



BACTERIA IMPLEMENTATION GROUP (BIG)

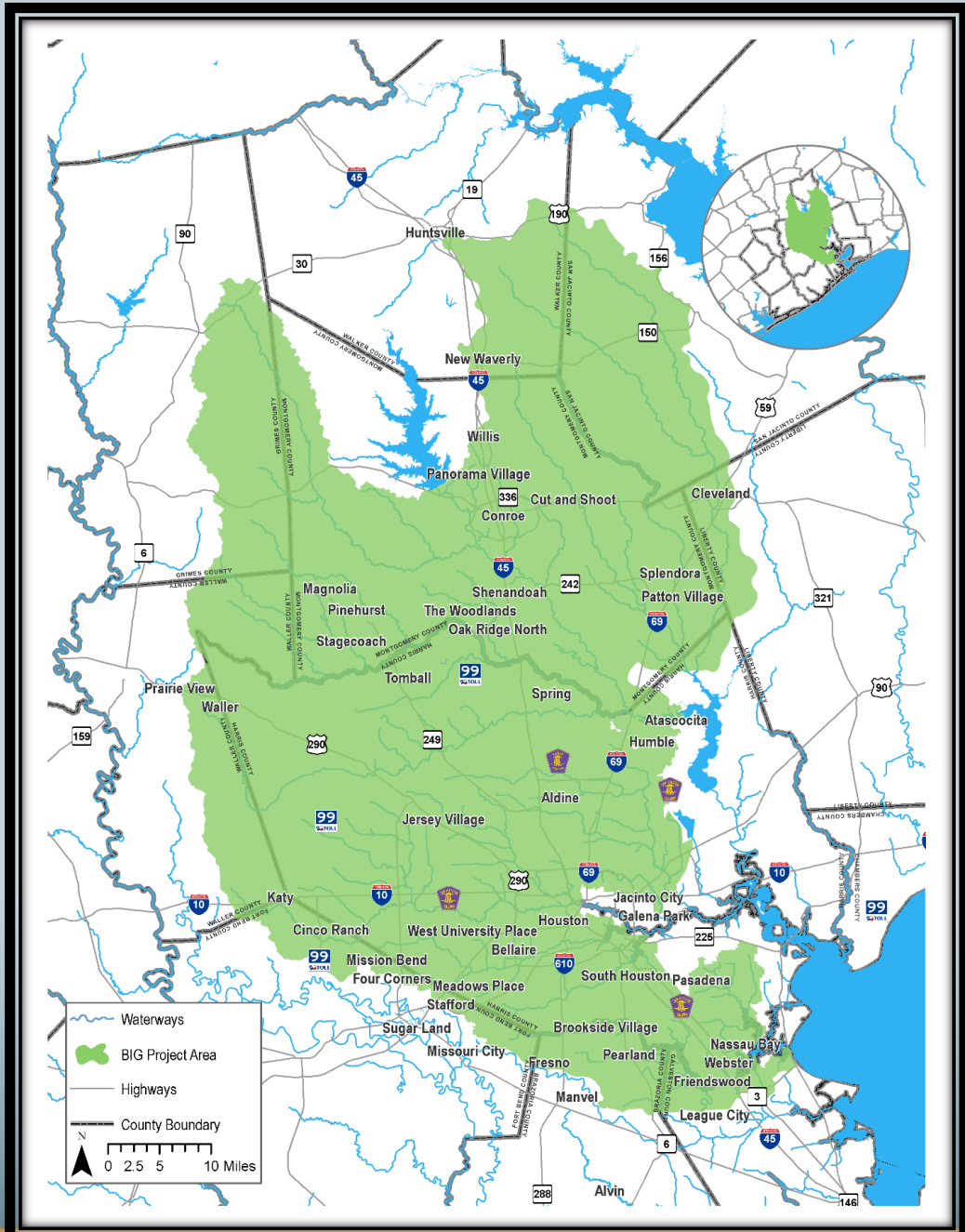
Fall Meeting
October 28, 2025



Photo Credit – Greens Bayou Coalition

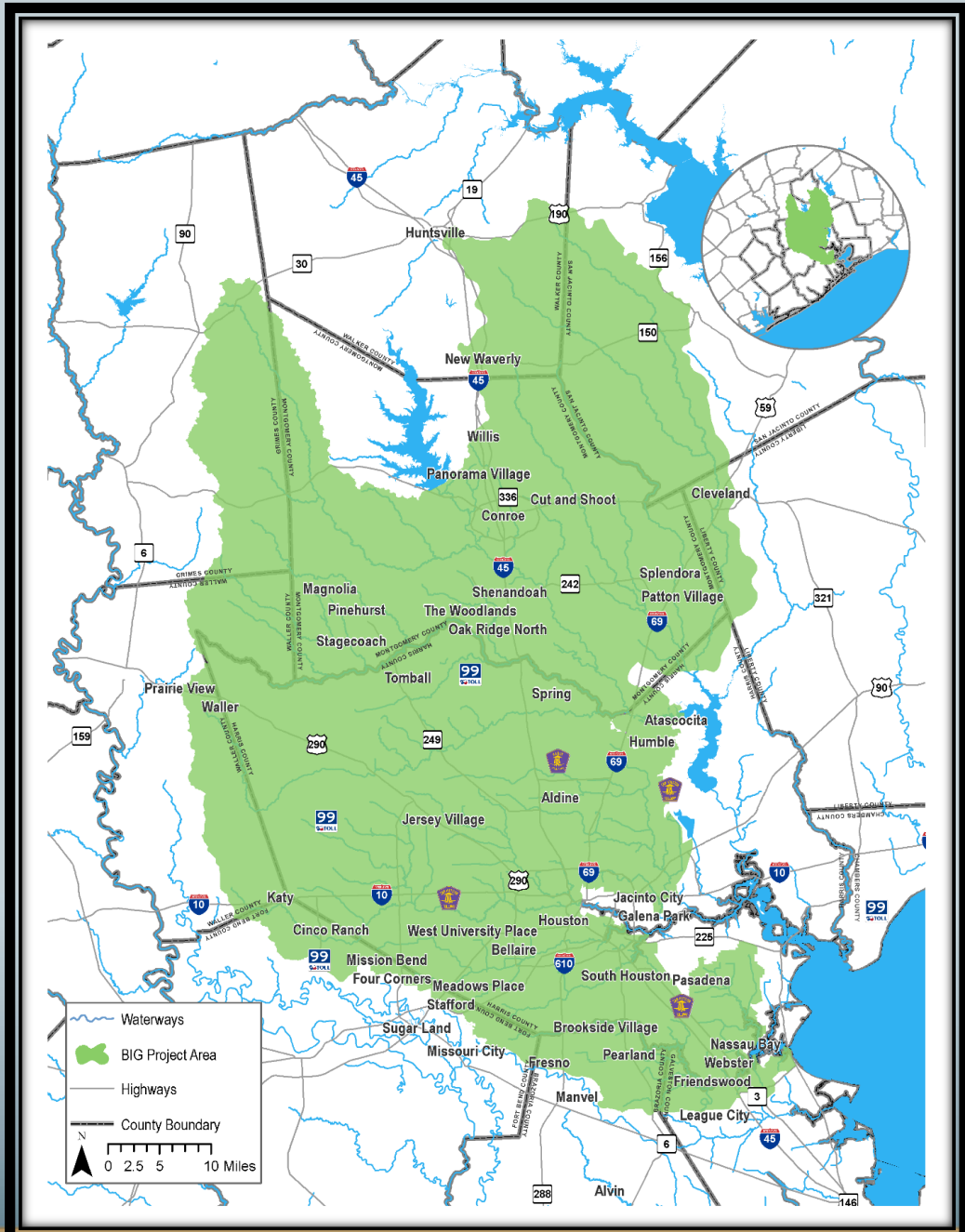
AGENDA

- Call to Order/Introductions
- Quorum Certification
- Review and Approve Changes to the BIG Roster
- Review and Approve Minutes
- Public Comment
- Item One: I-Plan Revision Update
- Item Two: 2024 Draft Annual Report
- Item Three: 2025 Annual Report Update
- Item Four: TMDL Program Update
- Item Five: Microbial Source Tracking Methods Presentation
- Item Six: Implementation Projects
- Item Seven: Other Business
- Adjourn



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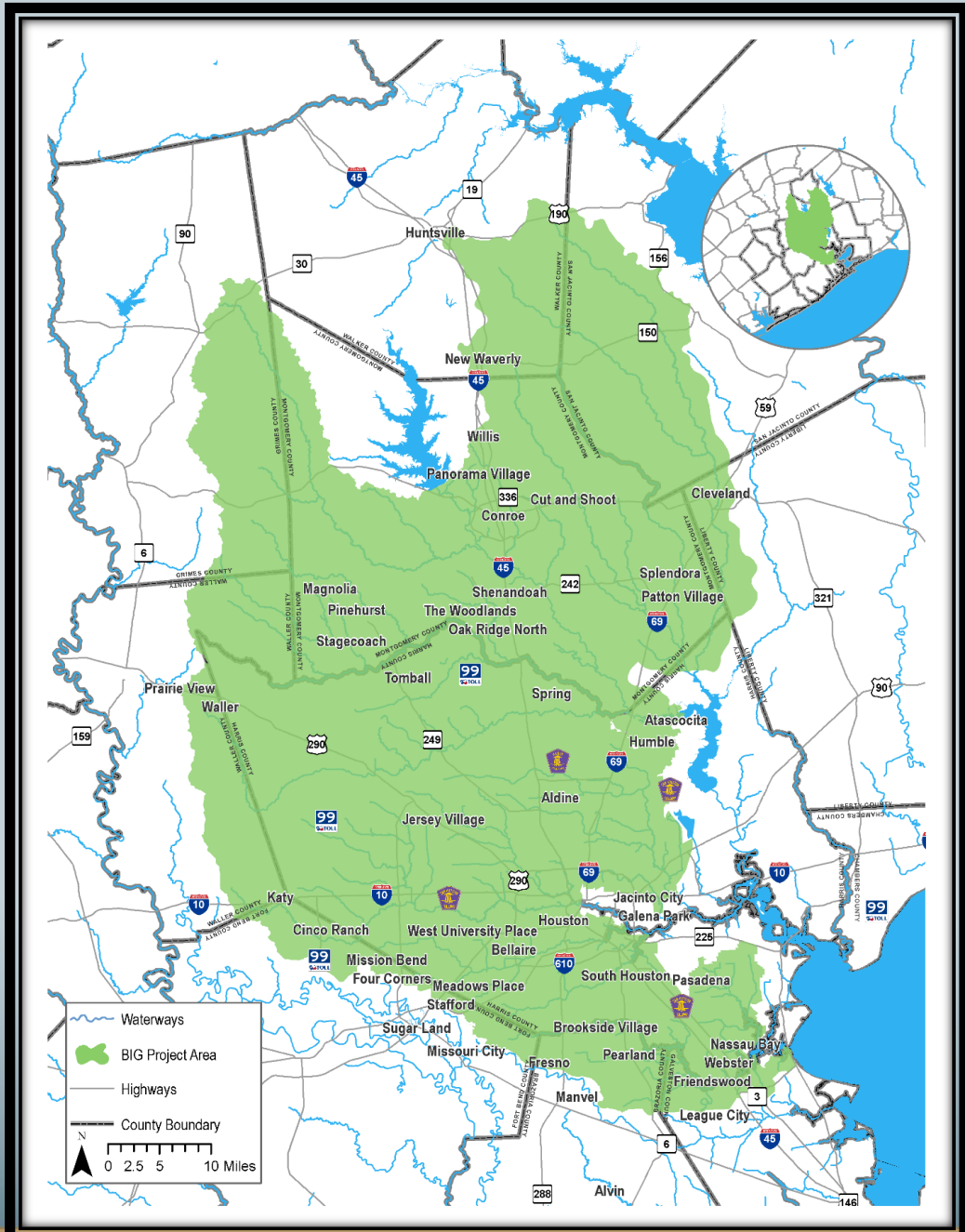
ROSTER UPDATES

- **BIG Membership**
 - **Morgan Henske (Urban County)**
Harris County
- **Alternates**
 - **Sergio Cisneros (Large City)**
City of Houston



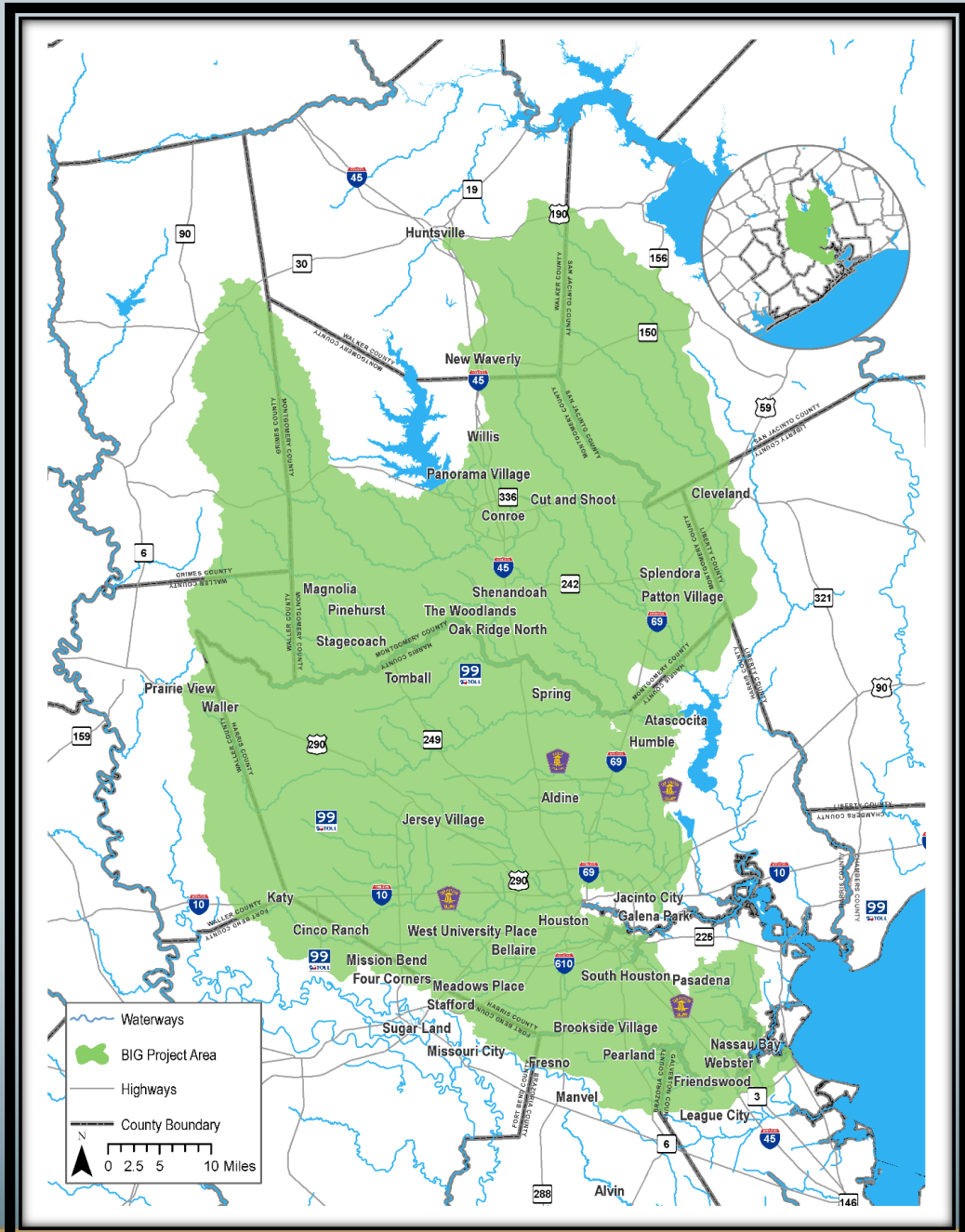
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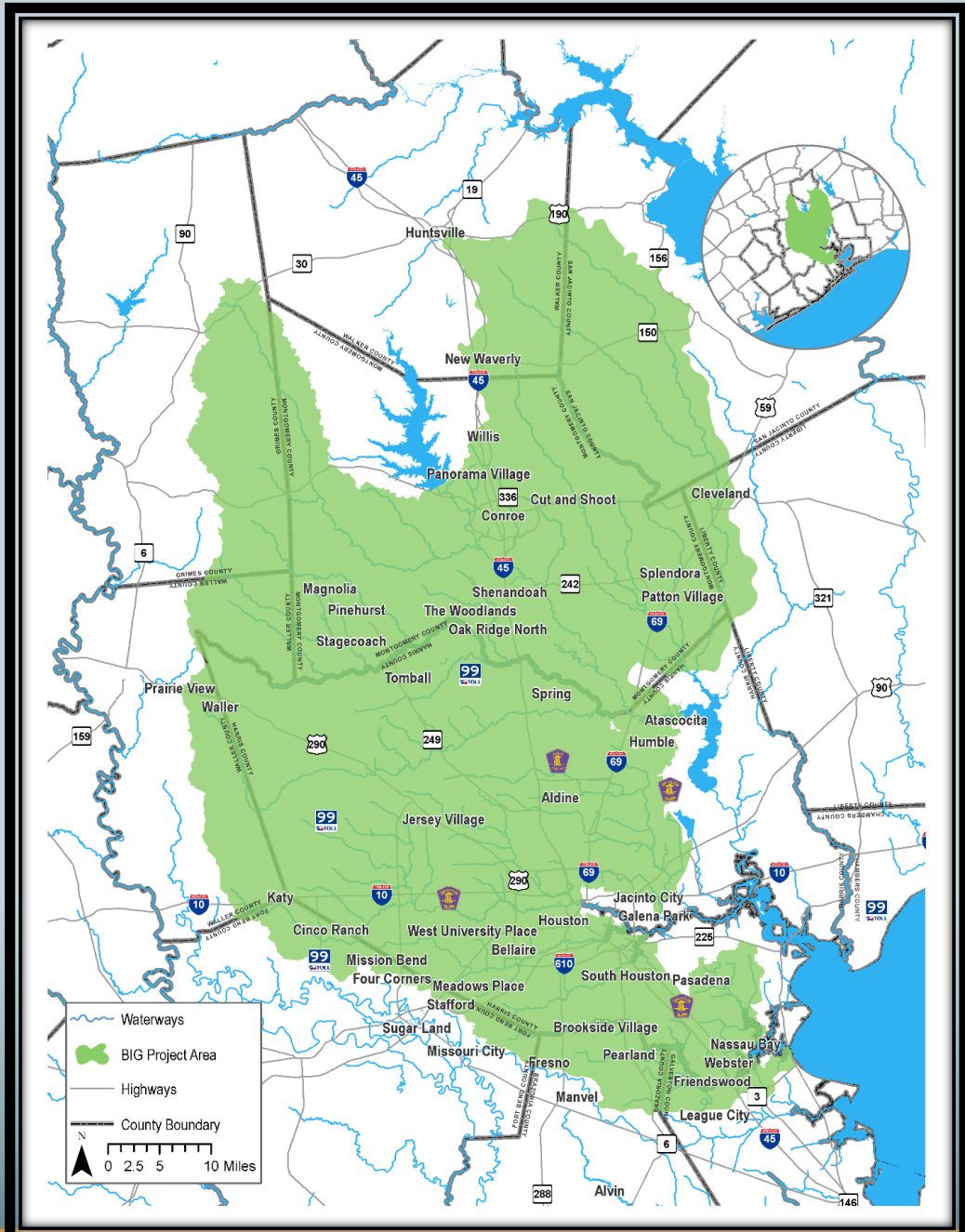
I-Plan Update

- 07/22/2025 – Monitoring and Research work group
- 08/05/2025 – Stormwater work group
- 08/12/2025 – WWTF/SSS work group
- 08/19/2025 – Animals/Agriculture/ Outreach work group
- 08/26/2025 – OSSF work group



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2024 Annual Report

- Calendar Year 2023
- Spotlight Stories
 - City of Houston Consent Decree Update
 - City of West University Place Sanitary Sewer Overflow Prevention Program
 - HCFCD Buffalo Bayou Park Revegetation and Biostabilization Project
 - Howard Hughes Holdings, Inc. – Chrysalis Lake LID Project
- Watershed Protection Plan Update
- Three BIG Ideas
- Implementation Progress

The logo for the Bacteria Implementation Group (BIG) features the letters 'BIG' in a large, bold, blue font with a white, bubbly, textured interior. The letters are set against a white background.

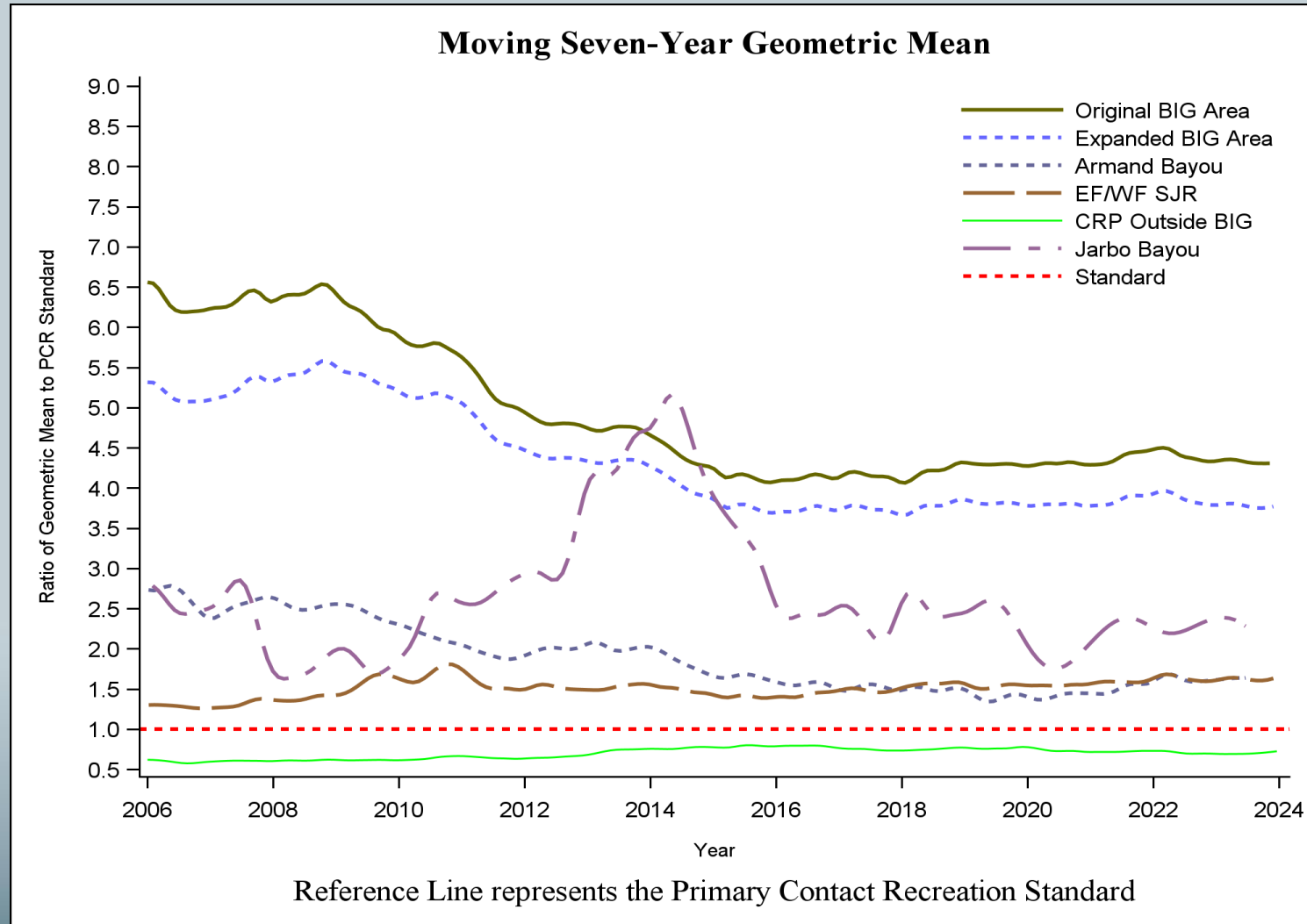
BACTERIA IMPLEMENTATION GROUP

2024 ANNUAL REPORT

JANUARY 1, 2023–DECEMBER 31, 2023

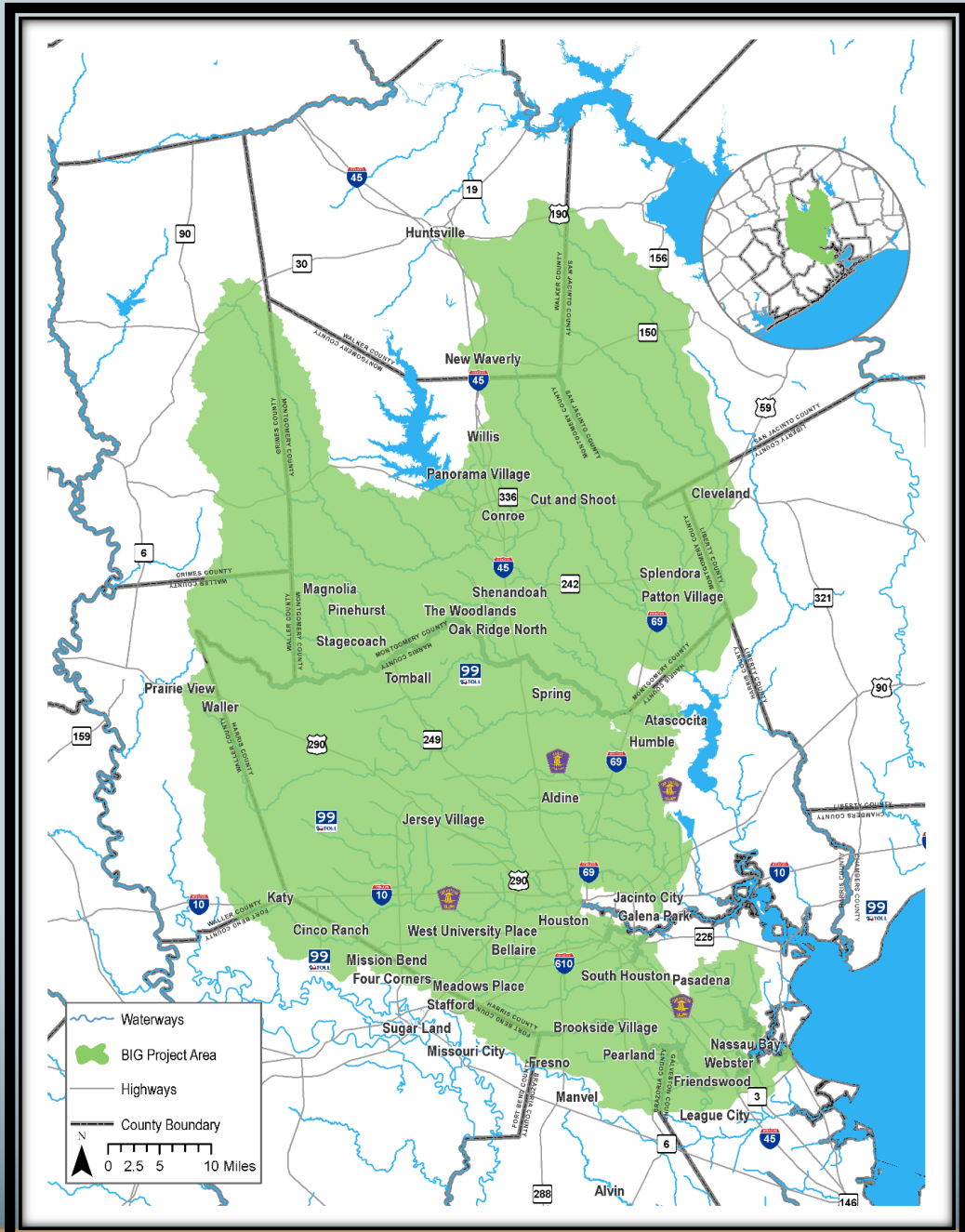


Bacteria Reduction Trend



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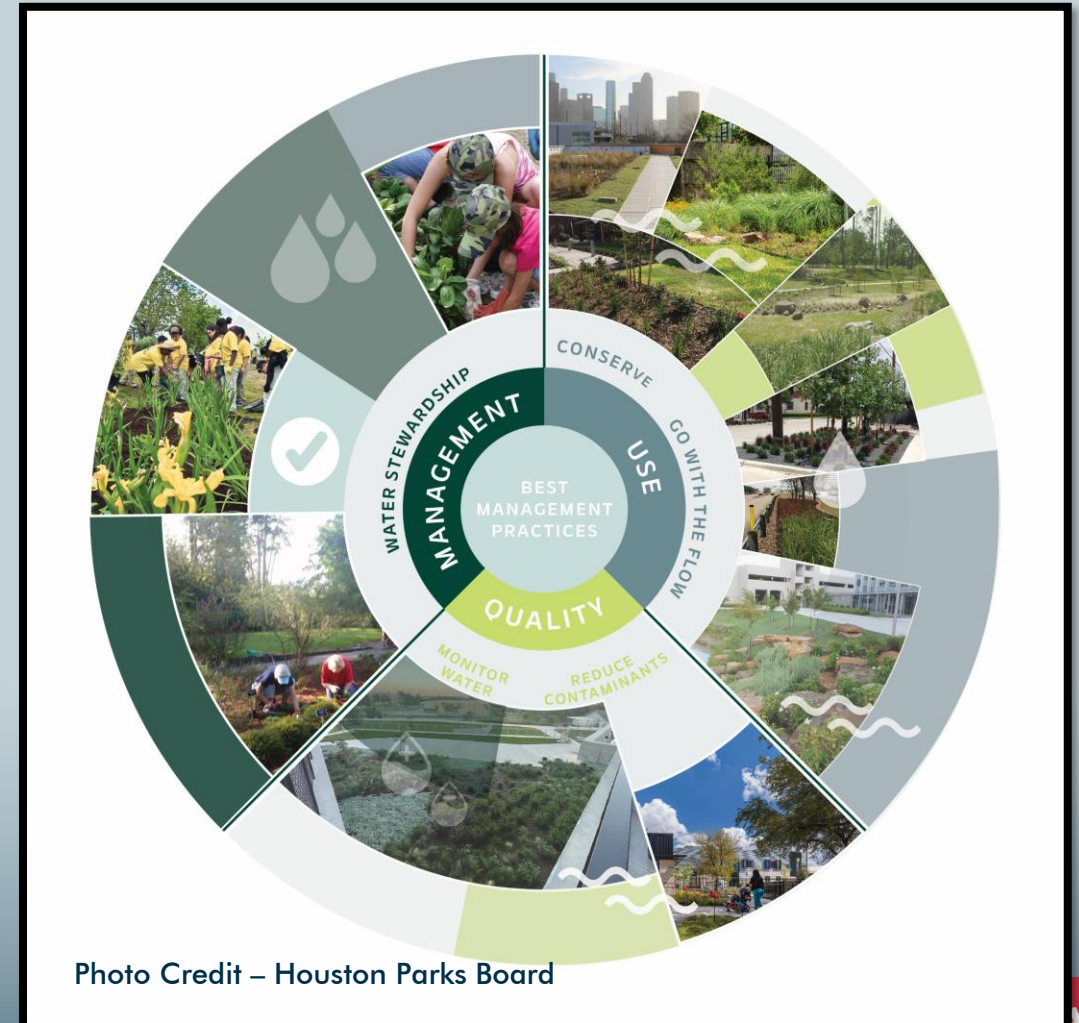
2025 Annual Report – Where We Stand



Photo Credit – Greens Bayou Coalition

2025 Annual Report

- Calendar Year 2024
- Spotlight Stories:
 - Targeted Monitoring 24/25
 - Green Infrastructure Efficacy Study
 - Wastewater Certification Program
 - WISE Awards 2025
- Three BIG Ideas – Stay the same?
- Implementation Progress based on Revised I-Plan.
- New look document



BIG PROJECT AREA DISCHARGE MONITORING REPORTS (DMRs)

Year	Total Grab/Max Results Reported from Permittees with Limits In Permits	Samples Exceeding Grab/ Max Limit	Percent Samples Exceeding Grab/Max Limit	Grab/Max Percent Compliance
2015	4601	171	3.7	96.3
2016	4688	127	2.7	97.3
2017	4786	146	3.1	96.9
2018	4899	112	2.3	97.7
2019	5073	160	3.2	96.8
2020	5142	119	2.3	97.7
2021	5207	132	2.5	97.5
2022	5272	130	2.5	97.5
2023	5320	239	4.5	95.5
2024	5356	308	5.8	94.2

H-GAC PLANNING AREA DMRs

Year	Total Grab/Max Results Reported from Permittees with Limits In Permits	Samples Exceeding Grab/Max Limit	Percent Samples Exceeding Grab/Max Limit	Grab/Max Percent Compliance
2020	8,389	219	2.61	97.39
2021	8,571	252	2.94	97.06
2022	8,752	241	2.75	97.25
2023	8,949	447	4.99	95.01
2024	9,194	567	6.17	93.83

UPPER OYSTER CREEK DMRs

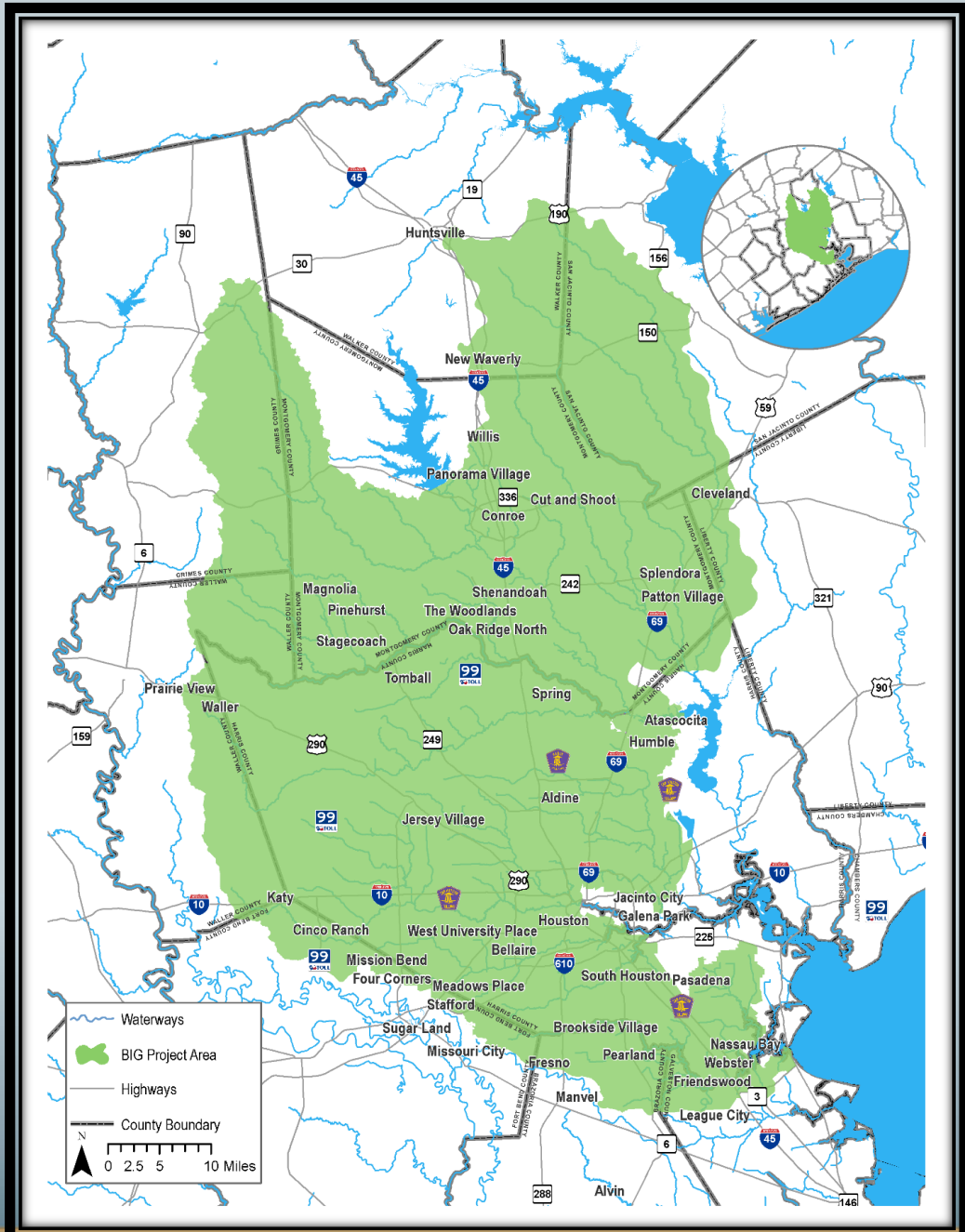
Year	Total Grab/Max Results Reported from Permittees with Limits In Permits	Samples Exceeding Grab/ Max Limit	Percent Samples Exceeding Grab/Max Limit	Grab/Max Percent Compliance
2018	160	3	1.9	98.1
2019	177	4	2.3	97.7
2020	184	1	0.5	99.5
2021	184	1	0.5	99.5
2022	185	4	2.2	97.8
2023	191	14	7.3	92.7
2024	226	11	4.9	95.1

Big CREEK DMRs

Year	Total Grab/Max Results Reported from Permittees with Limits In Permits	Samples Exceeding Grab/Max Limit	Percent Samples Exceeding Grab/Max Limit	Grab/Max Percent Compliance
2018	92	5	5.4	94.6
2019	99	1	1.0	99.0
2020	103	2	1.9	98.1
2021	103	2	1.9	98.1
2022	107	.	.	.
2023	108	7	6.5	93.5
2024	106	6	5.7	94.3

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For Total Maximum Daily Loads for Bacteria
in the Houston-Galveston Region

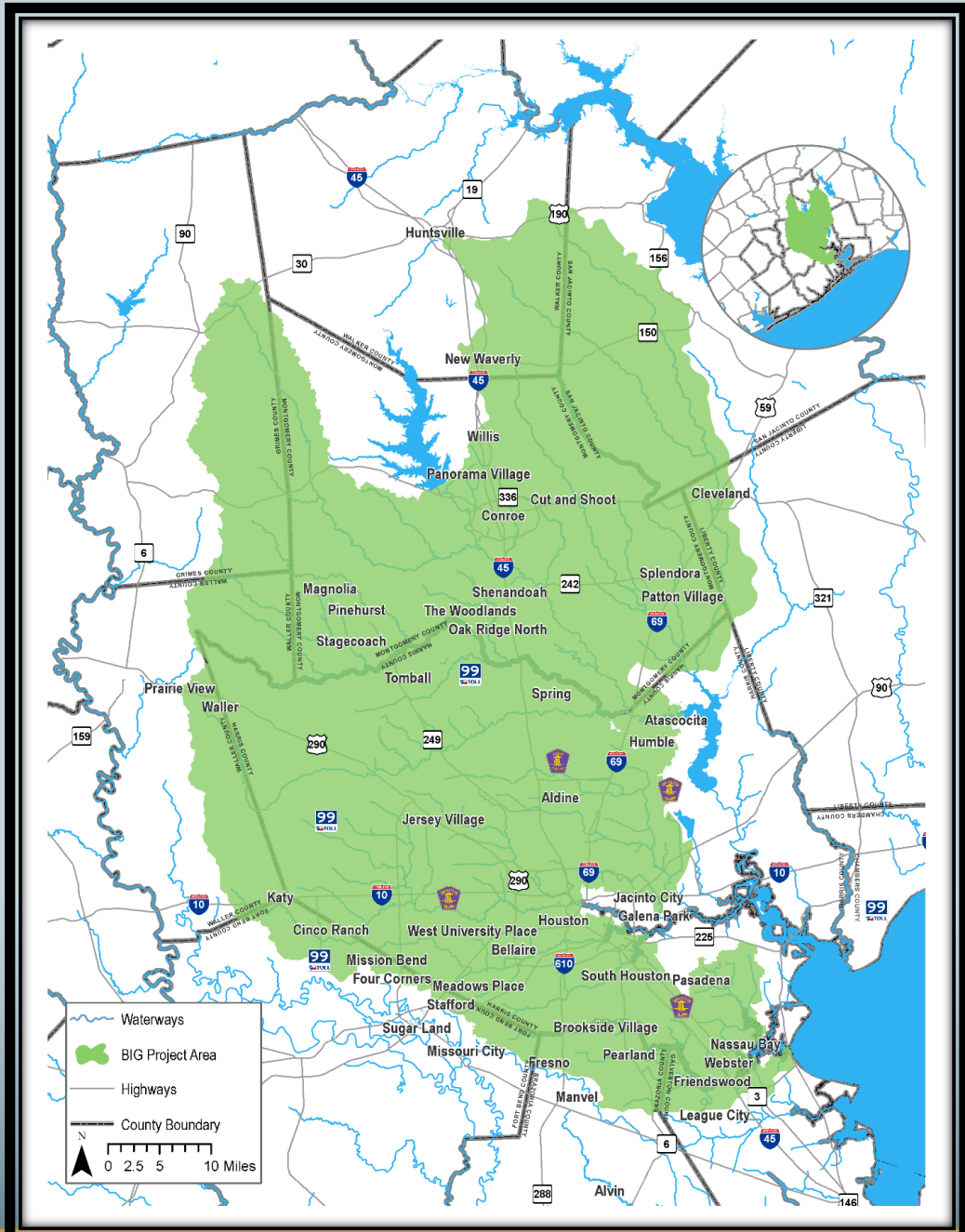
TMDL Program Update

Ms. Sophia Staska
TCEQ Project Manager



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New Microbial Source Tracking Methods

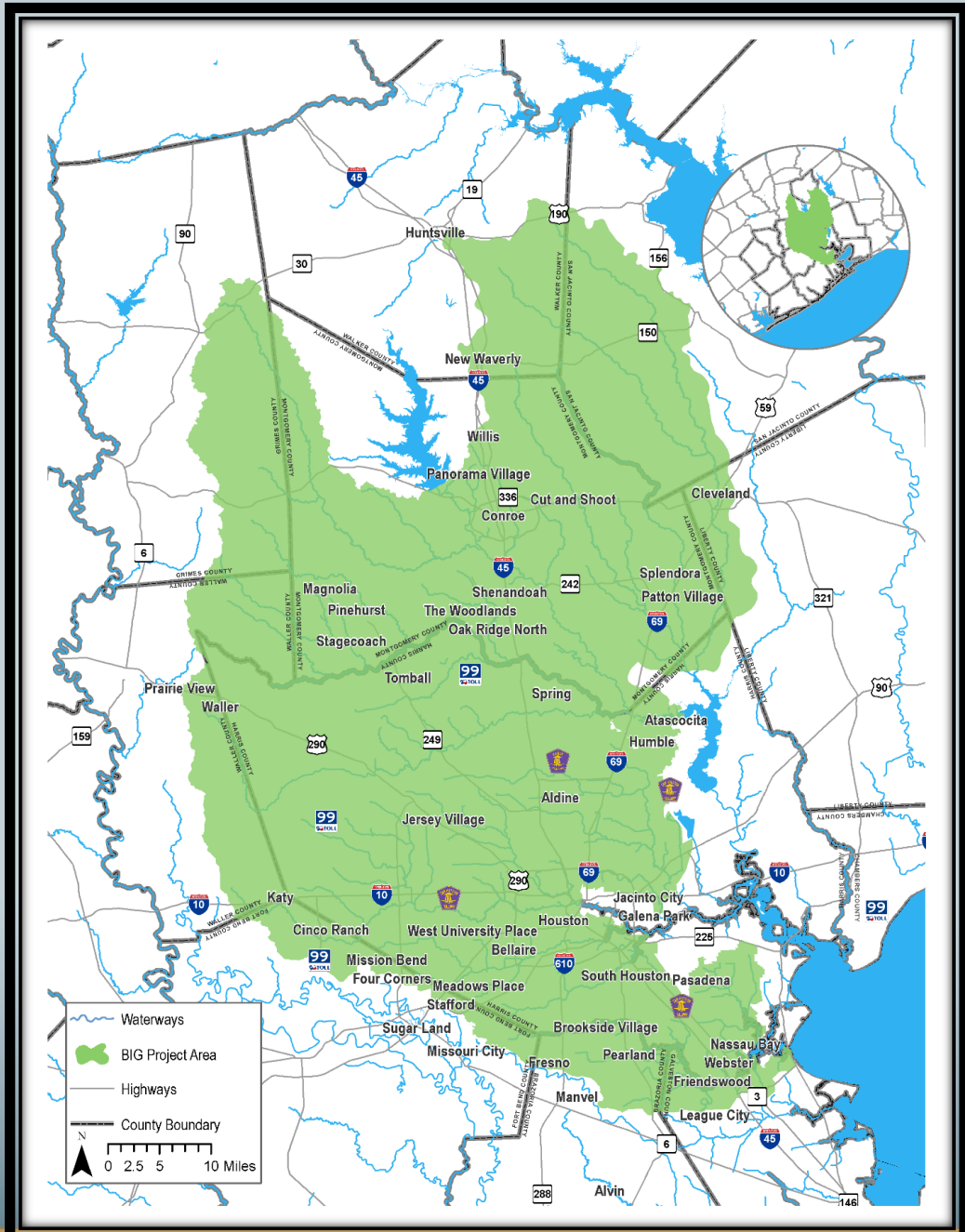
Dr. Michael LaMontagne,
University of Houston – Clear
Lake

For Total Maximum Daily Loads for Bacteria
in the Houston-Galveston Region



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Implementation Presentations

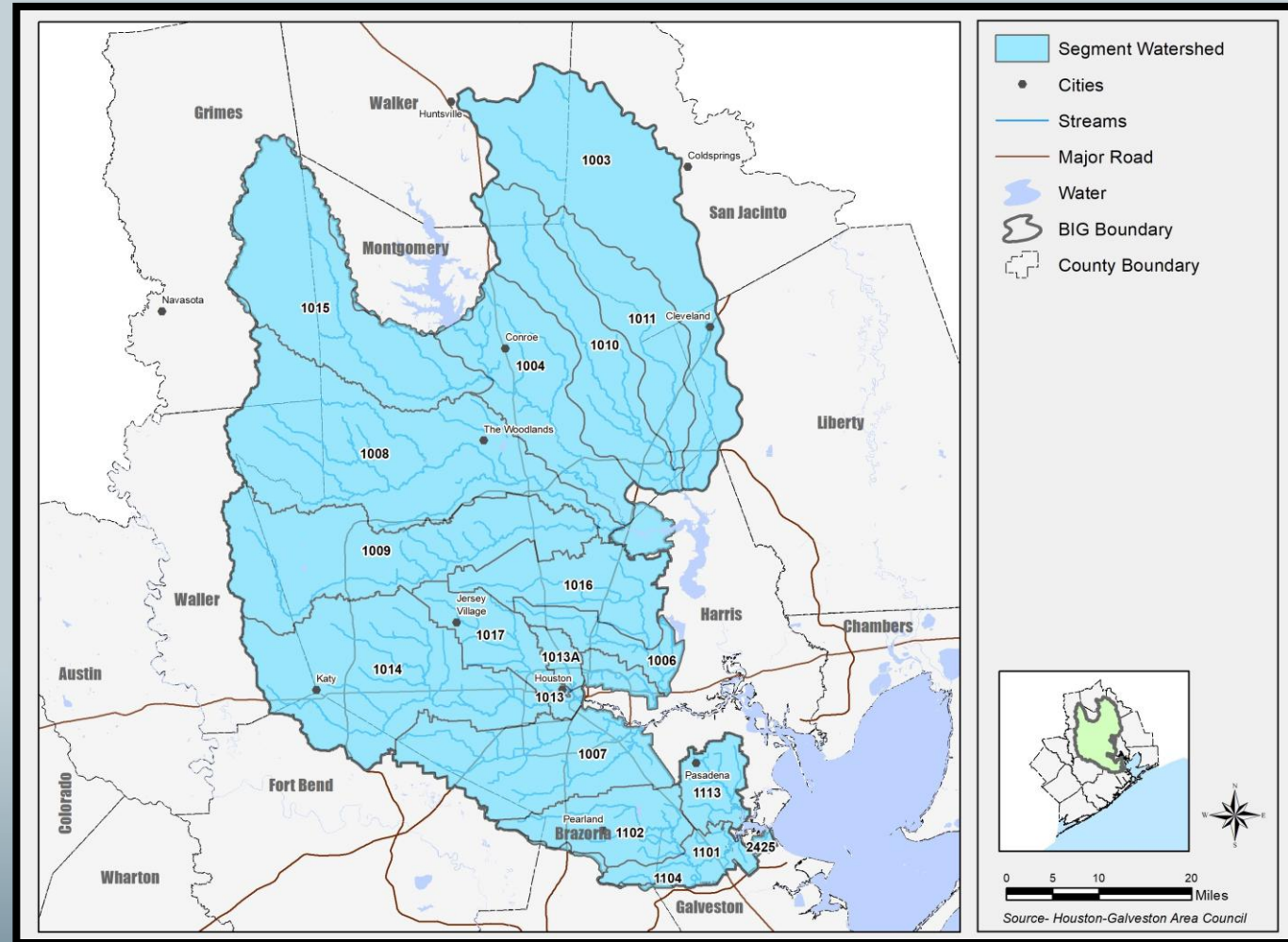
- **H-GAC**
 - Watershed Delineation in Support of the BIG – Ms. Jessica Casillas
 - WISE Awards 2025 – Ms. Rachel Windham
 - Wastewater Operators Training and Employment Website – Mr. Todd Running



H-GAC Projects

Watershed Delineation in Support of the BIG –

Ms. Jessica Casillas – Senior Planner, H-GAC



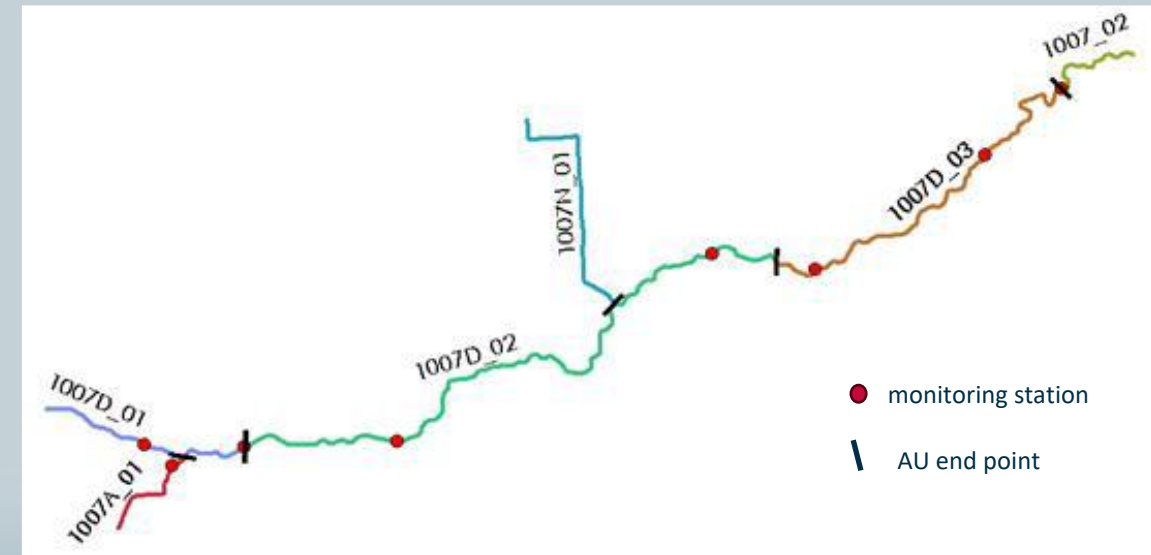
Watershed Delineation

Bacteria Implementation Group
Fall 2025

Oct 28, 2025

Project Overview

- Why delineate to the TCEQ assessment unit level?
 - allows for a finer scale analysis of bacterial sources and transport pathways
 - Allows managers to focus resources on the **most affected areas**, leading to more measurable improvements in water quality
 - Current watersheds are at the TCEQ segment level



Project Overview

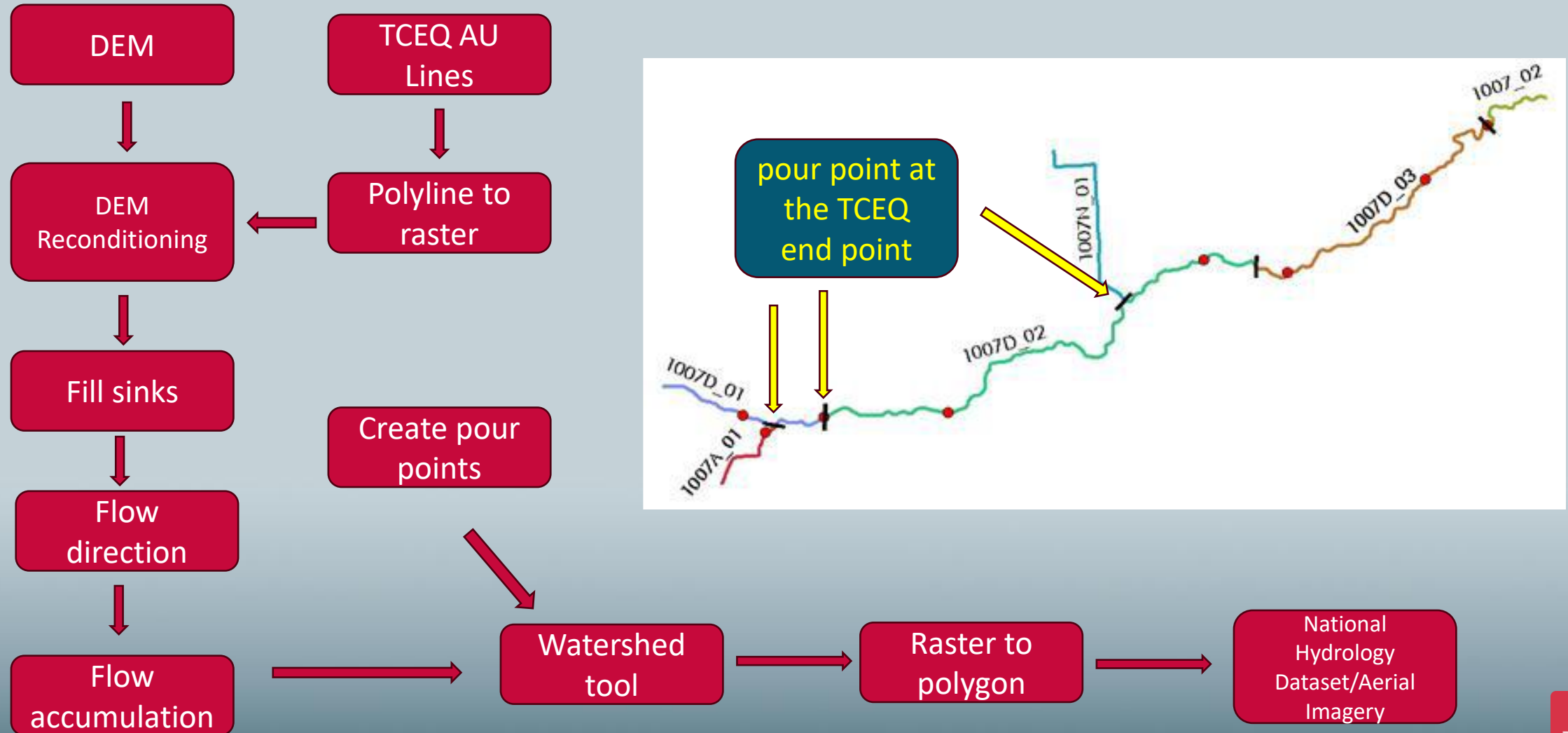


USGS Digital Elevation Model



Bacteria Implementation Group
Assessment Unit Level
Subwatersheds

Methodology



Data Sources

- Obtain Digital Elevation Models (USGS)
- May need multiple downloads depending on project extent
- [USGS National Map](#) (link)

USGS science for a changing world

DEM and DSM data for the Jan 2025 [download updates](#) are now available [here](#).

TNM Download (v2.0) Help Custom Views Share Link Contact Us [topoBuilder](#)

Datasets Products Cart

	Extent: 1 x 1 degree Vendor Metadata Download Link (TIF)	
	USGS 1/3 Arc Second n30w095 20240229 Published Date: 2024-02-29 Metadata Updated: 2024-03-28 Format: GeoTIFF Extent: 1 x 1 degree Footprint Thumbnail Zoom To Info/Metadata Vendor Metadata Download Link (TIF)	
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Map showing Houston area with coordinates: XY -96.538086°, 29.701826°
Zoom: 9
Scale: 1155581
20 km

Data Sources

- Obtain latest TCEQ assessment unit lines
- TCEQ releases updated segment and unit level data with the Integrated Report
- [TCEQ GIS Data Hub](#) (link)






TEXAS COMMISSION ON ENVIRONMENTAL QUALITY


GIS Data Hub

Connecting people to the environment with data

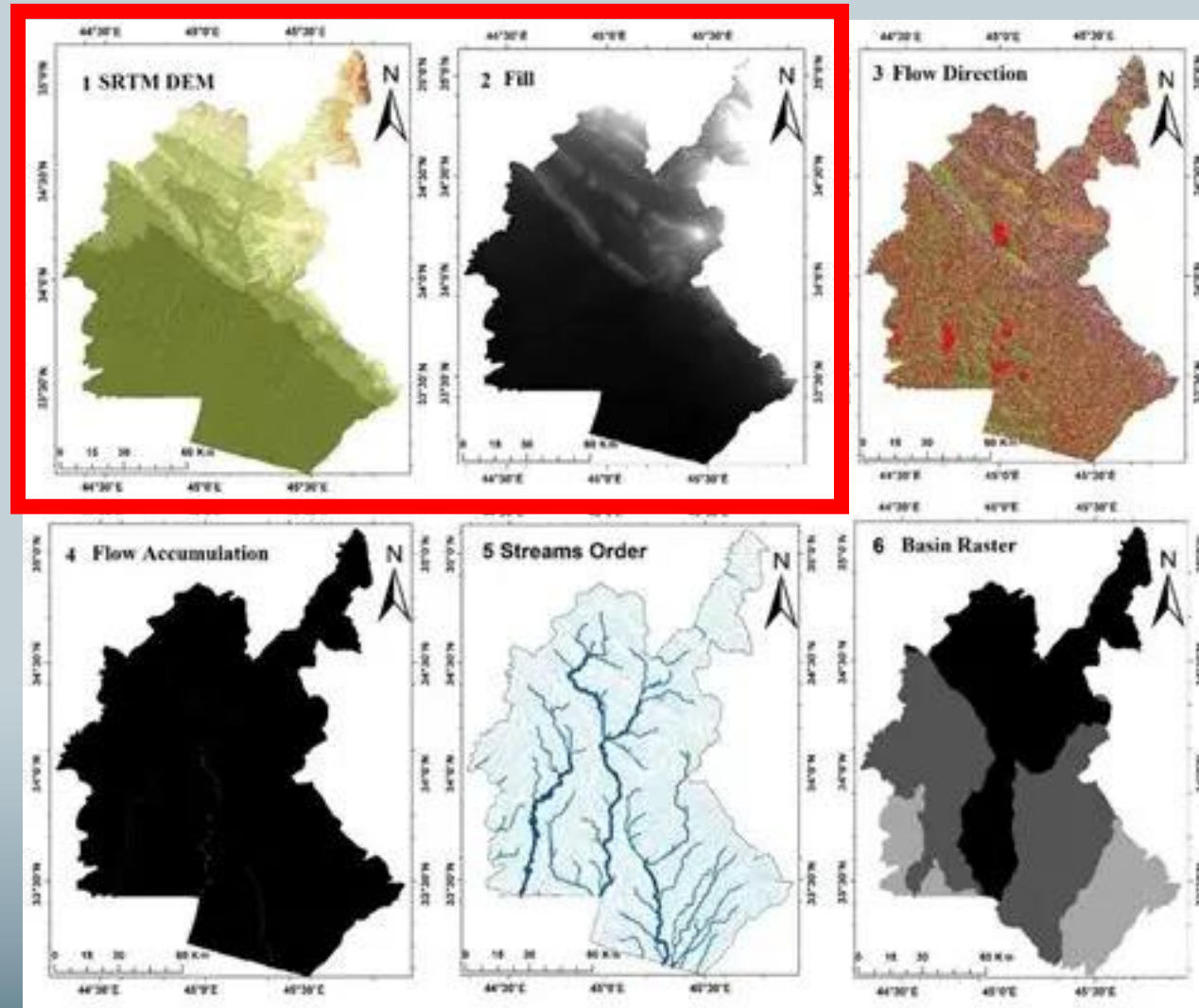
To download data: Click "View Full Details" on the "Summary Page" for the item you are interested in. Next, scroll down and click on the layer name link like "Outfalls". Then click "Download" for multiple file format options.

Explore Our Programs

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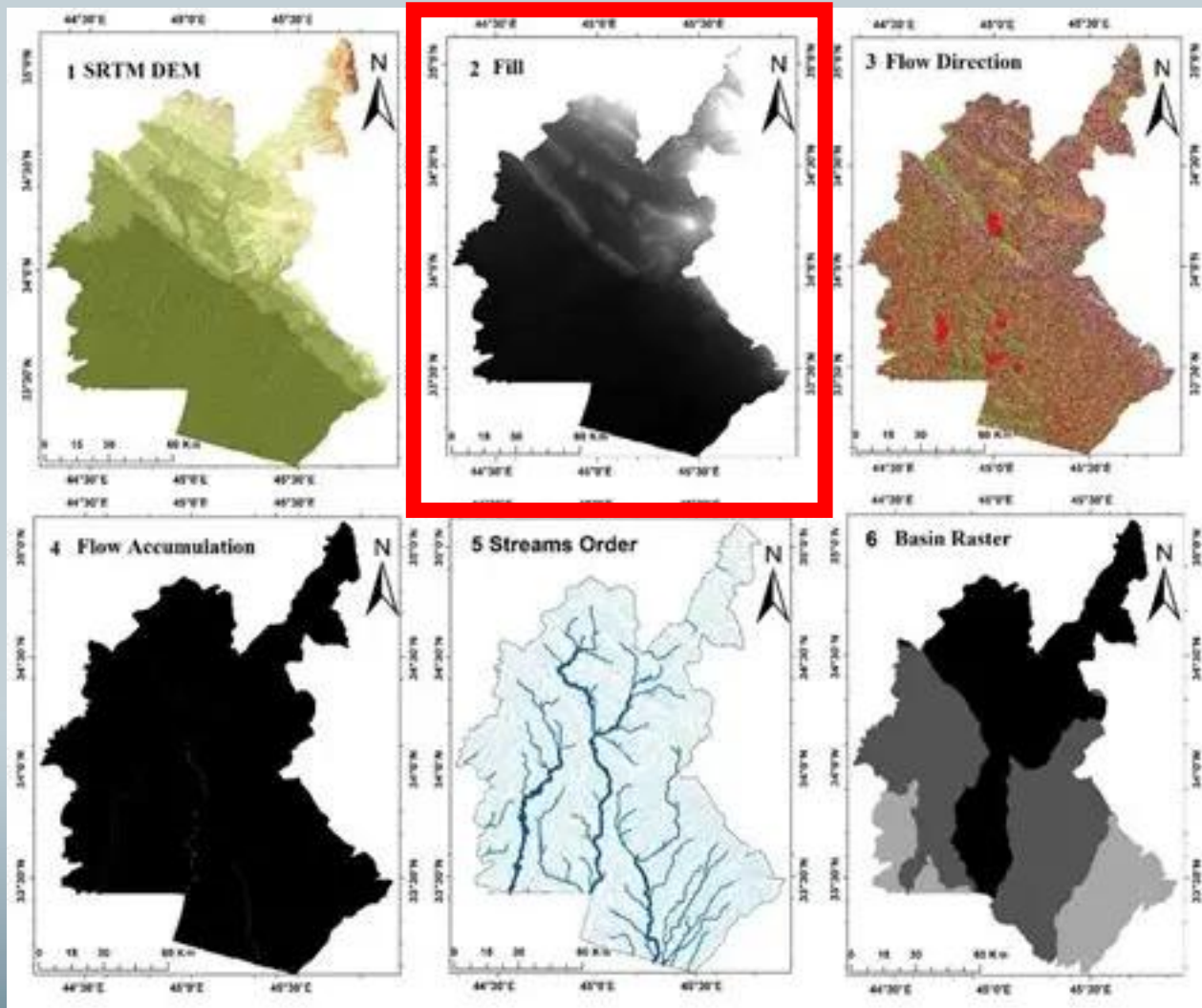
 [All Available Datasets](#)

Terrain Preprocessing



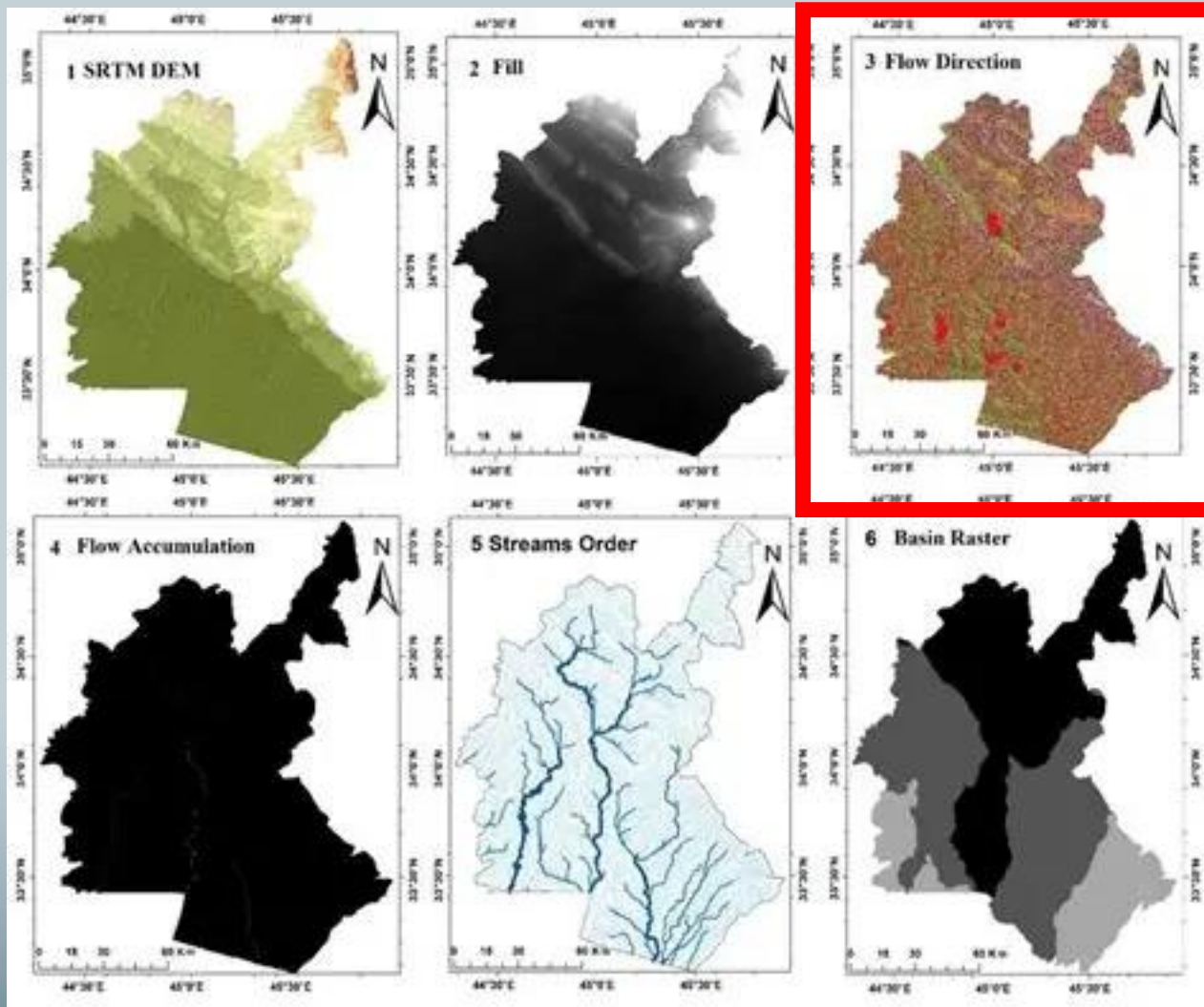
- BIG project area is flat
- Used a unique tool to “burn” TCEQ lines into the DEM to force water to flow in that direction
- Depressed the TCEQ lines into the elevation to allow for general processing

Watershed Delineation



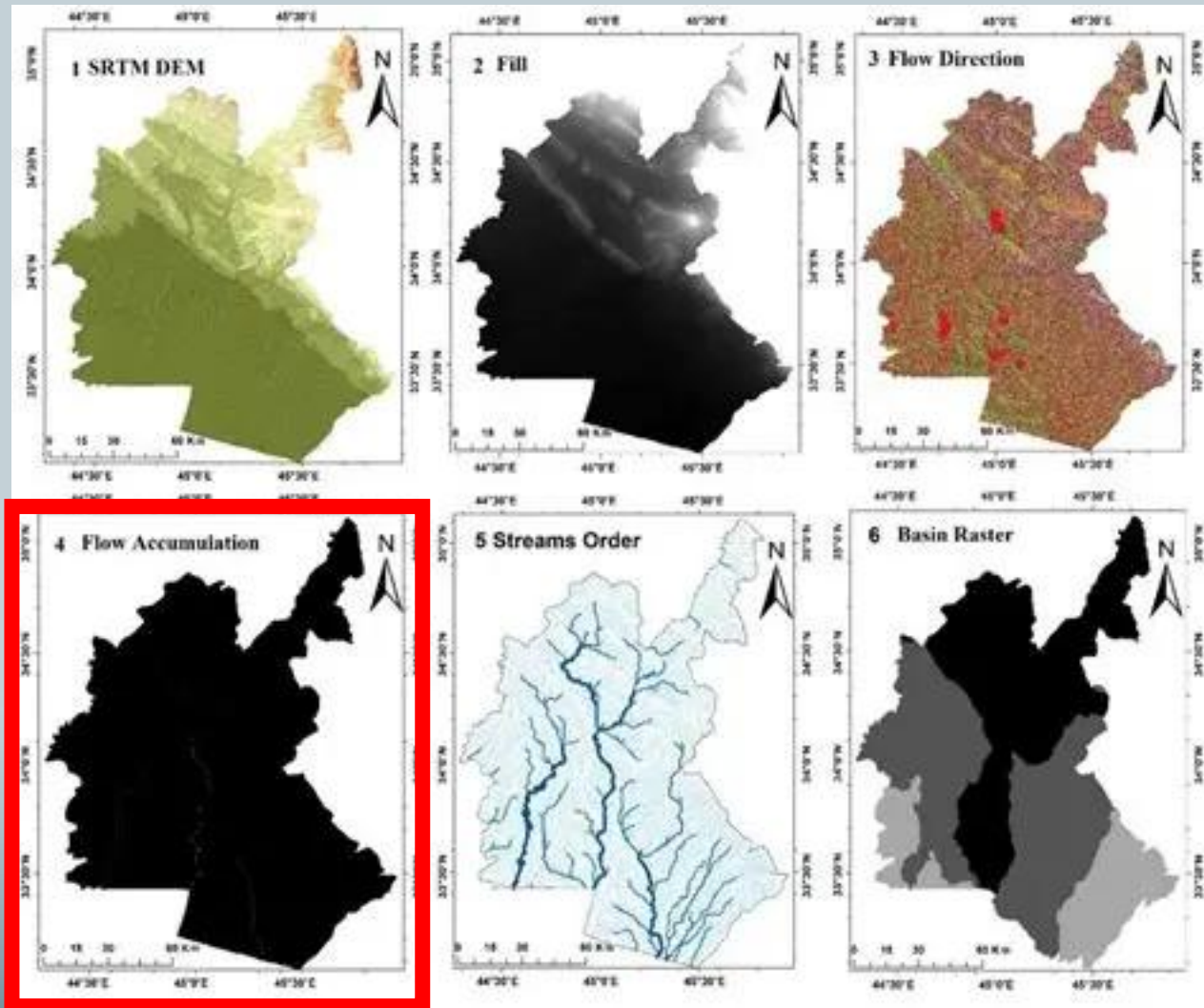
- Fill Sinks – removes small depressions in the DEM to ensure continuous flow
- Flow Direction – determines which way the water flows from each cell
- Flow Accumulation – calculates how much area contributes flow to each cell

Watershed Delineation



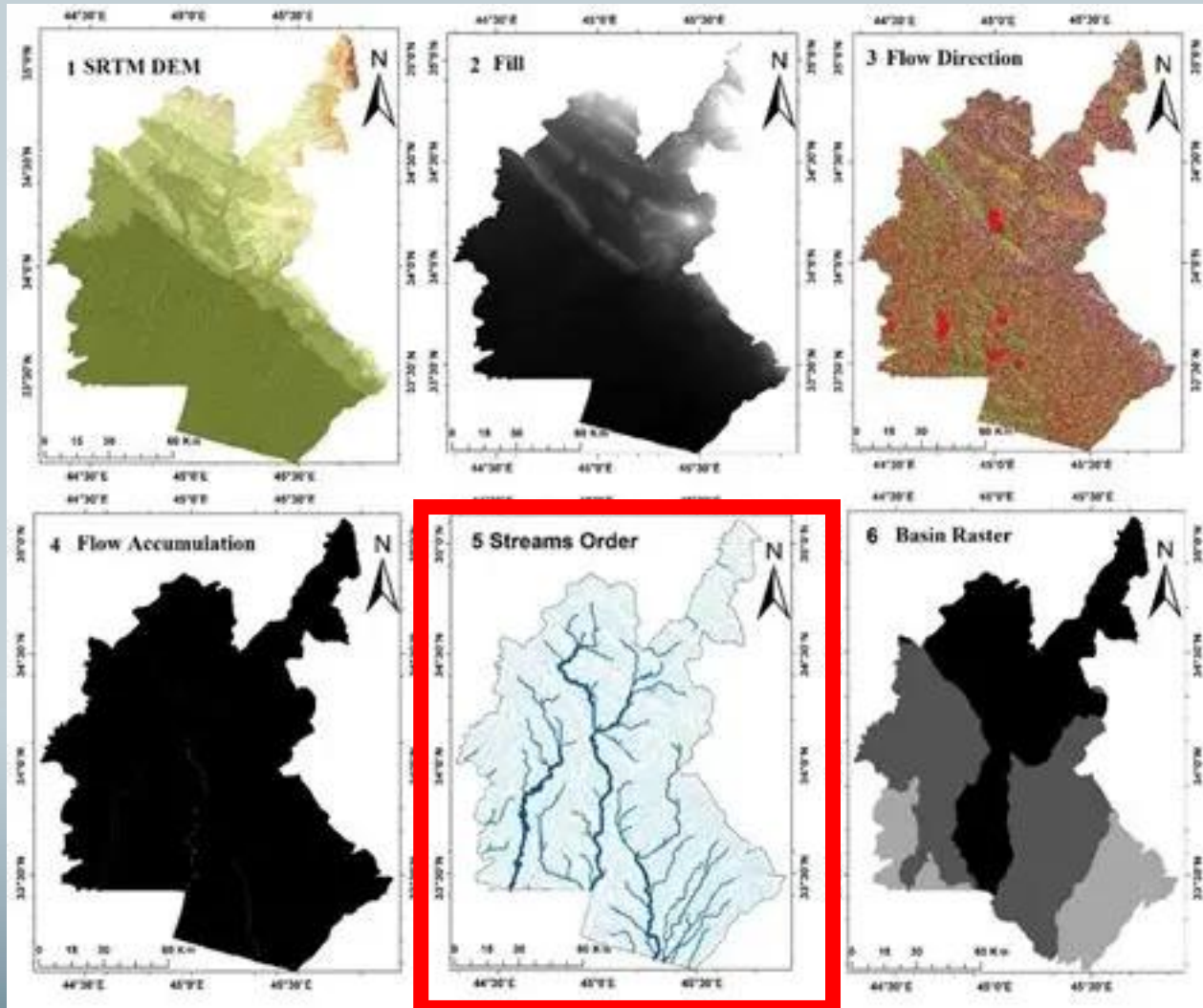
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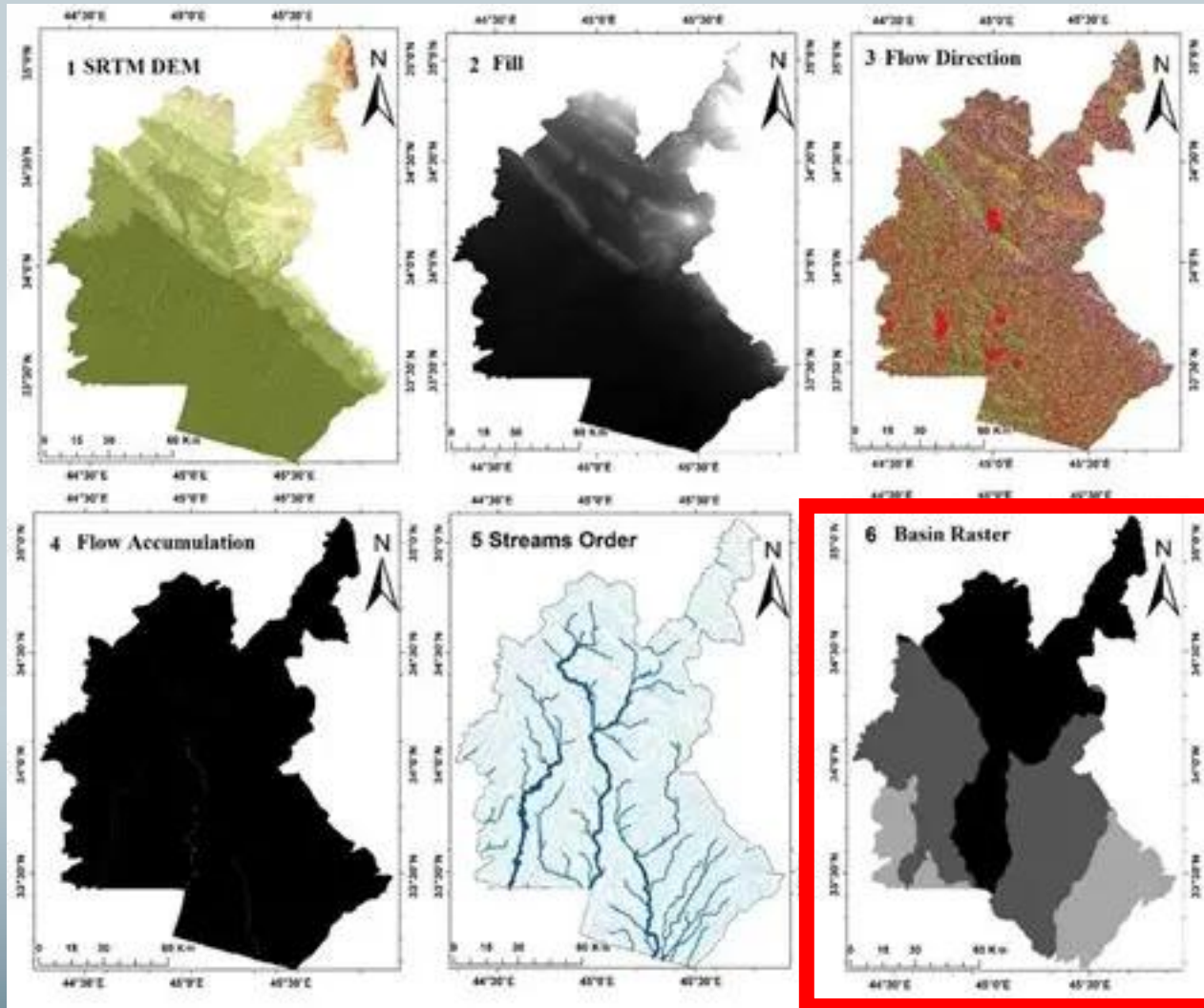
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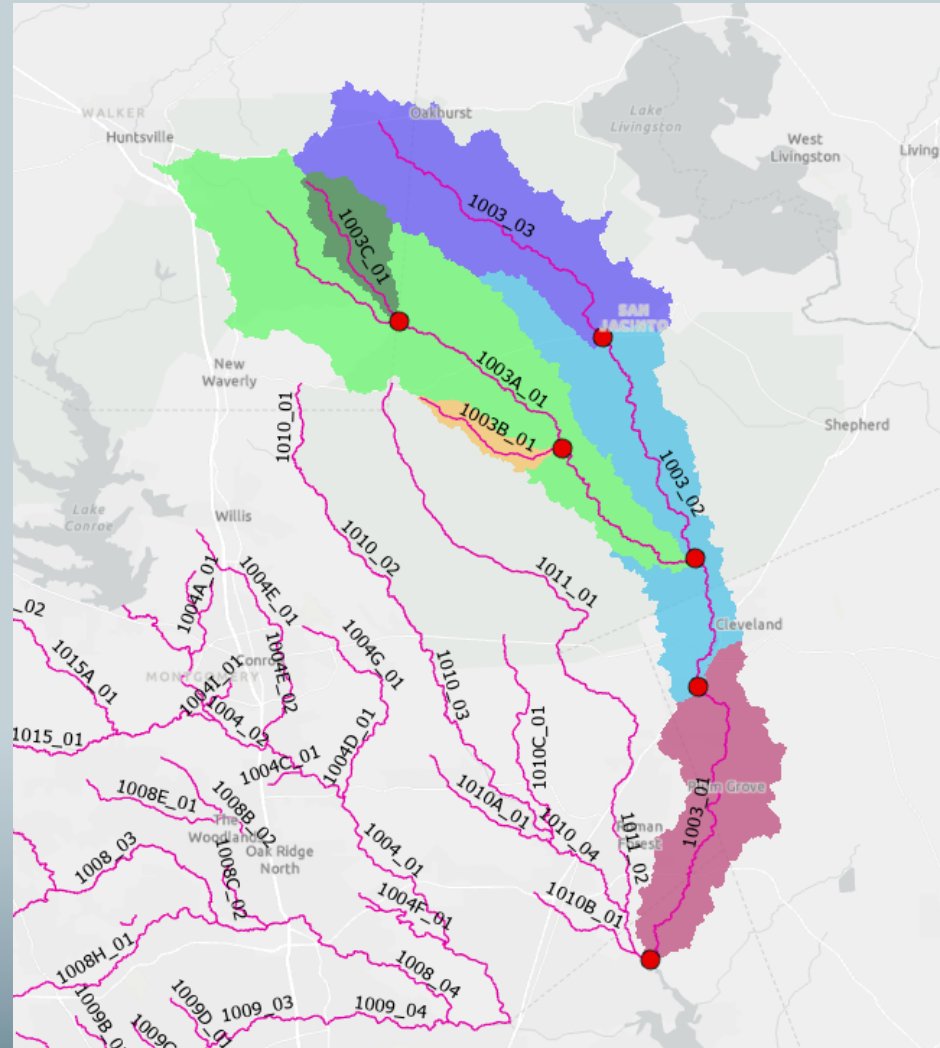
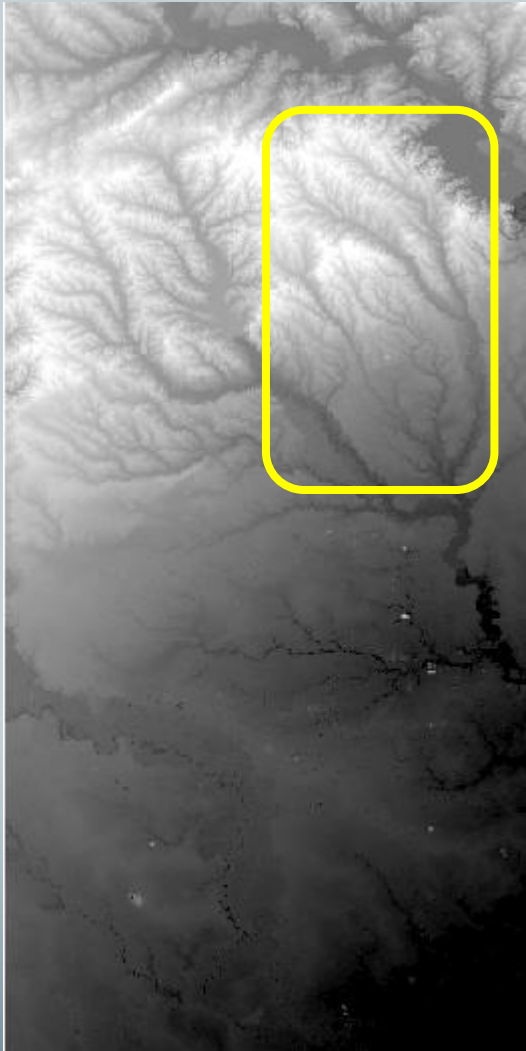
- Define outlet/pour points to create a known point where the stream exists (AU end point)
- Delineate watershed – traces the boundary upslope of each outlet/pour point

Watershed Delineation



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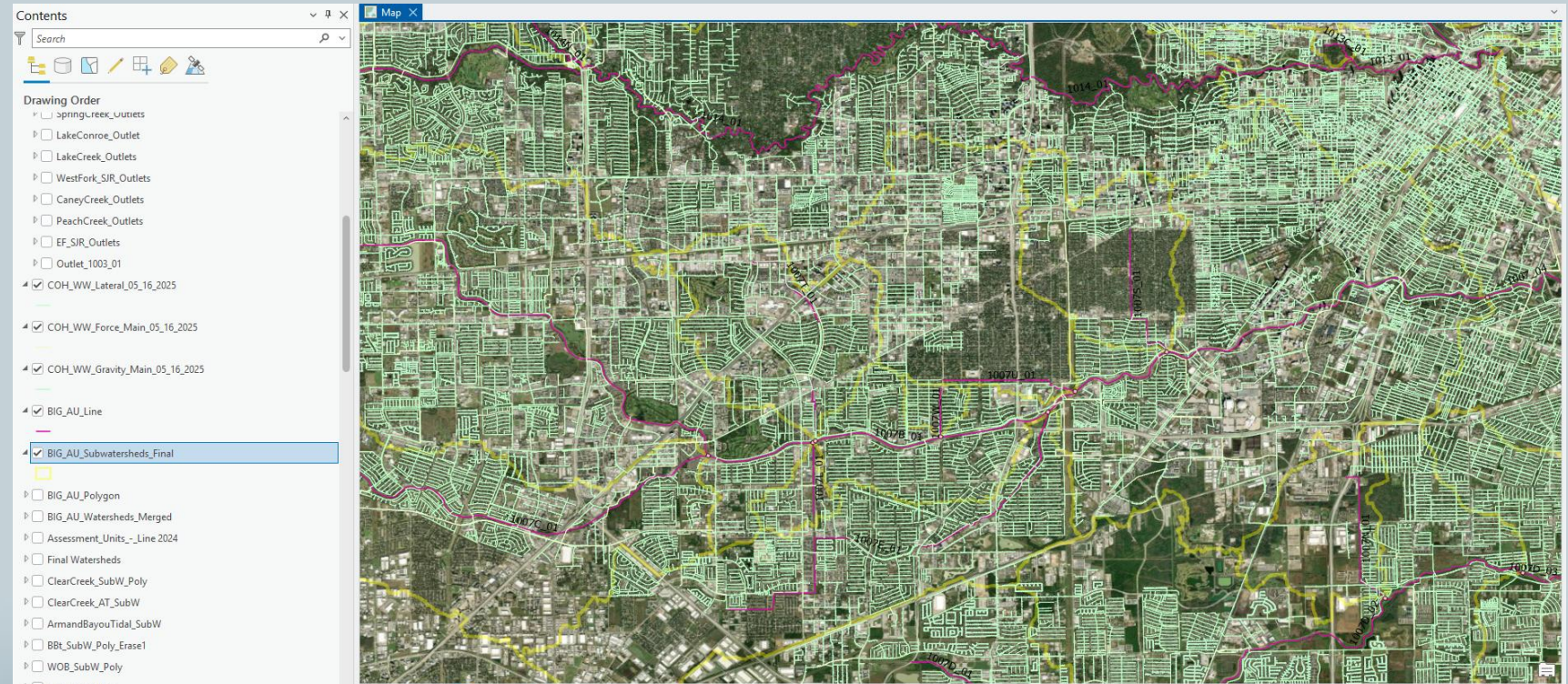
Subwatersheds



- Example – East Fork San Jacinto River (Segment 1003)
- Segment 1003 = 6 Assessment Units

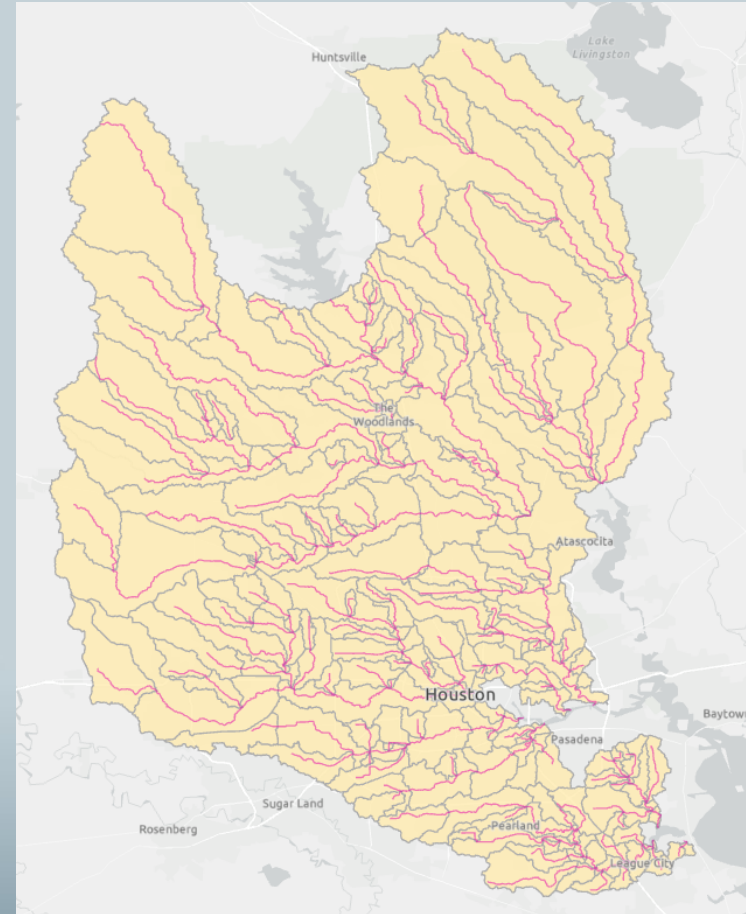
Draft Delineations

- While ESRI tools provide powerful and informative analyses, applying quality control checks is essential to ensure data accuracy and reliability
 - Aerial imagery
 - City of Houston Public Works – Geolink HUB

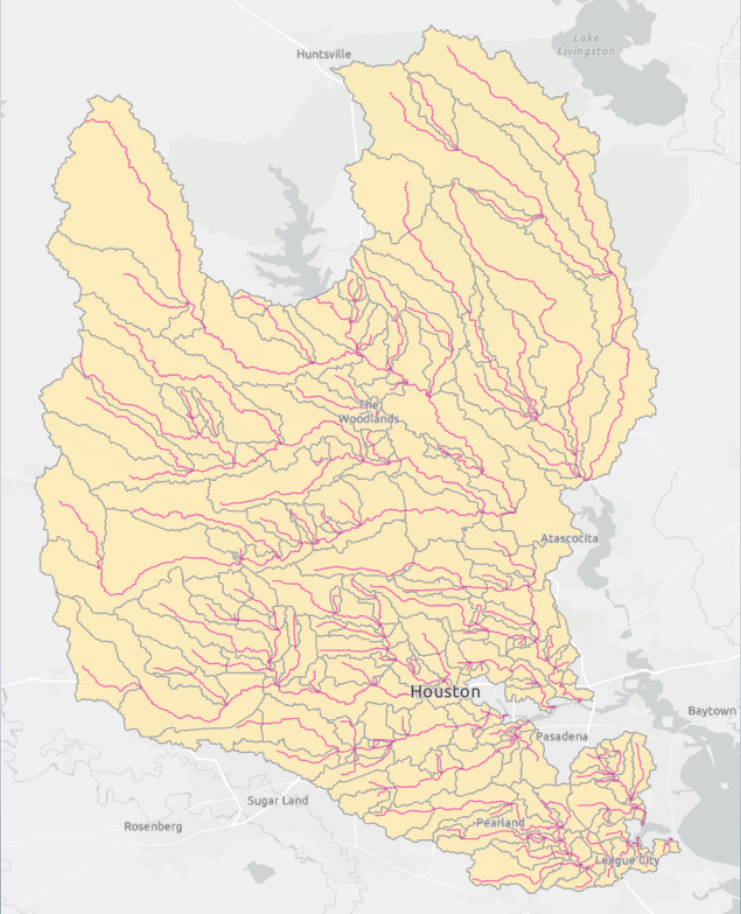


Final Delineations

- Final Assessment Unit watersheds contained manual adjustments based off **aerial imagery** and review of infrastructure data
- 184 watersheds created for the BIG project area
- Data currently accepted by TCEQ (Aug 2025)



Questions/Comments



CONTACT INFORMATION

Jessie Casillas
Jessica.Casillas@h-gac.com
713-993-4594

WISE AWARDS PROGRAM



Rachel Windham – Senior
Planner, H-GAC



Houston-Galveston
Area Council

WISE AWARDS PROGRAM



The Water Innovation Strategies of Excellence (WISE) Awards recognize innovative **Projects, Programs, or Individuals** in the Houston-Galveston Area 13-County Region that serve as models for **improving and protecting water quality**.

This program is overseen by the Natural Resources Advisory Committee, an advisory committee to the Houston-Galveston Area Council Board of Directors.



Houston-Galveston Area Council

ELIGIBILITY

- Local Governments
- Businesses & Industry
- Non-Profit Organizations
- Universities and Educational Institutions
- Utility Districts
- Individuals



Houston-Galveston
Area Council

CATEGORIES

- Policy and Planning
- Education and Public Awareness
- Completed Effort (Greater than \$200K)
- Completed Effort (Less than \$200K)
- Research and Monitoring
- Program Performance
- Individual Excellence



2025 WINNERS



AWARDS

Education and Public Awareness

Texas Watershed Steward Program
Texas A&M AgriLife Extension Service

Program Performance

Urban Forestry Drone Program
City of Pearland

Completed Effort (Less Than \$200,000)

Arts in the Park
City of La Marque

Completed Effort (Greater Than \$200,000)

Wastewater Treatment Plant
A&S Engineers and Partners

Policy and Planning

Houston Parks and Recreation Department's Water Management Plan
Houston Parks and Recreation Department

Individual Excellence

Protecting Water Quality
Tom Douglas

Individual Excellence

Protecting Water Quality
Marissa Llosa

RECOGNITIONS

Special Recognition for Innovation in Planning For Sustainable Resource Management

Jersey Village 2024 Water and Wastewater Master Plan
City of Jersey Village

Special Recognition for Expanding Access to Natural Resources

Mahan Park Boat Ramp Expansion
City of La Marque



Houston-Galveston Area Council

2025 CEREMONY

For more information, visit:
<https://www.h-gac.com/wise-awards>



H-GAC Projects

Wastewater Operators Training and Employment Website –

Mr. Todd Running – Water
Resource Program Manager,
H-GAC

- [TexasWaterCareers.com](https://www.texaswatercareers.com)



Upcoming Meetings and Events

- November 1, 2025 – Galveston Bay Foundation Rain Barrel Workshop
- November 6, 2025 – Natural Resource Advisory Council
- November 19, 2025 – Greens Bayou WPP, 5-7 PM (hybrid)
- December 1, 2025 – [TexasWater.com](https://www.texaswater.com) Clean Waters Initiative Workshop: Wastewater
- December 10, 2025 – Parks and Natural Areas Tour in Kemah
- December 12, 2025 – Fall Planning Workshop (online)
- February 24-25, 2026 – 12th State of the Bay Symposium
- June 2, 2026 – BIG Spring Meeting



Photo Credit – Galveston Bay Foundation

The Watershed Rock Opera – See It Now Online!



[Mt. Adams Institute](#)

The Watershed Rock Opera, in five movements, acclaimed as “The Greatest Rock Opera Ever Produced About a Watershed,” was recorded live in **Hood River, Oregon** in April 2025. The story follows the course of water, moving from the sky as rain, to the high Cascades, to fruit orchards, through Hood River’s sewer system, to the Columbia River. It features original music composed and performed by local musicians in accompaniment with original film, audio, and theatrical performances. In the frame shown above, a woman who has just contributed to the sewer system receives a surprise visit from the Wastewater Wizard.

You can view the performance and read about the author and performers at

ADJOURN

- **Steven Johnston**
- Steven.johnston@h-gac.com
- 281-681-2579

