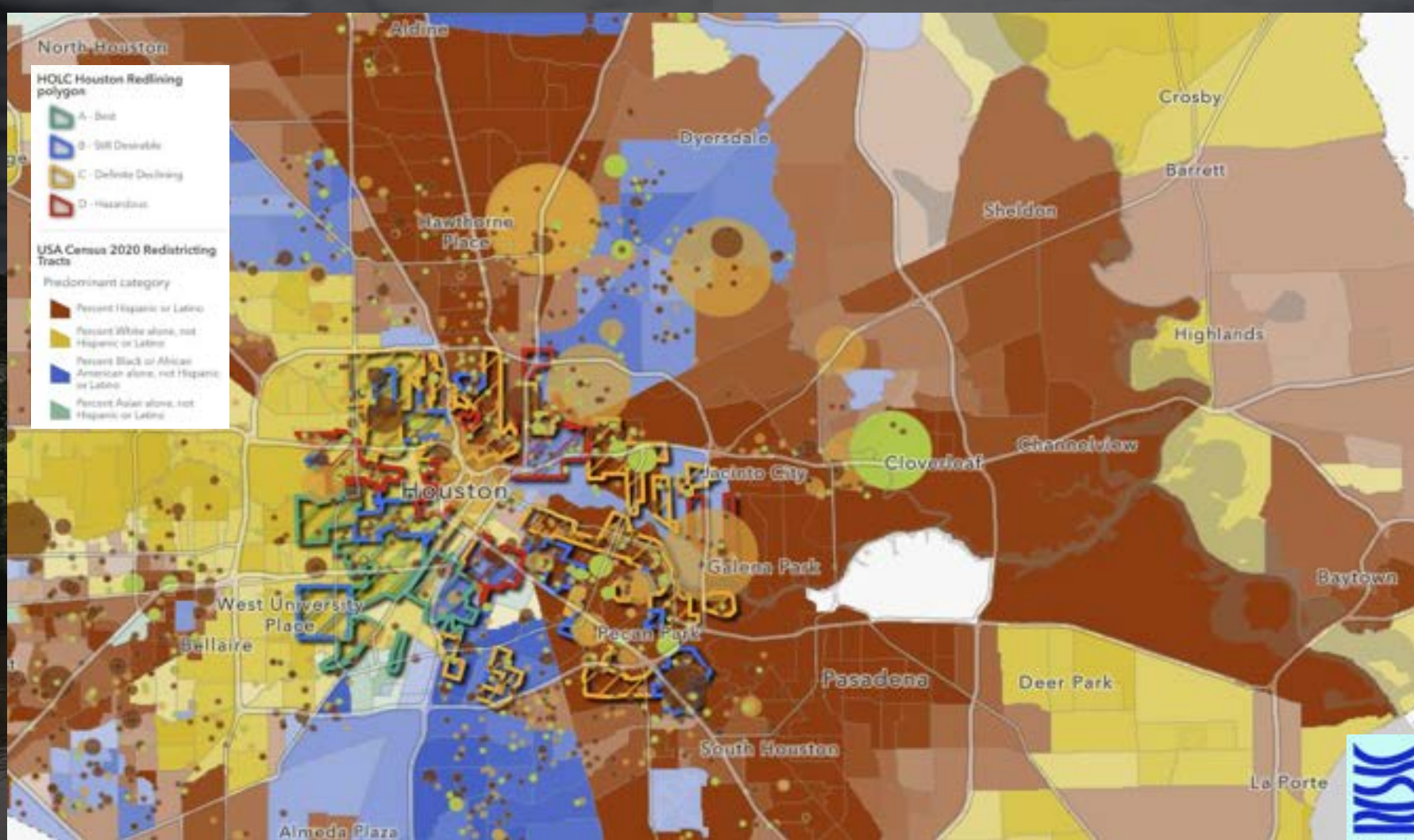
**HOLC Houston Redlining
polygons**

-  A - Best
-  B - Still Desirable
-  C - Definitely Declining
-  D - Hazardous

**USA Census 2020 Redistricting
Tracts**

Predominant category

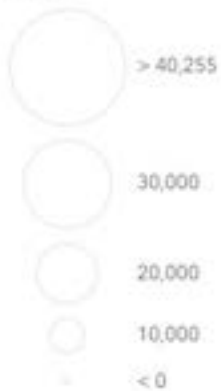
-  Percent Hispanic or Latino
-  Percent White alone, not Hispanic or Latino
-  Percent Black or African American alone, not Hispanic or Latino
-  Percent Asian alone, not Hispanic or Latino



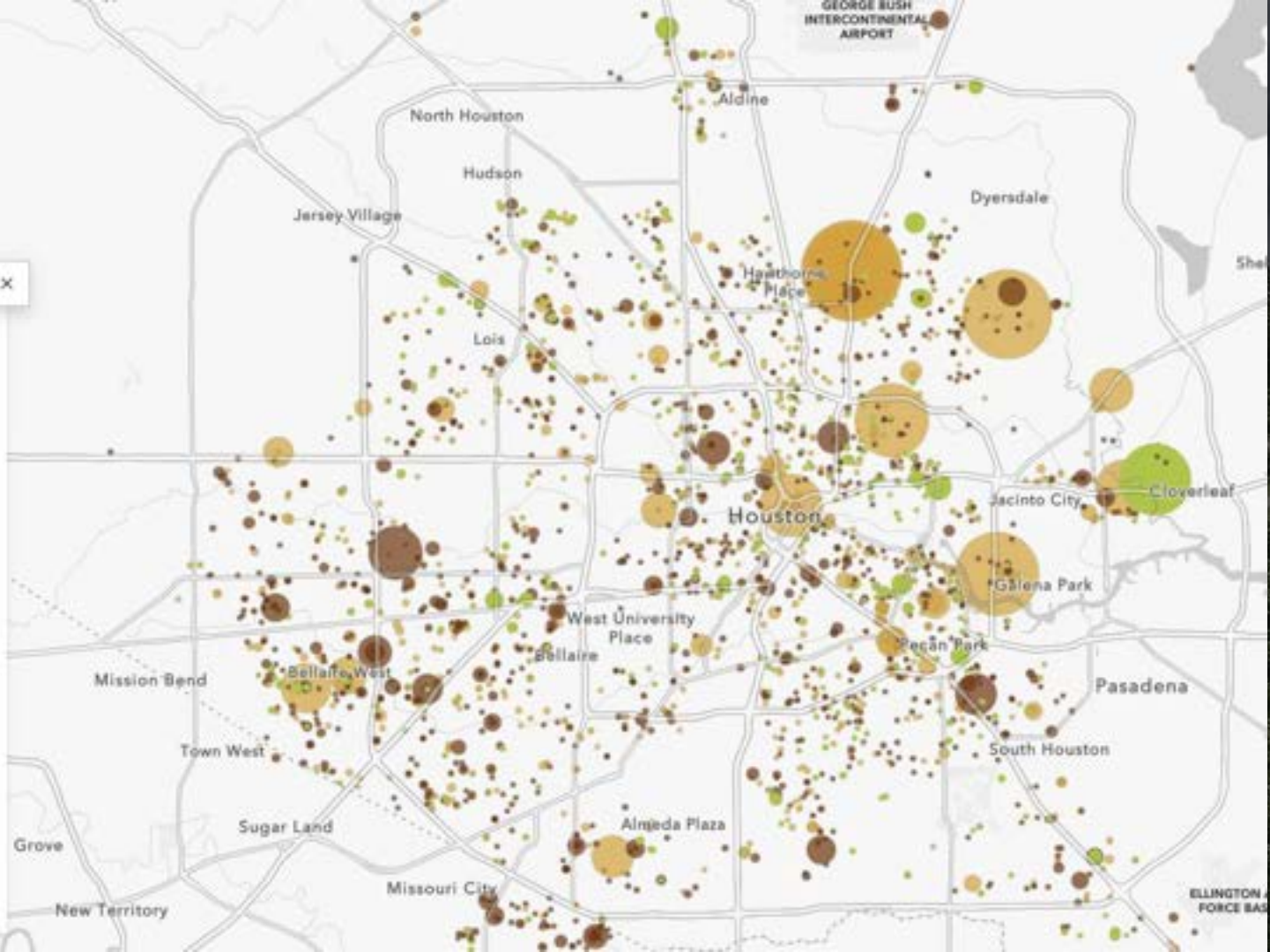
Over Flow

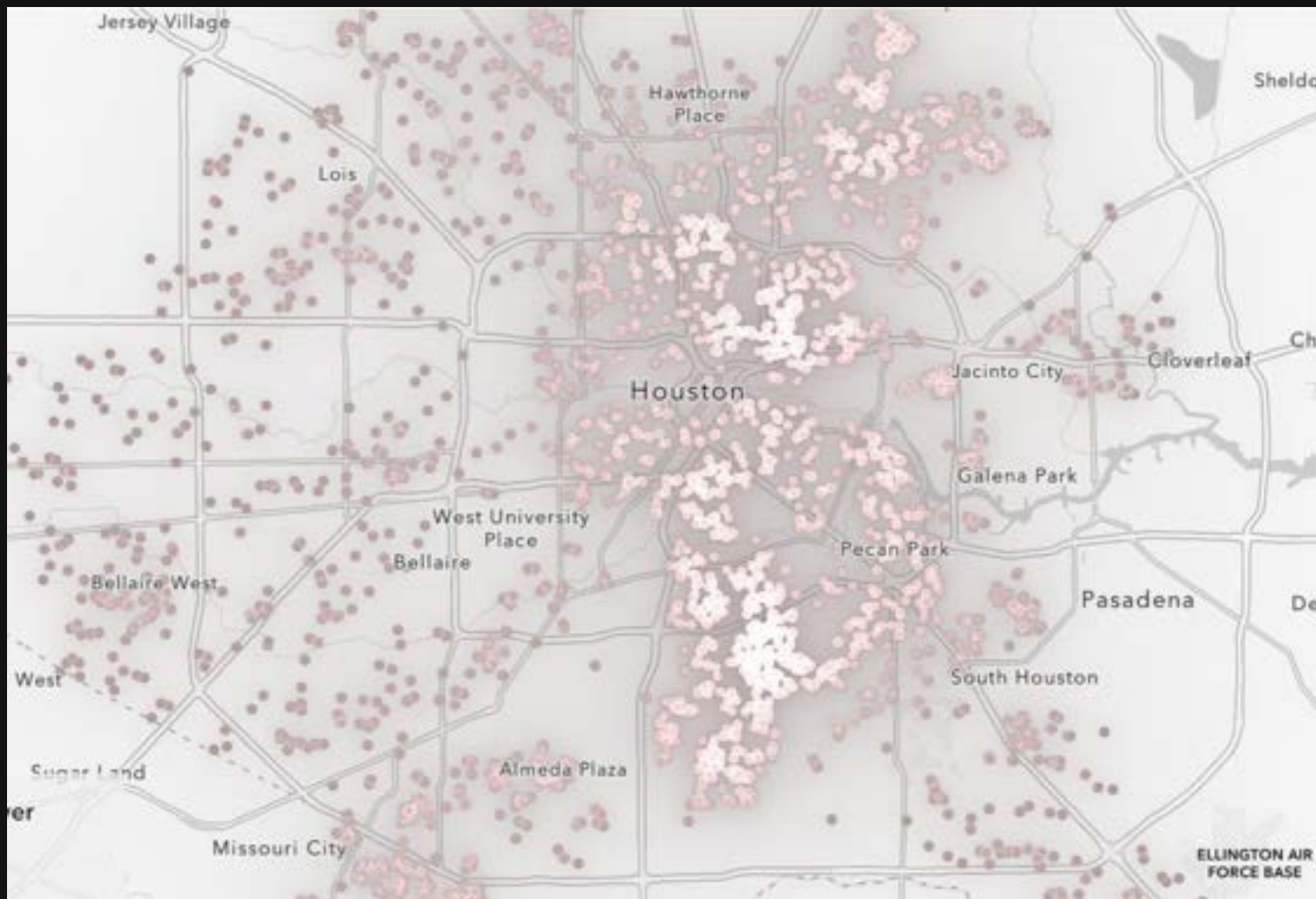
- 2023
- 2022
- 2021

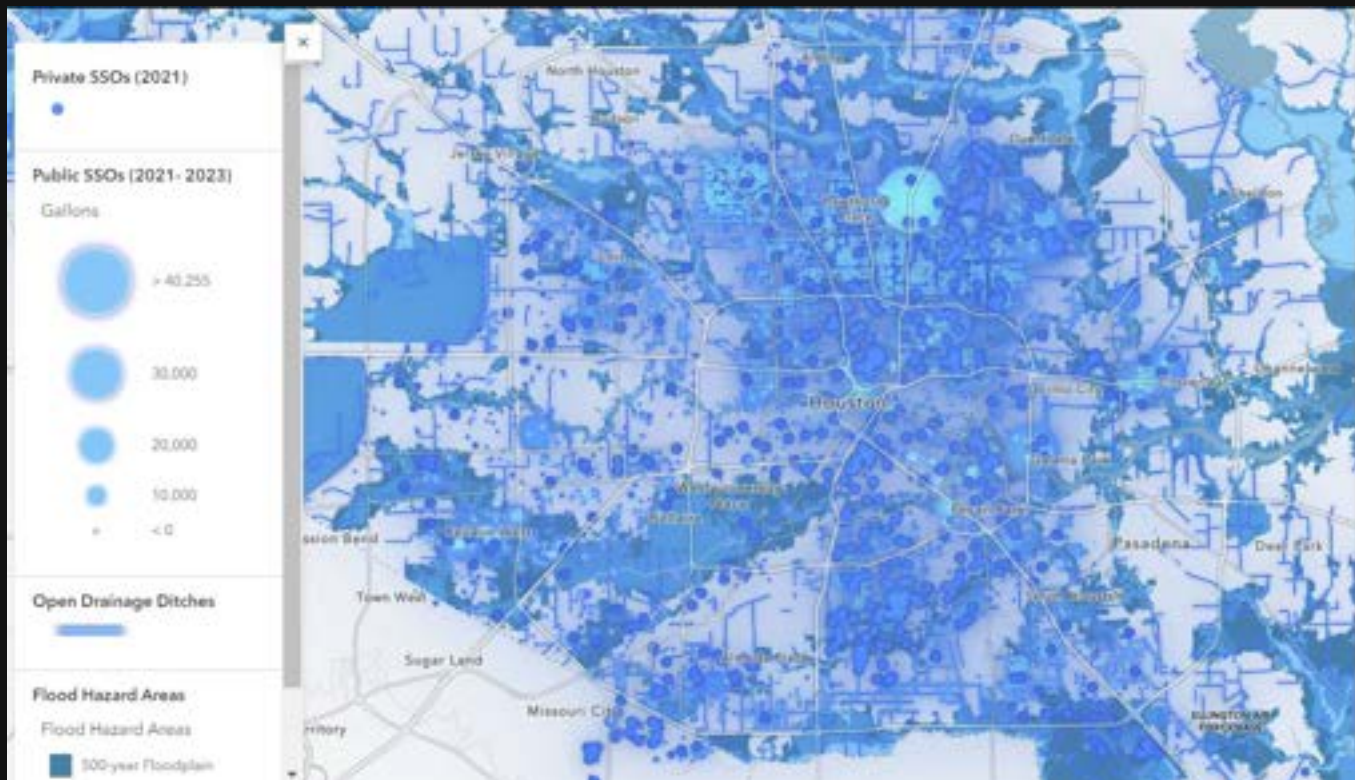
Gallons



x



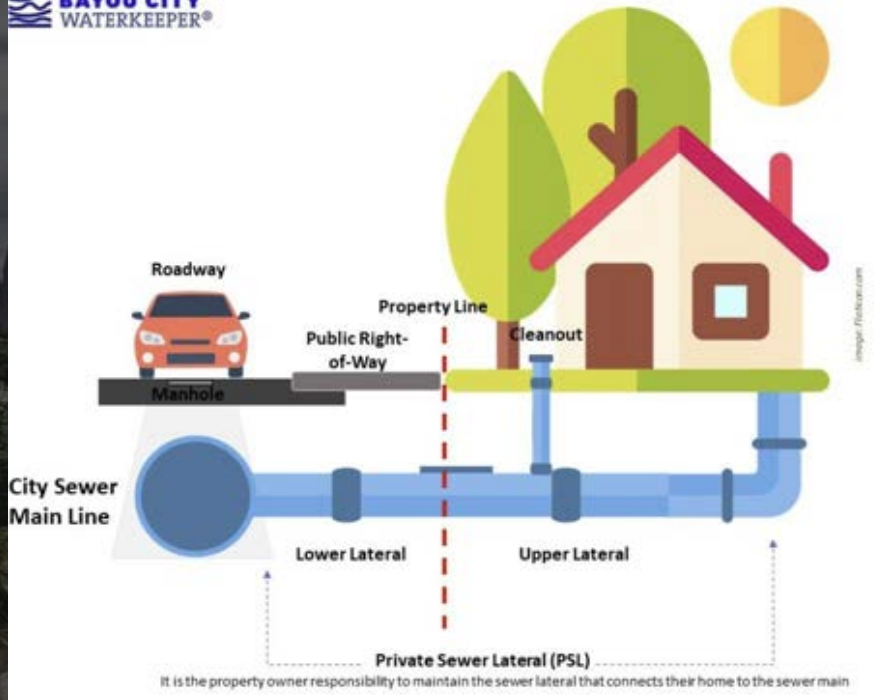




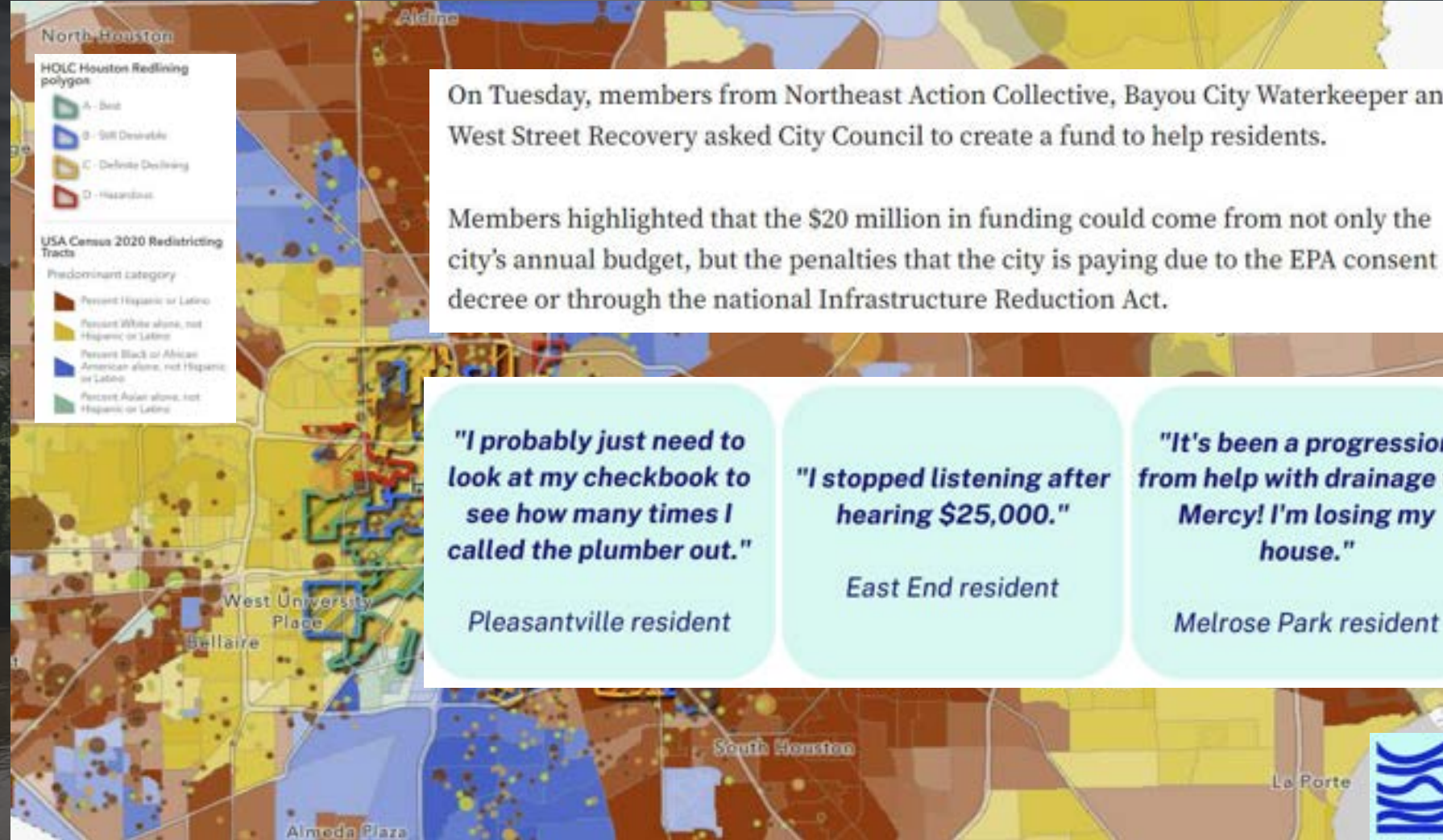
The two zip codes with the highest reported number of overflows are **77023** (Gulfgate, east Wayside area), **77026** (Kashmere Gardens/Northeast Houston) over the years 2021 and 2022.

If you look at the highest volume of overflows, **77093**, Jensen/south of East Aldine area, reports highest volume of overflows for 2021.

For private sewer lateral data, 180 overflows reported in **77016**, which is again the Northeast/East Little York area and 164 overflows reported in **77033** in Southeast Houston.



What happens if the sewer overflow is occurring on private property?



HCLC Houston Redlining polygons

- A - Best
- B - Still Desirable
- C - Definite Declining
- D - Hazardous

USA Census 2020 Redistricting Tracts

Predominant category

- Percent Hispanic or Latino
- Percent White alone, not Hispanic or Latino
- Percent Black or African American alone, not Hispanic or Latino
- Percent Asian alone, not Hispanic or Latino

On Tuesday, members from Northeast Action Collective, Bayou City Waterkeeper and West Street Recovery asked City Council to create a fund to help residents.

Members highlighted that the \$20 million in funding could come from not only the city's annual budget, but the penalties that the city is paying due to the EPA consent decree or through the national Infrastructure Reduction Act.

"I probably just need to look at my checkbook to see how many times I called the plumber out."

Pleasantville resident

"I stopped listening after hearing \$25,000."

East End resident

"It's been a progression from help with drainage to, Mercy! I'm losing my house."

Melrose Park resident



- 1. Invest \$20 million into a private sewer lateral repair fund** to be administered by Houston Public Works/Houston Water and seek funding. The City should (i) set up the fund from an administrative perspective within Houston Water, (ii) allocate funds under the annual city budget, (iii) modify the consent decree's stipulated penalties provision and/or to add a supplemental environmental project, (iv) create a state-level supplemental environmental project to supplement funding through state-level enforcement efforts, and (v) pull down funds available through the Infrastructure Reduction Act, Bipartisan Infrastructure Law, Community Development Block Grants, and other federal funding sources. By committing \$20 million, the city will invest one penny into private sewer laterals for every one dollar it spends on the public system through the consent decree.
- 2. Make funding flexible to address health impacts of sewage.** Given the health impacts of sewage problems, the fund should allow residents' reimbursement for healthcare costs associated with sewage problems and make testing available to ensure sewage has not had impacts on drinking water.
- 3. Evaluate neighborhoods for sewer-line replacement across an entire street or neighborhood.** Northeast Houston residents voiced concerns about their lines as a whole, especially given examples when the City of Houston insists line repairs are residents' responsibility only for residents to discover the problems originated in the city's line. Community sewer lines in the City's oldest neighborhoods (such as the East End) should also be disconnected and fully phased out.
- 4. Create transparency in ongoing consent decree planning** by sharing processes and timelines on the City's wastewater consent decree page. This will enable community members to understand opportunities to give input and advocate more effectively for themselves and their neighbors.
- 5. Create language accessibility in ongoing consent decree processes** by translating all information into the city's major languages, including, at a minimum, Spanish, Vietnamese, and Mandarin and by providing interpretation services when conducting any outreach or in-person community meetings in the top languages identified in the specific neighborhoods or City Council districts.
- 6. Create transparency and internal and external clarity about the City's obligations to investigate and determine the root cause of sewage issues.** This should be published on the City's wastewater consent decree website and shared with Public Works staff. This can avoid residents needing to advocate relentlessly when City staff disclaims the responsibility to repair problems that the City in fact regards as its obligation.
- 7. Change policy to require, and allocate funding to support, investigation of the root cause of sewage problems to avoid unfair costs being imposed on community members.** This can avoid residents hiring their own plumbers to identify problems that are in fact the City's responsibility, as well as reduce cost burdens of addressing private sewer lateral problems, and result in less sewage problems for all residents.
- 8. Remove barriers to reporting.** Create ways to report sewage problems at homes that do not place community members at risk for incurring fines. Having a private-sewer lateral fund accessible to lower-wealth residents and investigating the root cause would both help remove this barrier.
- 9. Close gaps and fix errors in data.** The City's private sewer lateral data is limited because the City does not include volume in their reporting, and underreporting by residents means the City's data is under-inclusive. Further, the data contains errors. For example, 97.5 % of private sewer lateral datapoints from July 1, 2022 through June 29th, 2023 (extracted from the City of Houston's 2023 annual report) has incorrect zipcodes.



A group of people is gathered in front of a house, holding signs and banners. The signs prominently feature the acronym 'NAC' and the slogan 'WE WANT EQUITY AND WE WON'T'. One sign also includes a circular logo with a compass needle. The scene is outdoors, with trees and a utility pole visible in the background.

Key Takeaways:

- Visualizing Qualitative and Quantitative **data can inform and strengthen advocacy**
- **Community mapping** and data to action platforms like the Justice in the Sewers mapper can create another layer of visibility to systemic injustices in our watershed
- Academic and local community **partnerships** are critical to building trust, developing relevant tools and platforms to inspire equitable change
- Academic partnerships can **build capacity** and research and training opportunities - lasting relationships to sustain capacity (3 years of working together)
- **Data justice** is environmental justice and transparent data and public data is critical in having community informed decision making - CFRTF
- **Visualizations strengthen** story telling, and can be a powerful tool to advocate for and protect the environment

Questions and Thank you.

Mashal Awais

mashal@bayoucitywaterkeeper.org

Uilvim Ettore Franco

ug2@rice.edu