



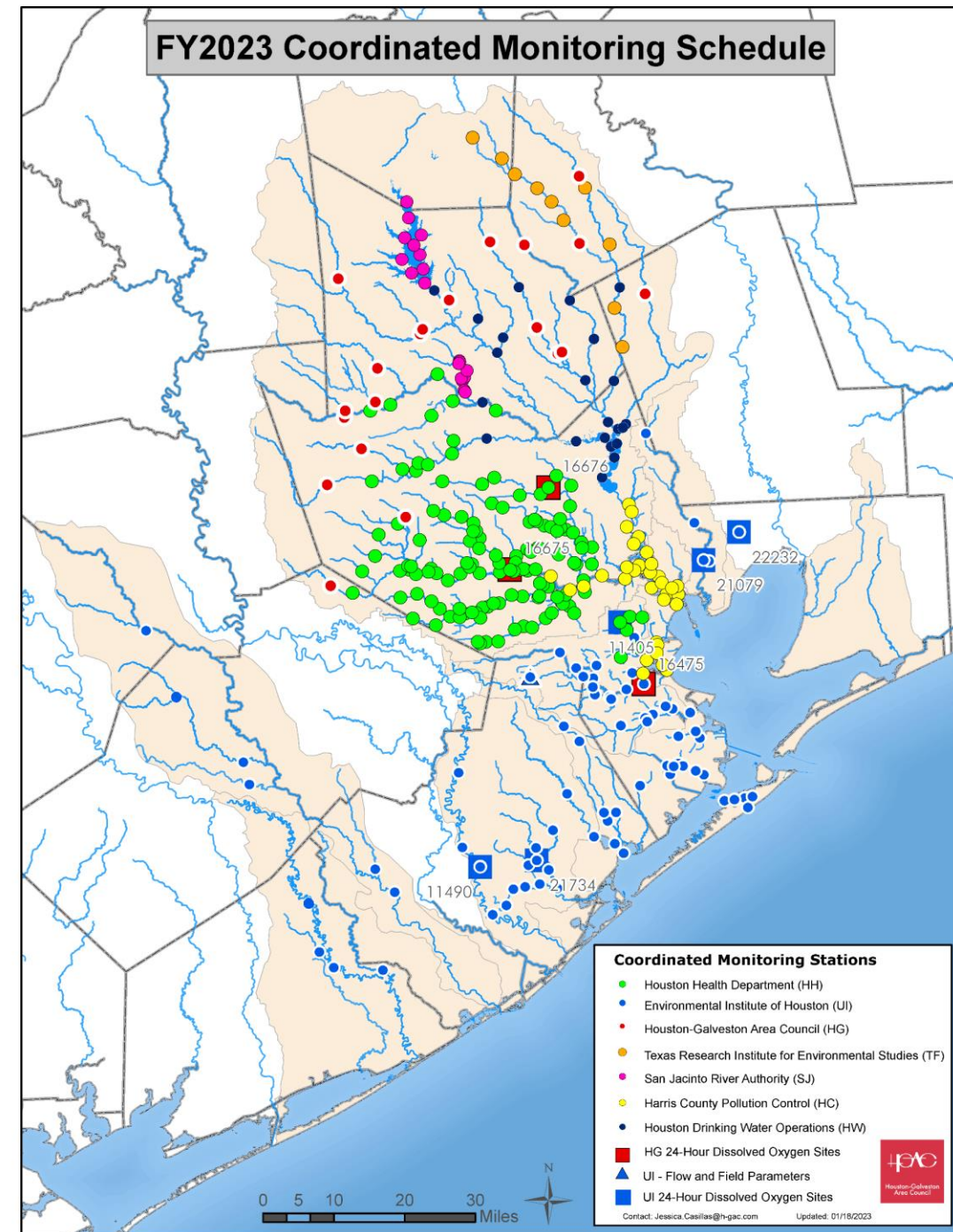
WATERSHED-BASED PLANNING:
Total Maximum Daily Load Program

May 4, 2023

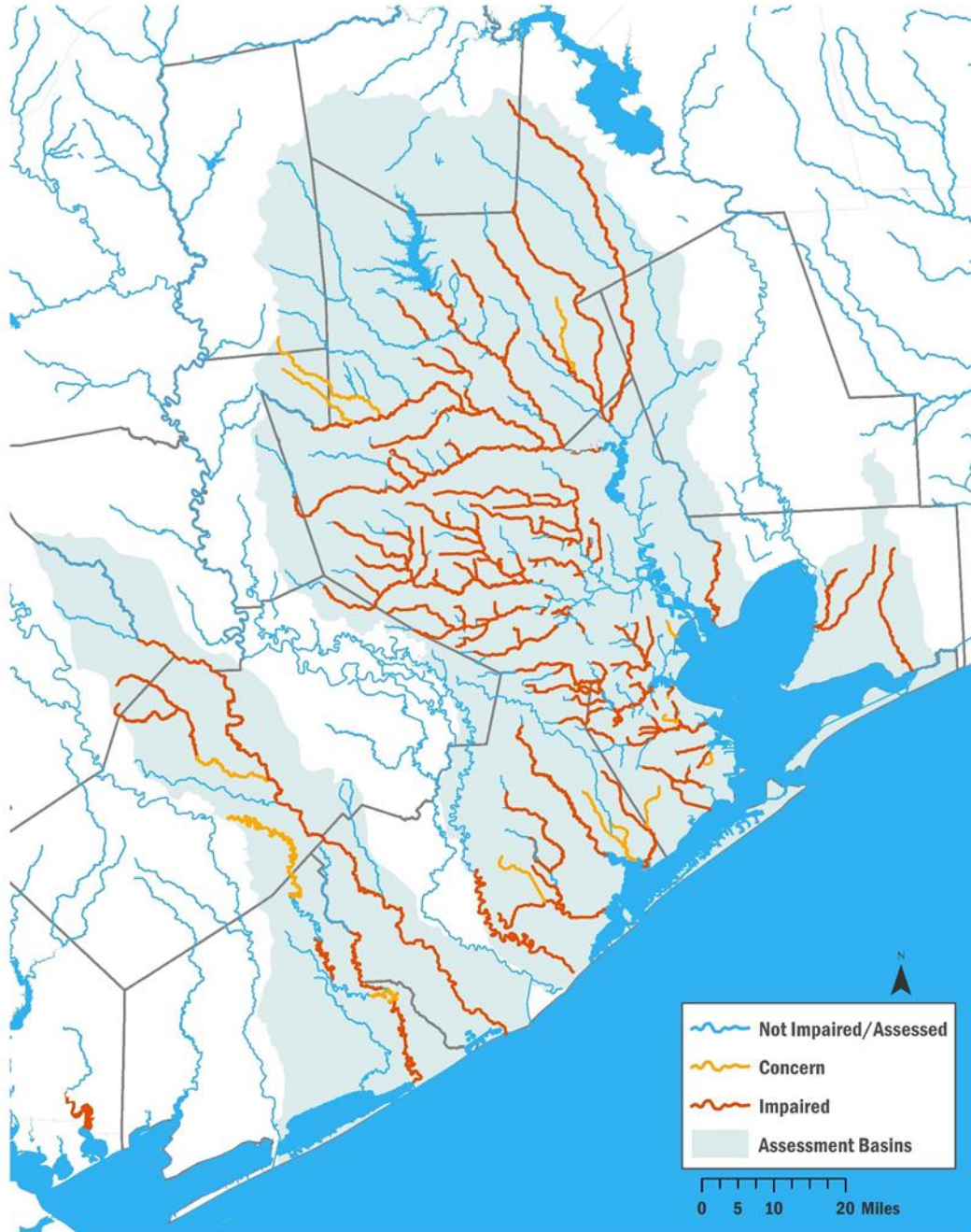
What is H-GAC?

Clean Rivers Monitoring Program

- Partners
 - 7 local partners
 - 2 State and Federal Partners
- Numerous Parameters
 - Bacteria
 - Nutrients
 - Dissolved Oxygen
- H-GAC's Water Resources Information Map



Bacteria Impairments and Concerns



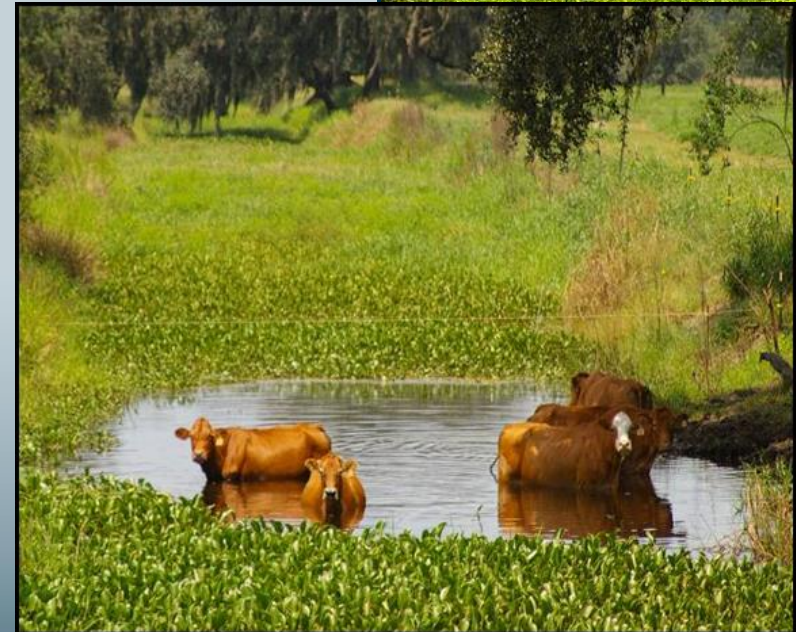
Water Quality Impairments

- TCEQ's 2022 Integrated Report for Surface Water Quality

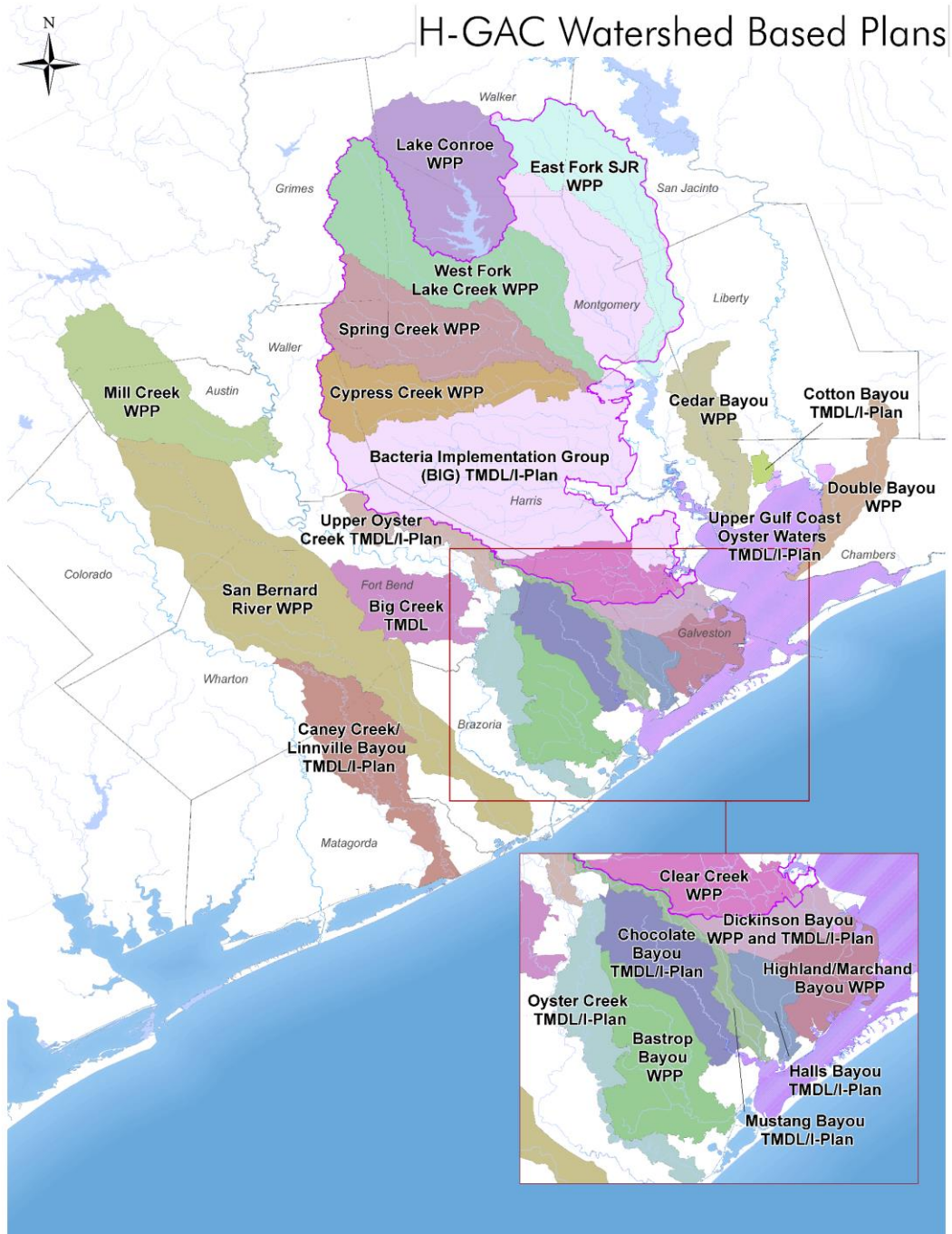
<https://www.tceq.texas.gov/waterquality/assessment/22twqi/22txir>

Watershed-based Planning

- Total Maximum Daily Load
- Watershed Protection Plan



H-GAC Watershed Based Plans



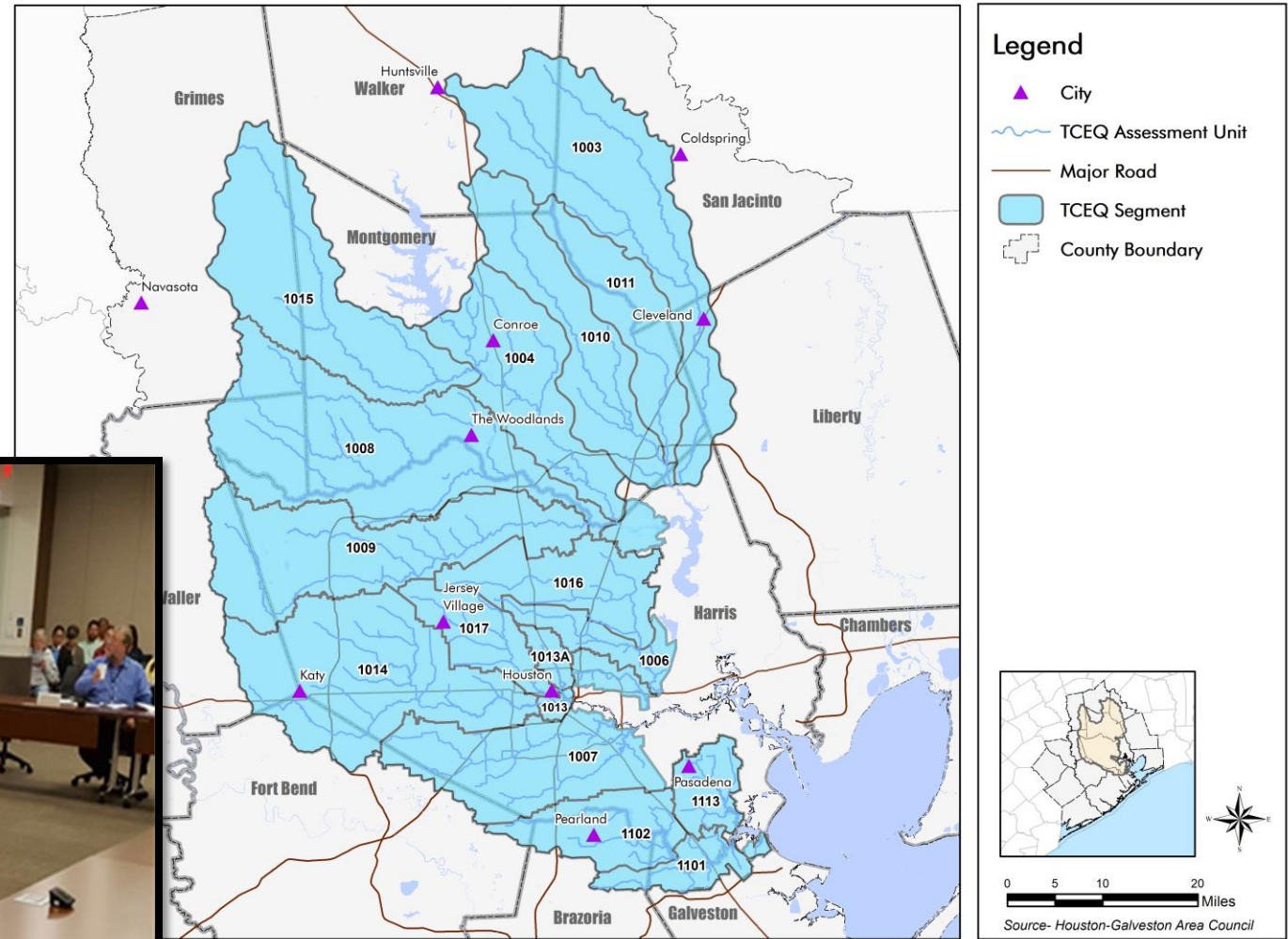
A LITTLE BACKGROUND ON THE **BIG**



- Convened in 2008
- Diverse stakeholders
 - Local Government
 - Business
 - Industry
 - Environmental
- I-Plan approved in 2013
- Updating the I-plan 2023

BIG Project Area

BIG Project - TCEQ Segments



BIG Project - TCEQ Assessment Units



Legend

- City
- Concern
- Impairment
- No Impairment/Concern
- Major Road
- County Boundary

0 5 10 20 Miles

Source- Houston-Galveston Area Council

Implementation Plan

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



Bacteria Implementation Group
October 2012

BIG

BACTERIA IMPLEMENTATION GROUP

2021 ANNUAL REPORT

JANUARY 1, 2020–DECEMBER 31, 2020



KEY ISSUES



SANITARY SEWER OVERFLOWS



STORMWATER POLLUTION



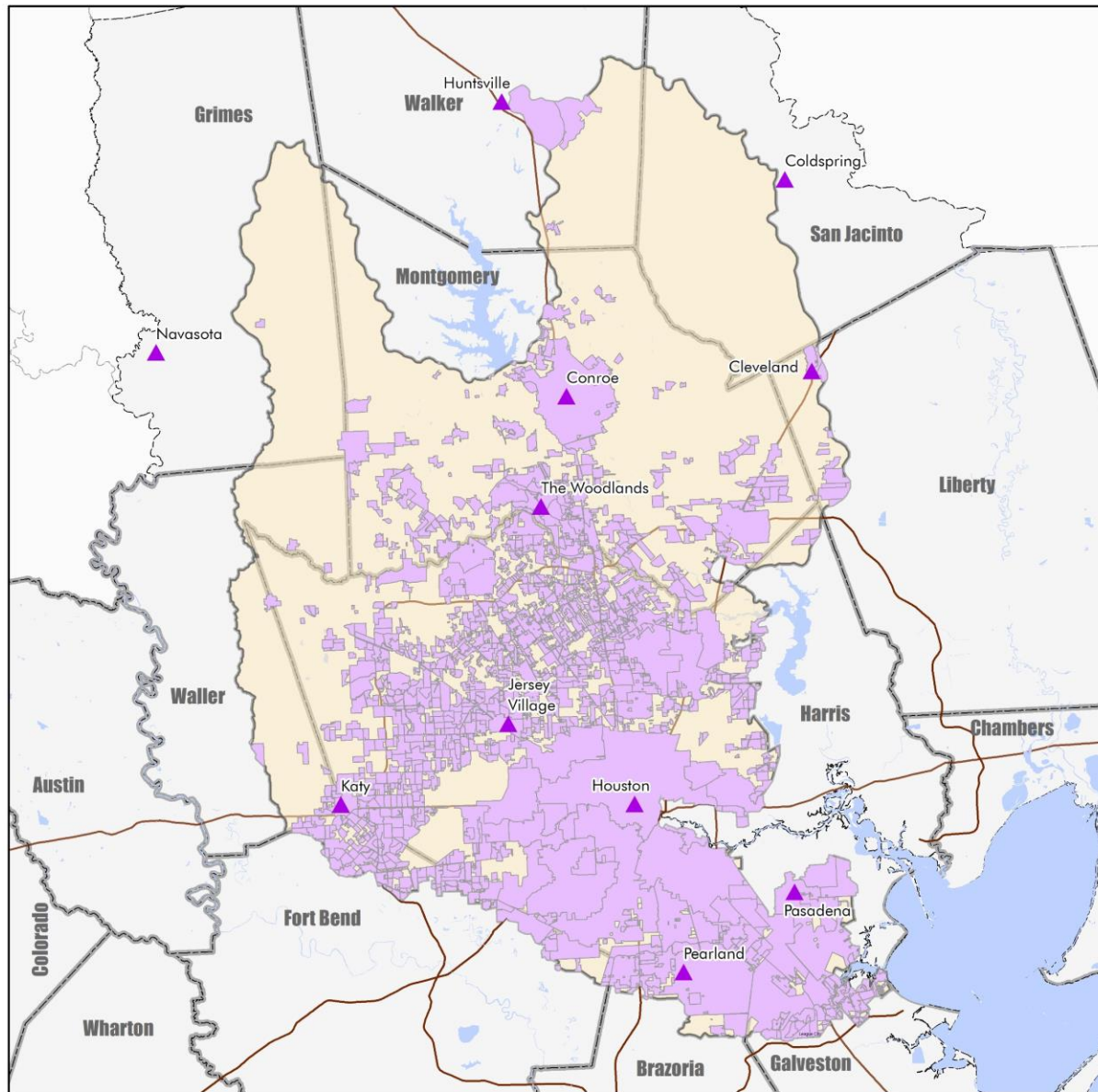
FAILING ON-SITE SEWAGE SYSTEMS

1.0 Wastewater Treatment Facilities

- Implementation Activities
 - 1.1 Encourage More Rigorous Bacteria Monitoring
 - 1.2 Continue to Track the Use of More Strict Bacteria Limits within the BIG Project Area
 - 1.3 Enhance WWTF Compliance
 - 1.4 Track Changes to Improve Design and Operation Criteria for New Plants
 - 1.5 Upgrade Facilities
 - 1.6 Consider Regionalization of WWTFs
 - 1.7 Use Treated Effluent for Facility Irrigation



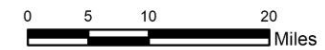
BIG Project - Wastewater Service Area Boundaries



Legend

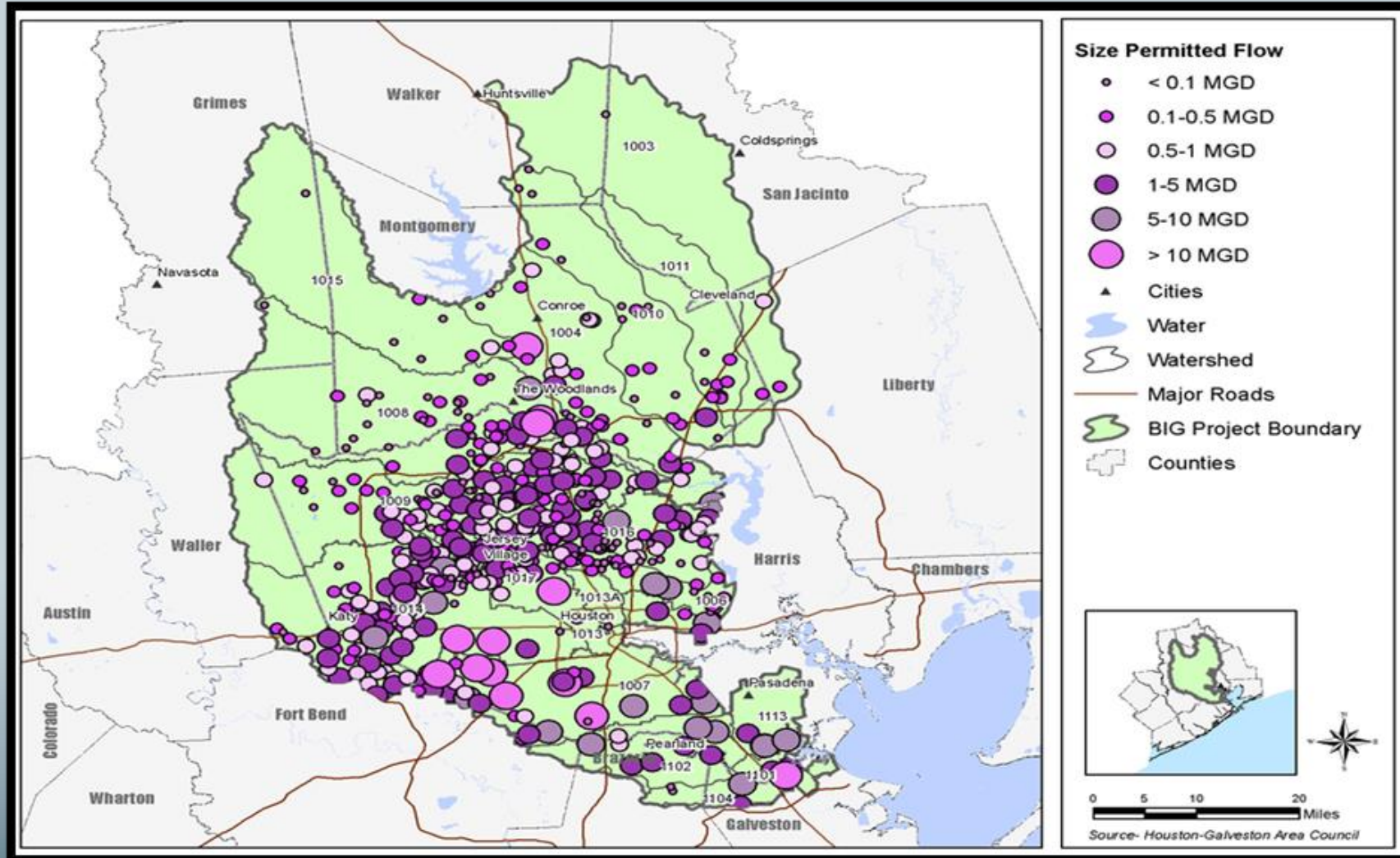
- ▲ City
- Major Road
- Service Area Boundary
- County Boundary

WWTF Type	Number of Permittees
Domestic	510
Industrial	18

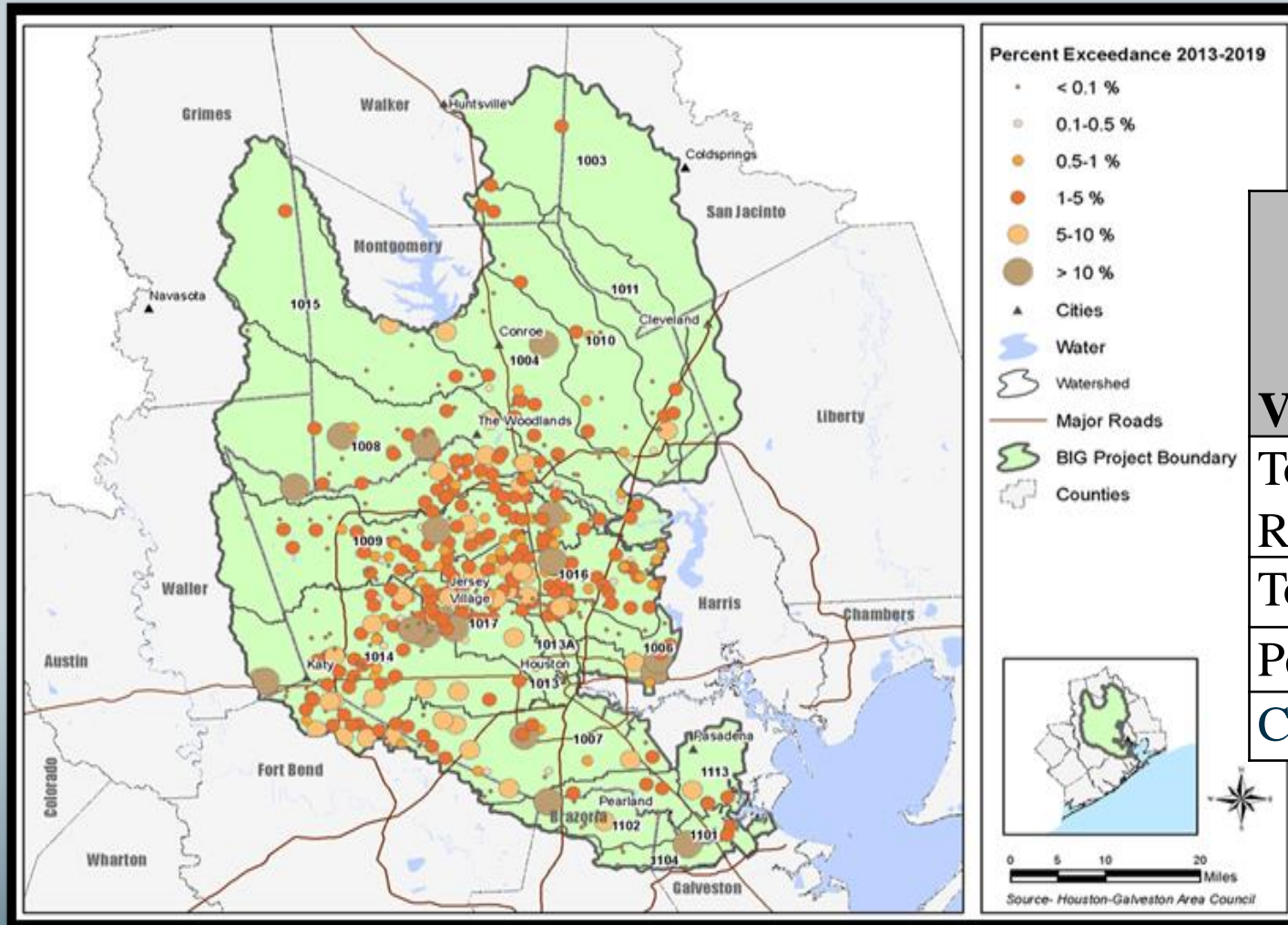


Source- Houston-Galveston Area Council

WWTF Permitted Flow



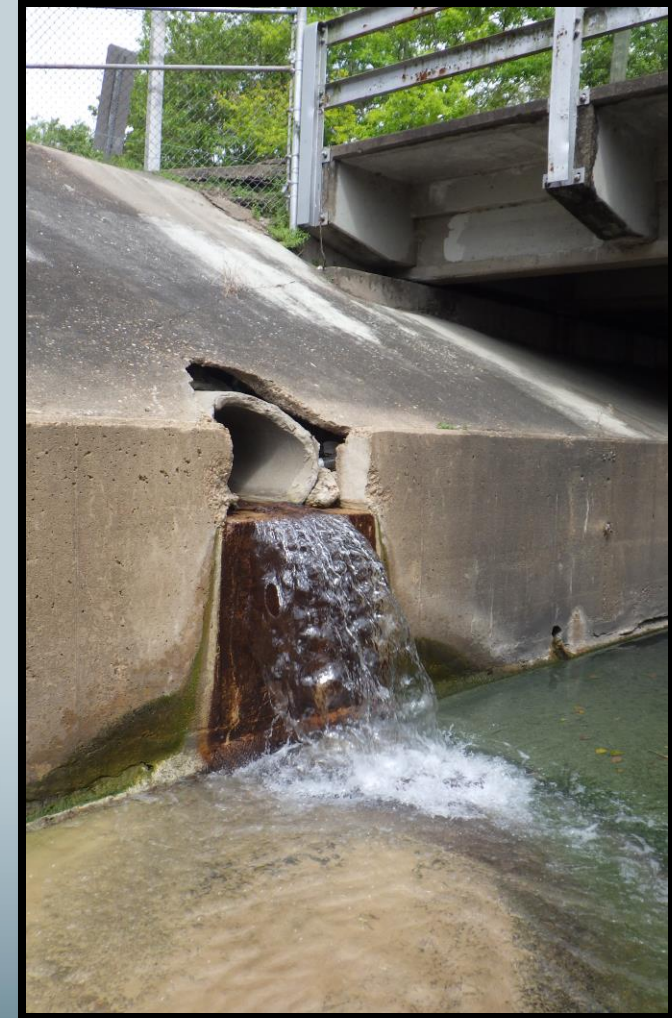
Percent Exceedances



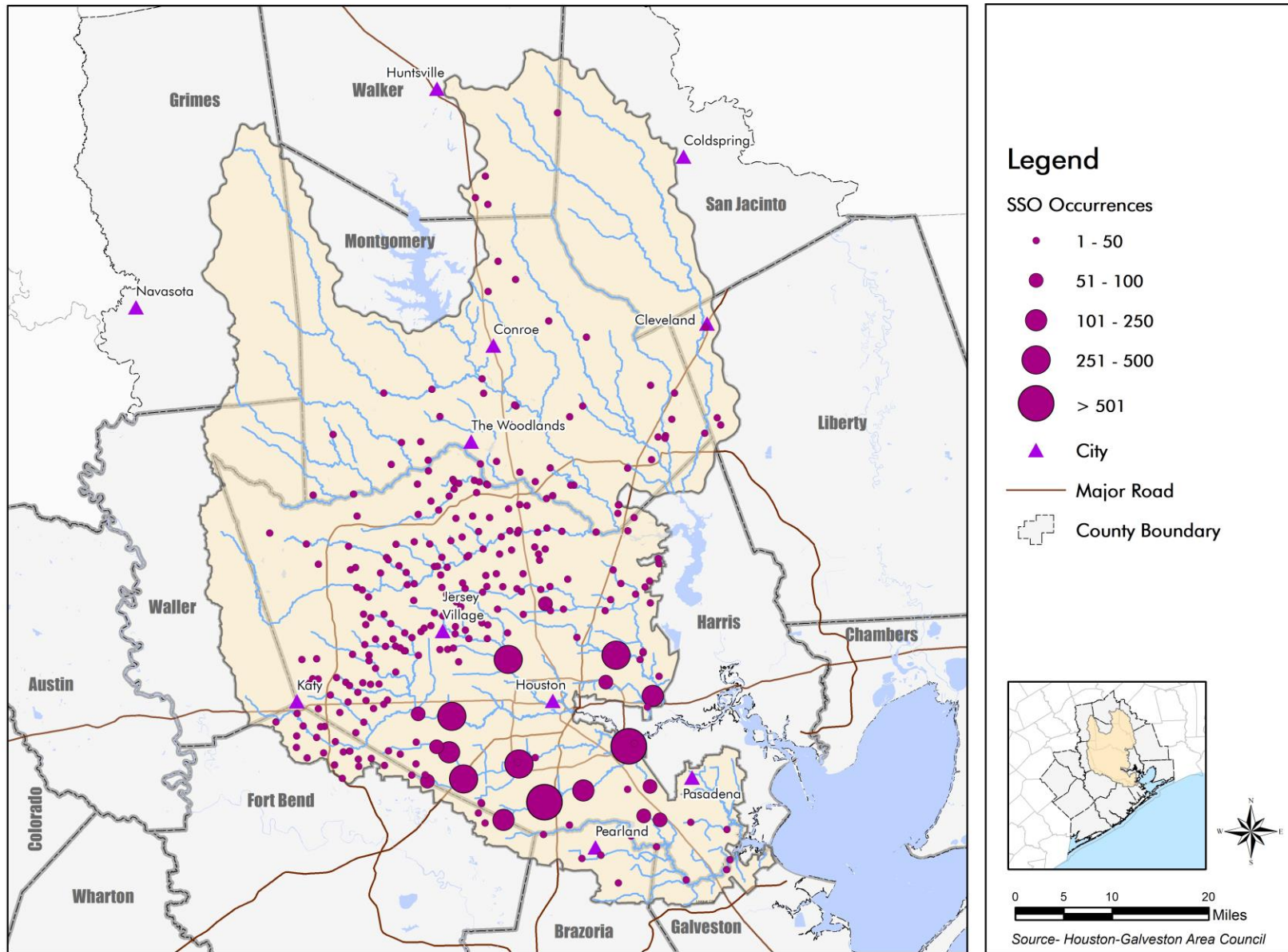
Variable	Geometric Mean	Daily Maximum or Grab Sample
Total Results Reported	3,828	3,914
Total Exceeding Limit	14	103
Percent Exceedance	0.37	2.63
Compliance	99.63	97.37

2.0 Sanitary Sewer Systems

- Implementation Activities
 - 2.1 Develop Utility Asset Management Programs for Sanitary Sewer Systems
 - 2.2 Address Fats, Oils, Grease and Wipes
 - 2.3 Encourage Appropriate Mechanisms to Maintain Function at Lift Stations
 - 2.4 Improve Reporting Requirements for Sanitary Sewer Overflows
 - 2.5 Strengthen Controls on Subscriber Systems
 - 2.6 Penalties for Violations



BIG Project - SSO Occurrences 2017 - 2021

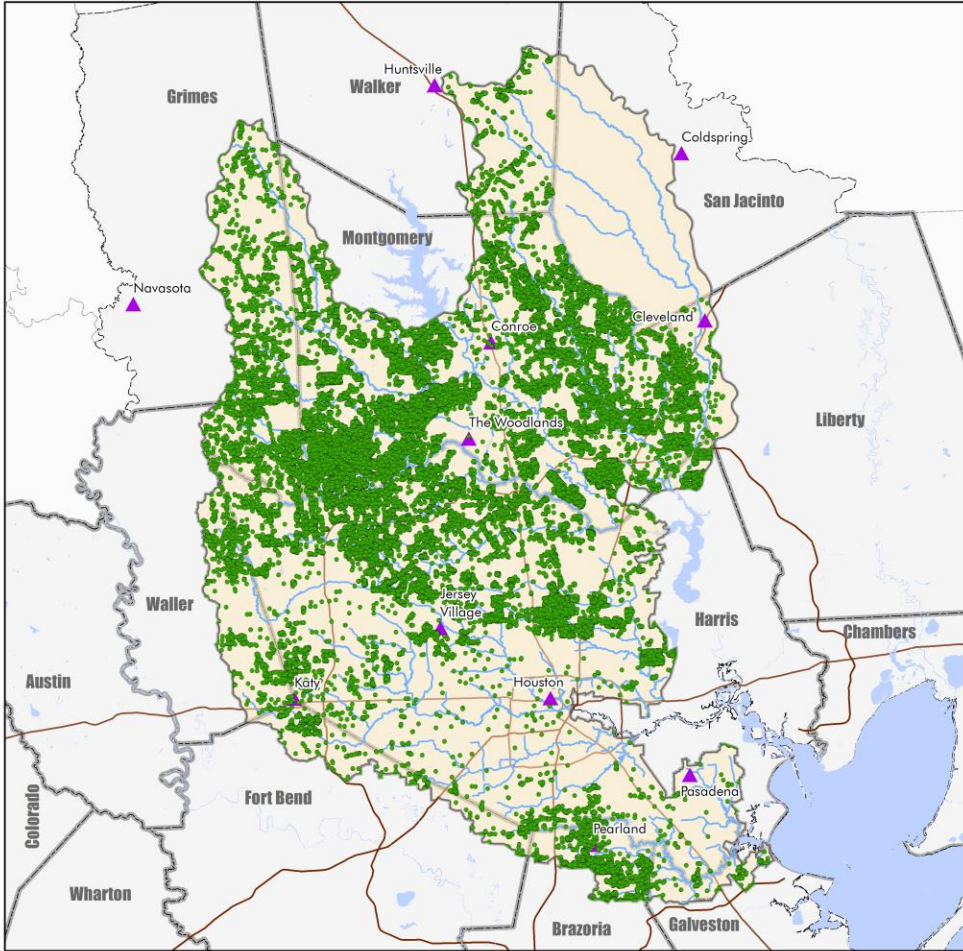


3.0 Onsite Sewage Facilities

- Implementation Activities:
 - 3.1 Identify and Address Failing Systems
 - 3.2 Address Inadequate Maintenance of OSSFs
 - 3.3 Legislation and Other Regulatory Actions



BIG Project - Permitted OSSFs

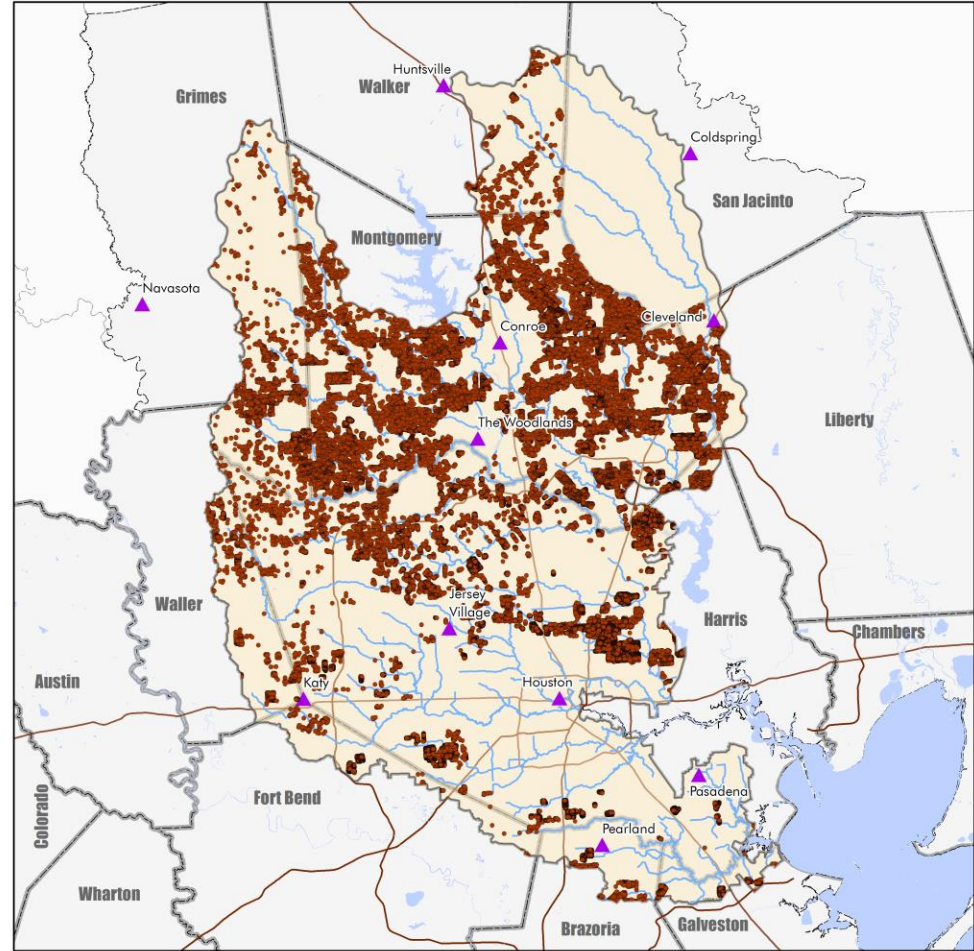


- Legend**
- Permitted OSSF
 - ▲ City
 - Major Road
 - County Boundary

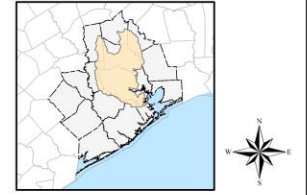


0 5 10
Source- Houston-Galveston Area Council

BIG Project - Unregistered OSSFs



- Legend**
- Unregistered OSSF
 - ▲ City
 - Major Road
 - County Boundary



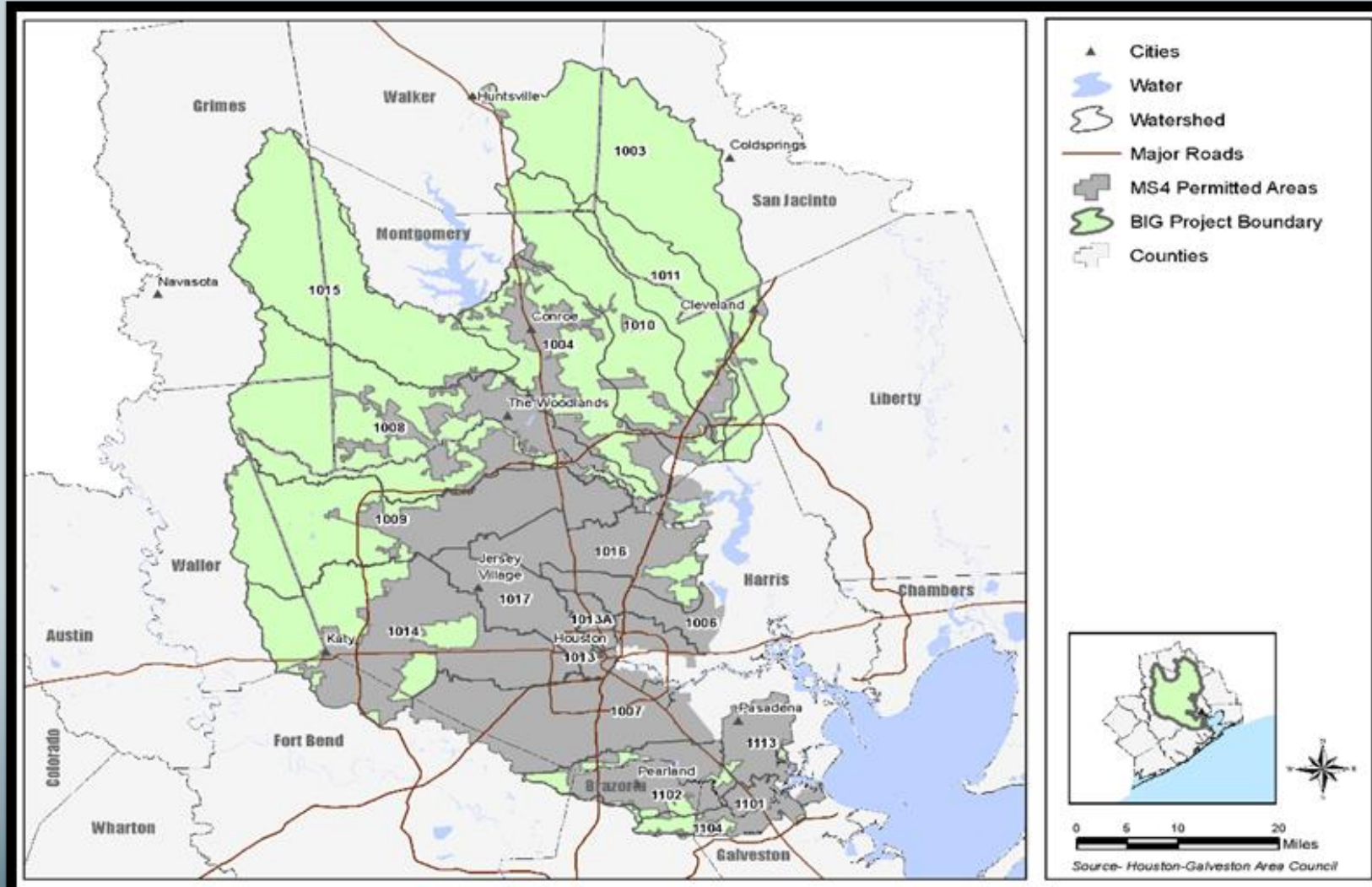
0 5 10 20 Miles
Source- Houston-Galveston Area Council

4.0 Stormwater

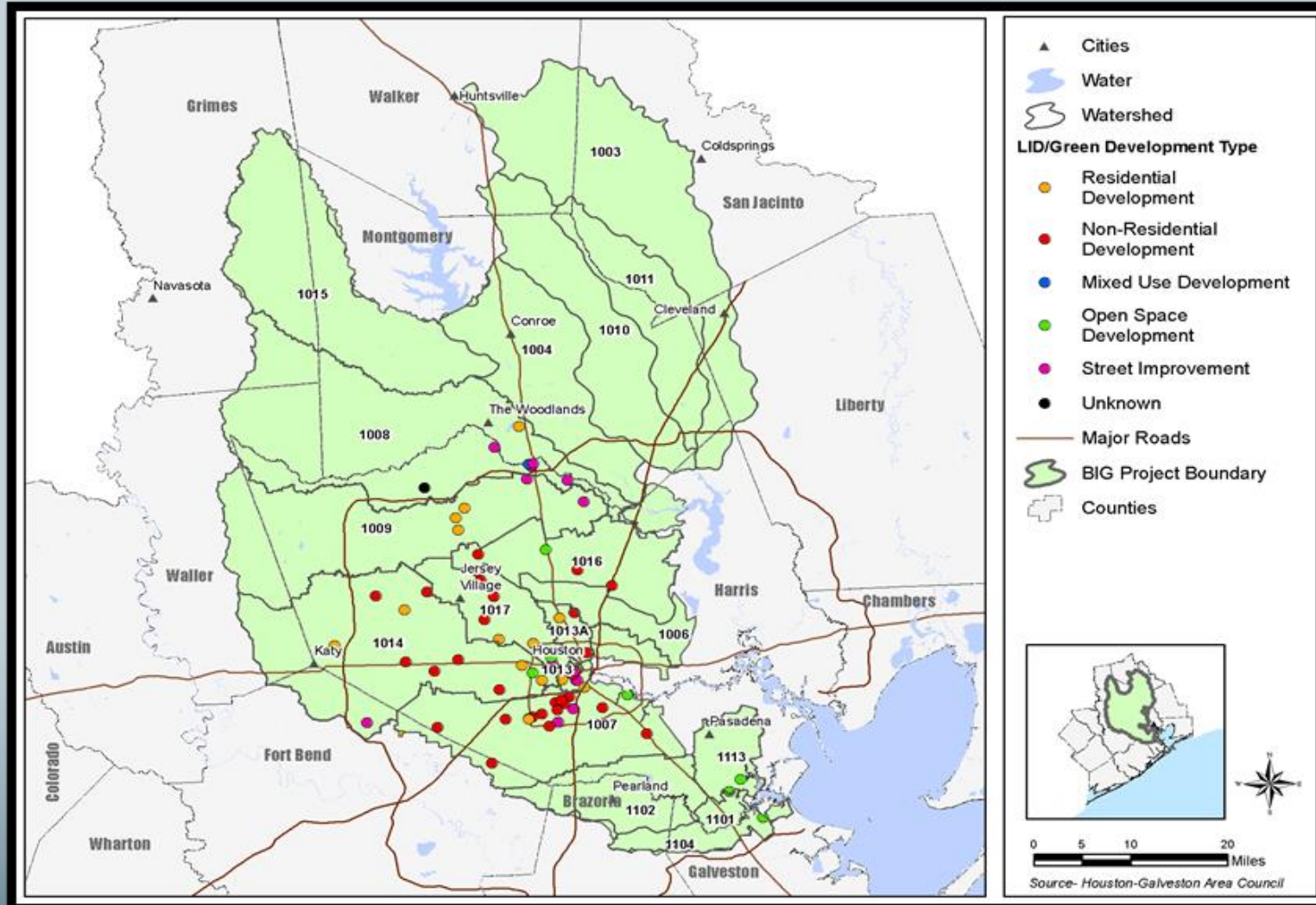
- **Implementation Activities:**
 - 4.1 Continue Existing Stormwater Programs
 - 4.2 Model Best Practices
 - 4.3 Encourage Expansion of Stormwater Management Programs
 - 4.4 Promote Recognition Programs for Developments that Voluntarily Incorporate Bacteria Reduction Measures
 - 4.5 Targeted Stormwater Outreach Programs
 - 4.6 Encourage Incentives for Bacteria Reduction Measures



Census Designate Urbanized Area



Model Practices

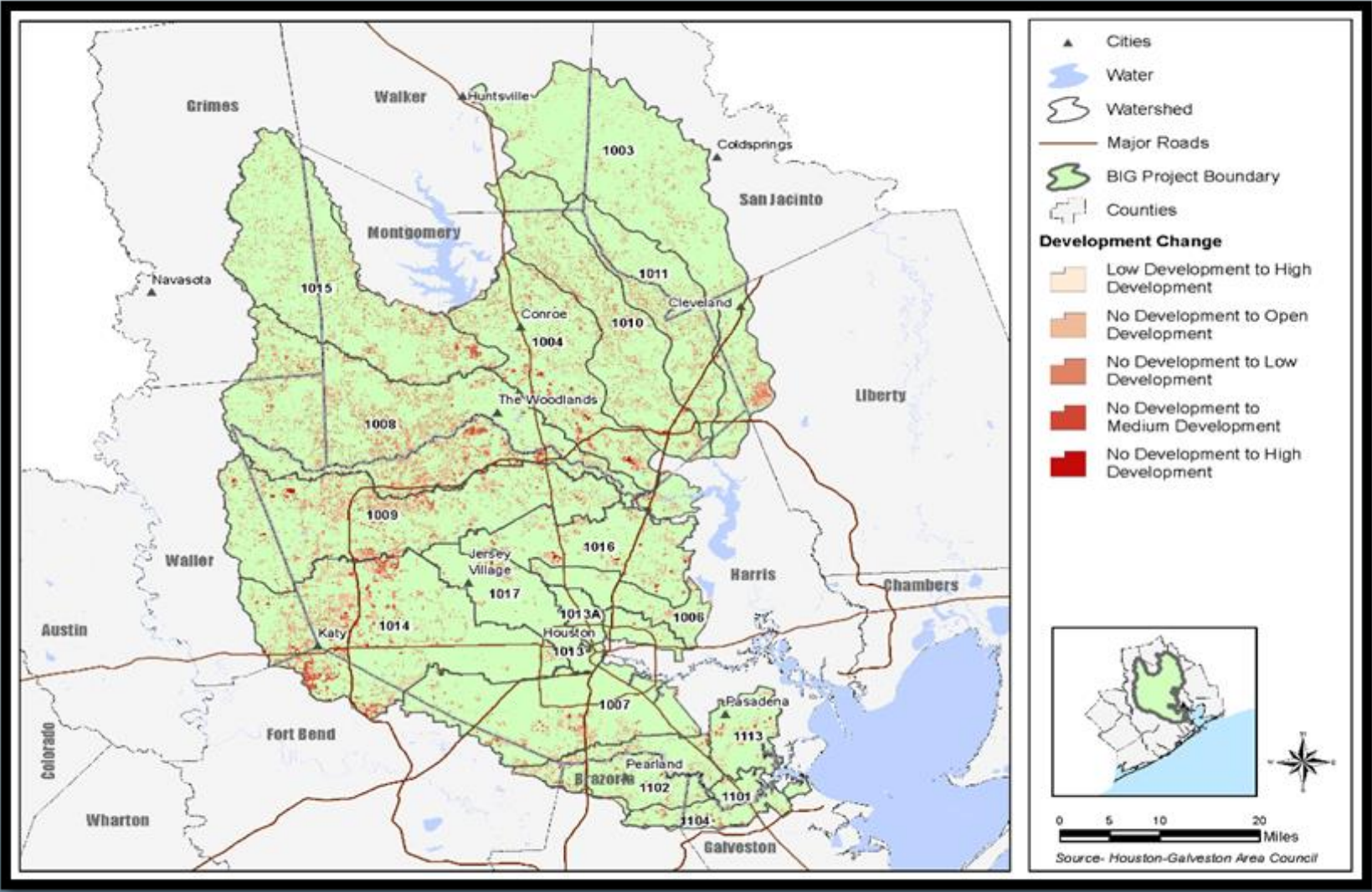


5.0 Construction

- Implementation Activity:
 - 5.1 Encourage Increased Compliance and Enforcement of Stormwater Management Permits



Development Pressure



6.0 Illicit Discharge

- Implementation Activities:

6.1 Encourage Local Jurisdictions to Detect and Eliminate Illicit Discharges

6.2 Improve Regulation and Enforcement of Illicit Discharges

6.3 Monitor and Control Waste Hauler Activities

6.4 Reduce Boater Wastes (New)

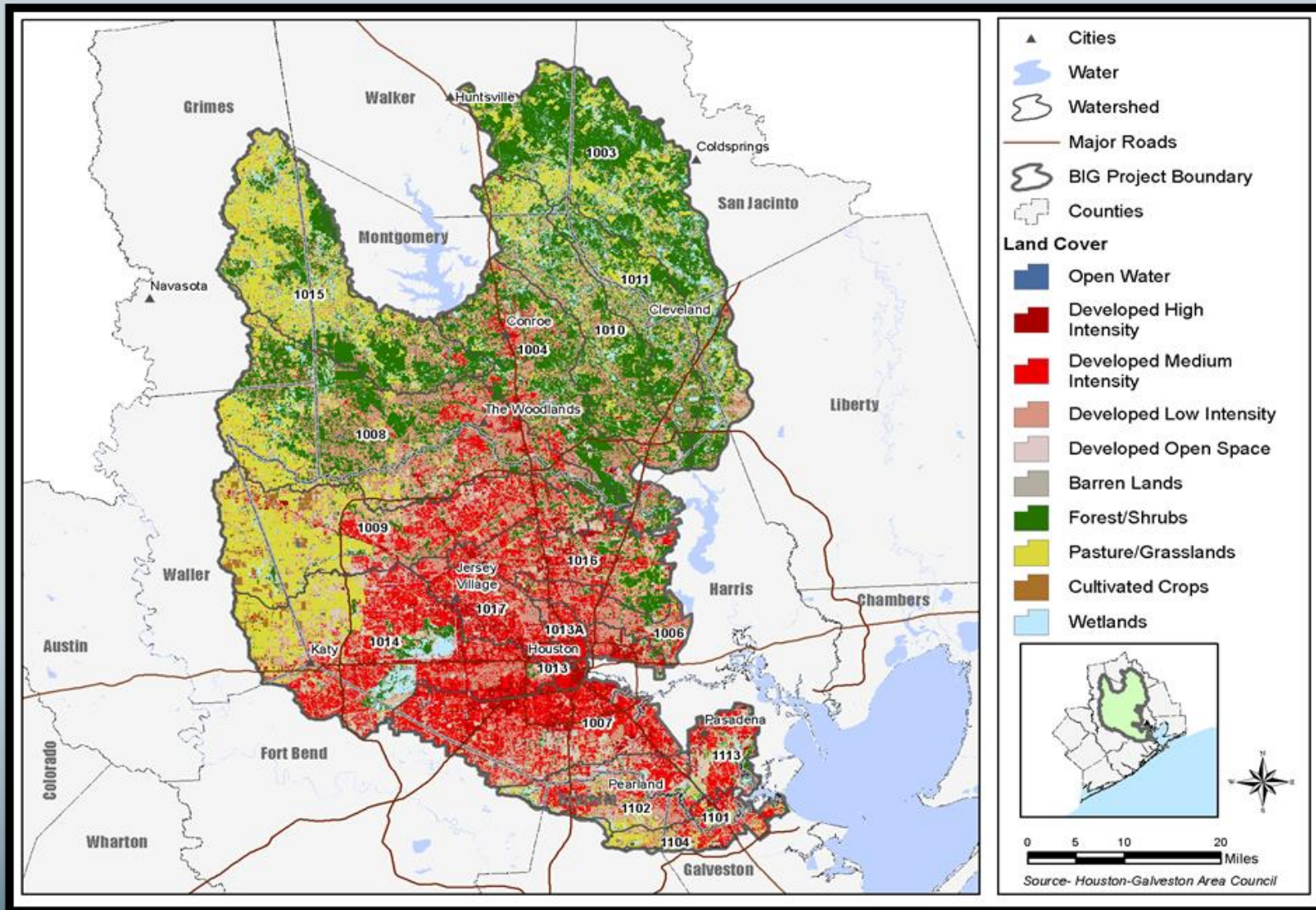


7.0 Agriculture, Animal and Silviculture Sources

- Implementation Activities:
 - 7.1 Promote Increased Participation in Existing Programs for Erosion Control, Nutrient Reduction, and Livestock Management
 - 7.2 Promote the Management of Feral Hog Populations



Land Cover



8.0 Residential

- Implementation Activity:
8.1 Expand Homeowner Education Efforts Throughout the BIG Project Area

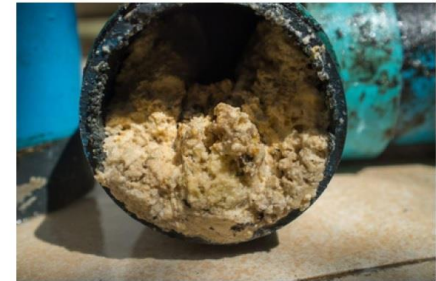
NEVER put Fats, Oils, & Grease down the drain! **ONLY WATER** goes down the drain

Dear Residents,

Fats, Oils, and Grease (FOG) damages and clogs pipes, which can cause sewer backups in your apartment - or your neighbor's. It can also cause overflows in our community that brings harmful bacteria into contact with people and waterways.

What can go down the drain?

- ✗ Grease or fat from meat
- ✗ Cooking oils, lard, shortening
- ✗ Butter & margarine
- ✗ Dairy products
- ✗ Mayo, salad dressings, sour cream
- ✓ Water



What can YOU do?

- Dispose of Fats, Oil & Grease in the trash not down the drain.
- Scrape food scraps into the trash not down the drain or garbage disposal.
- Wipe grease and oil off dishes before rinsing or placing in the dishwasher.

Thank you for helping keep our community clean!

Apartment
logo

Learn more about Fats, Oils, and Grease (FOG) and proper disposal methods at ceasethegrease.net

This project is funded in part by the TCEQ through a grant from the United States Environmental Protection Agency

9.0 Monitoring and I-Plan Revision



- Implementation Activities:
 - 9.1 Continue to Utilize Ambient Water Quality Monitoring and Data Analysis
 - 9.2 Conduct and Coordinate Non-Ambient Water Quality Monitoring
 - 9.3 Create and Maintain a Regional Implementation Activity Database
 - 9.4 Assess Monitoring Results and Modify I-Plan

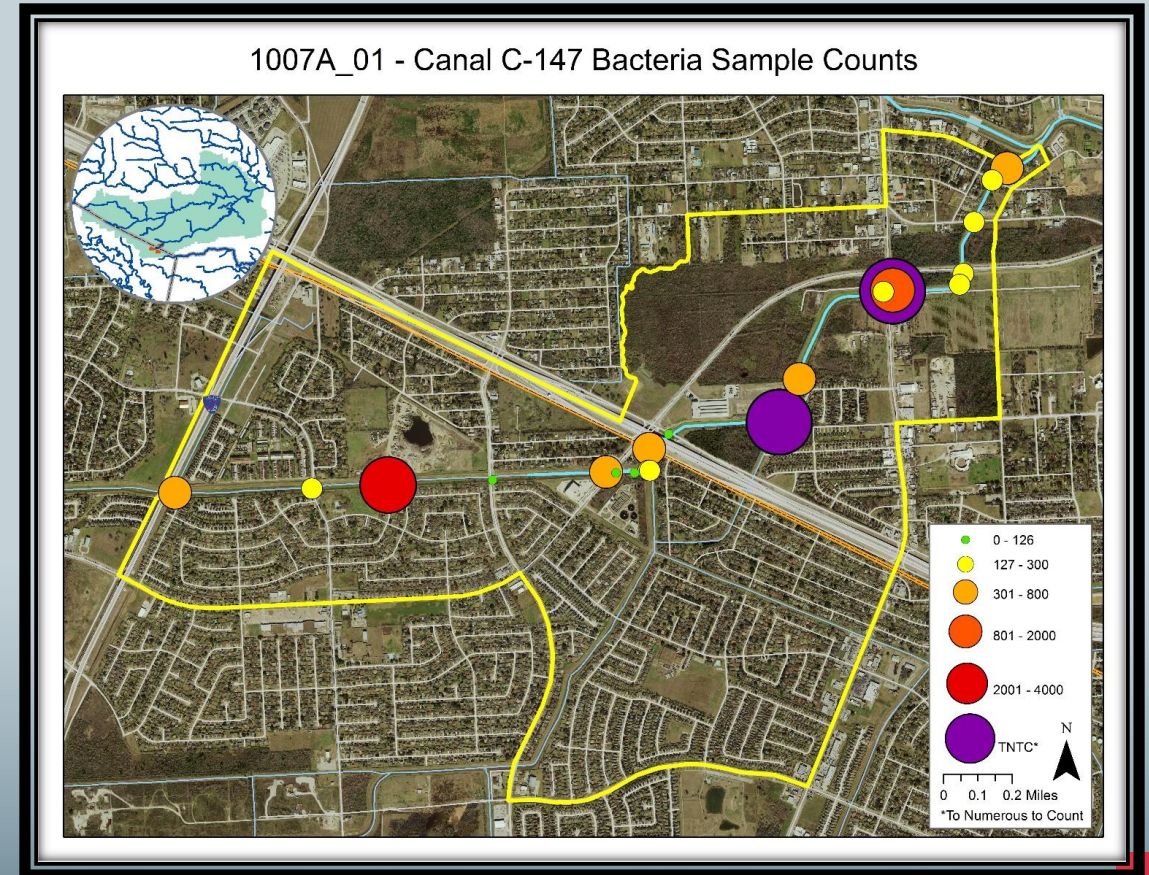
10.0 Research

- Implementation Activities:
 - 10.1 Evaluate the Effectiveness of Stormwater Implementation Activities
 - 10.2 Further Evaluate Bacteria Persistence and Regrowth
 - 10.3 Determine Appropriate Indicators
 - 10.4 Additional Research Topics

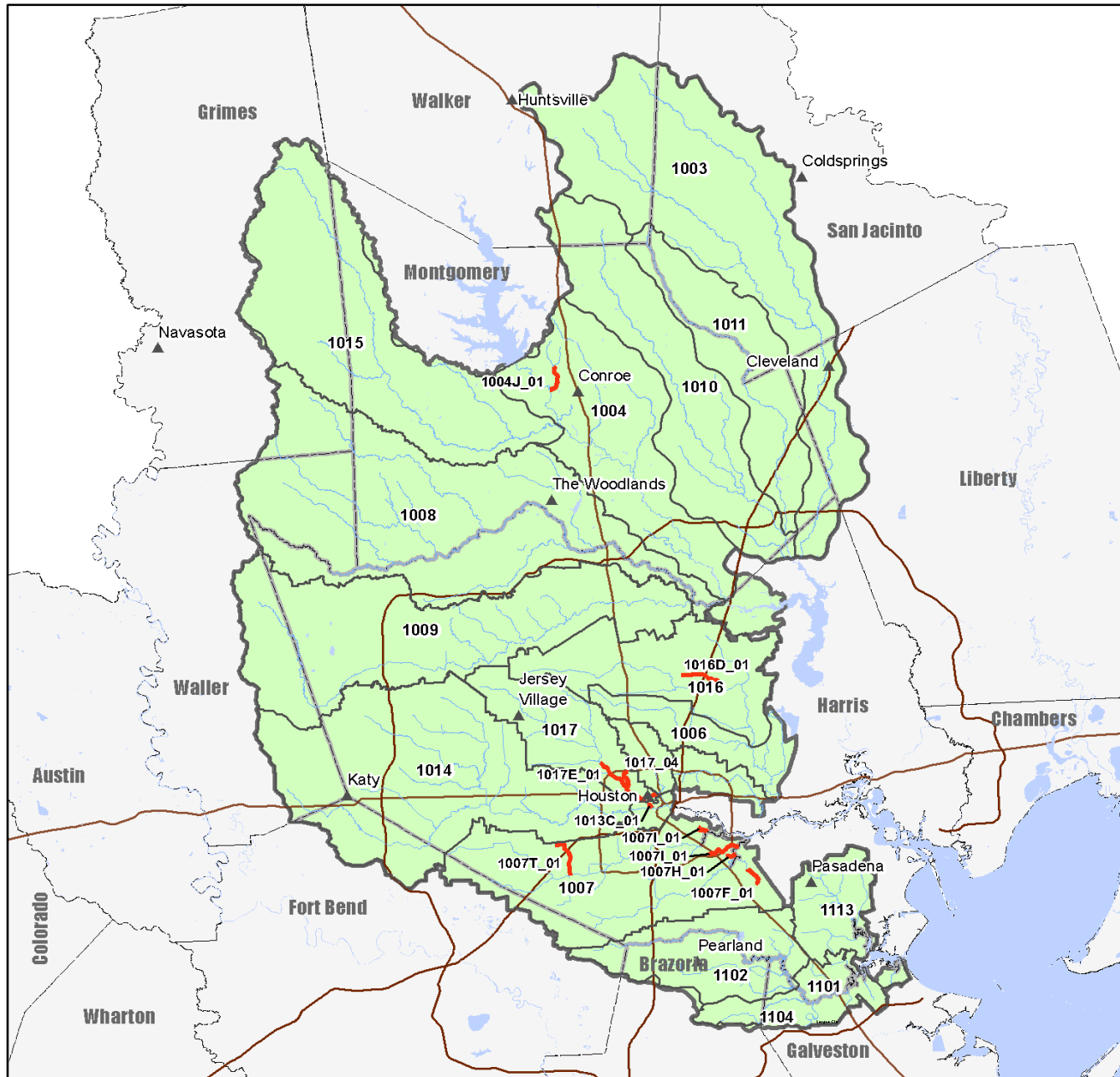


11.0 Geographic Priority Framework

- Implementation Activity:
11.1 Consider recommended criteria when selecting geographic location for projects



BIG Project - Top Ten Highest Geometric Mean



- ▲ Cities
- Water
- Watershed
- Top 10 Highest Geometric Mean
- Streams
- Major Roads
- BIG Project Boundary
- Counties

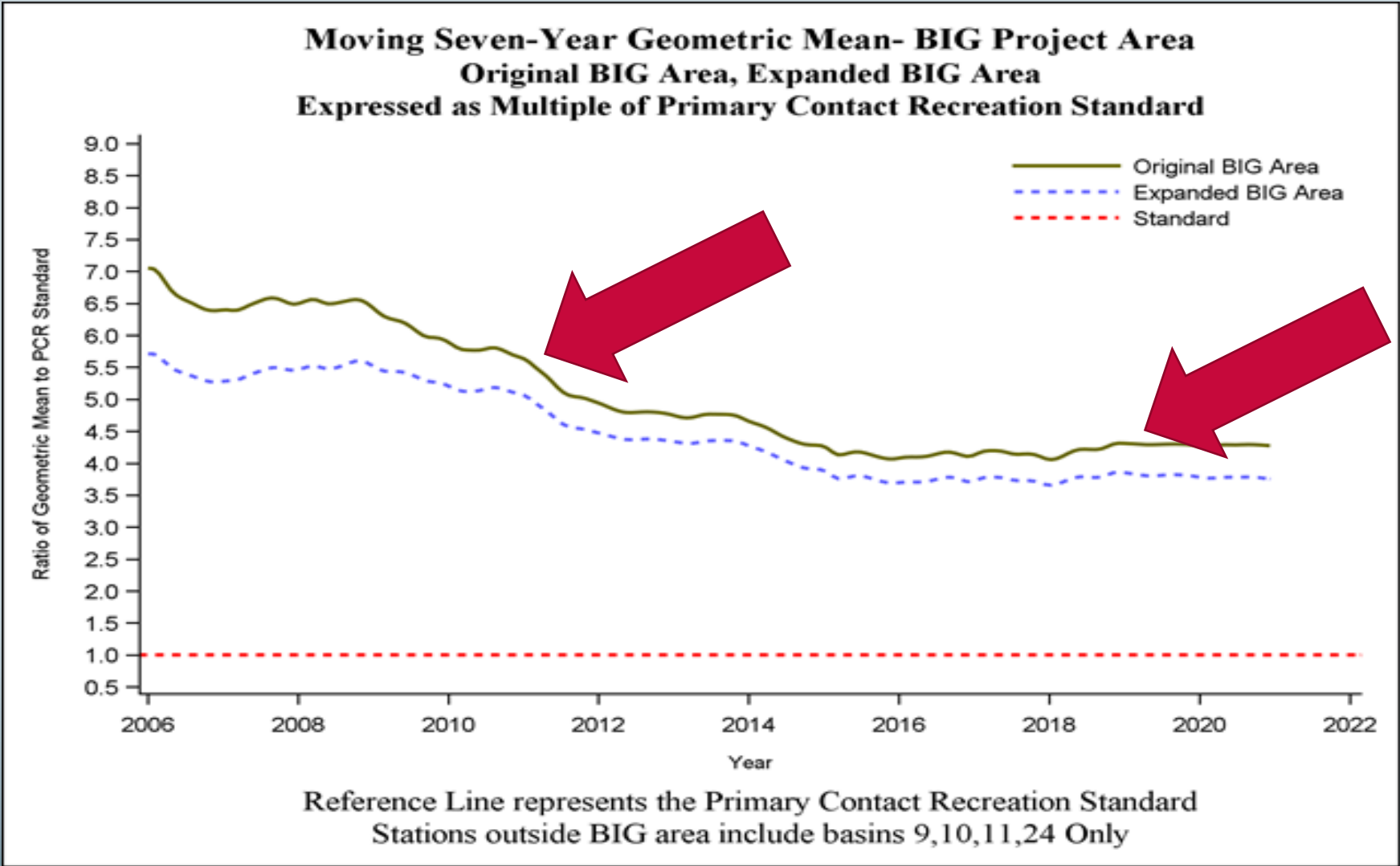
0 5 10 20 Miles

Source- Houston-Galveston Area Council

Implementation



BACTERIA TREND IN BIG PROJECT AREA



QUICK START EFFORTS

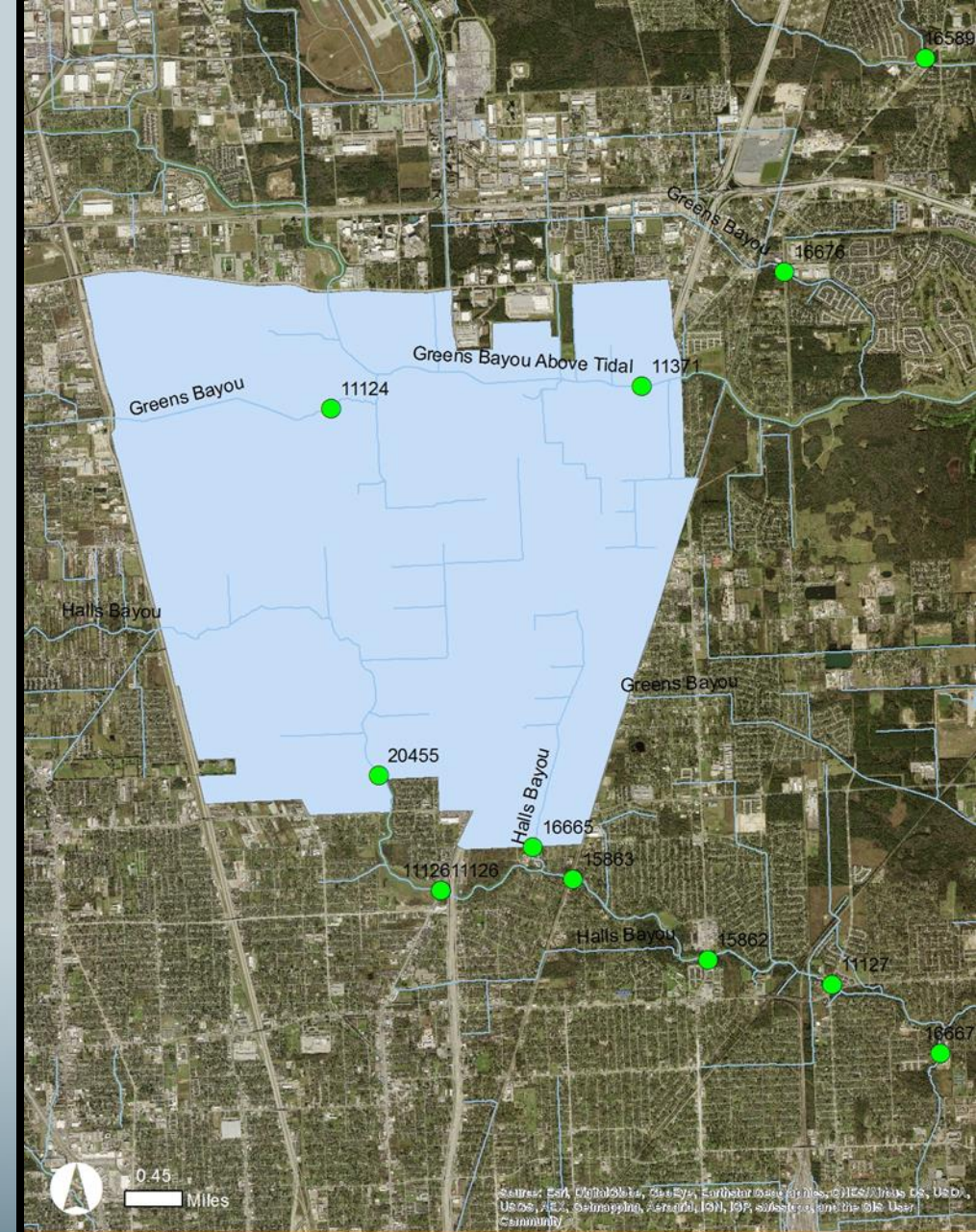


Photo credit: Lisa Montamayor

Success Story

ALDINE WESTFIELD: CASE STUDY

- Coordinated Partner Effort
 - Harris County
 - East Aldine Management District
- Monitoring Sites
 - Halls Bayou
 - Greens Bayou
- Reduced bacteria levels downstream

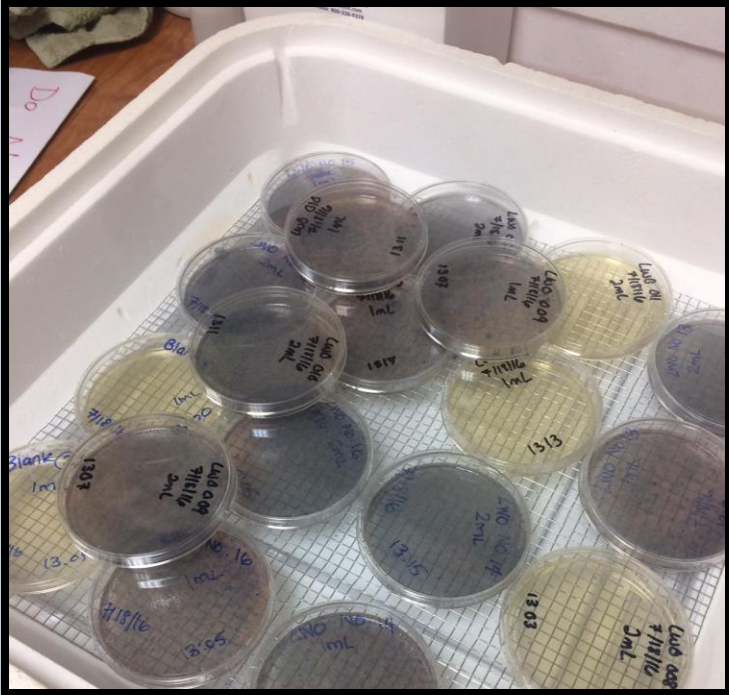


Implementation Opportunities

- Outreach
 - TrashBash®
 - OSSF Workshops
 - Texas Stream Team Training
 - Ag/Feral Hog Workshops
 - Green Infrastructure Workshops
- Structural
 - Pet Waste Stations
 - Evaluating/Repairing OSSFs
 - Expand LID/GI practices
 - Targeted Monitoring



OTHER HIGHLIGHTS



TARGETED BACTERIA REDUCTION

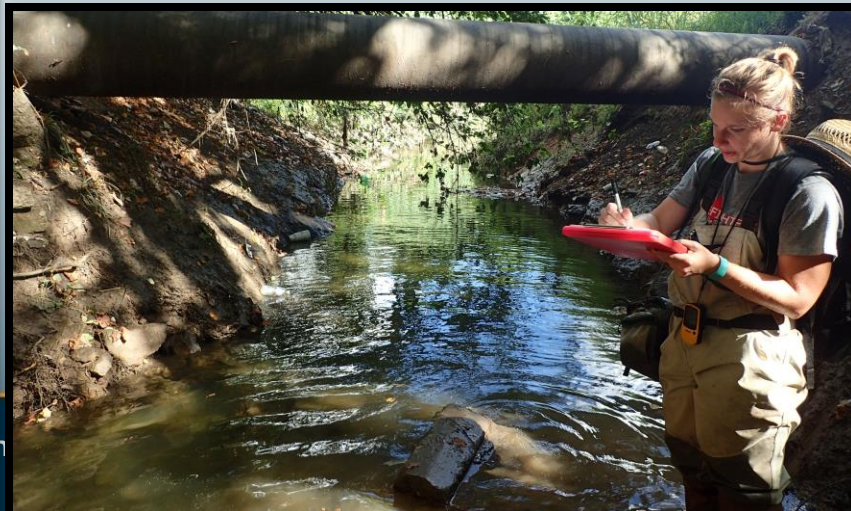
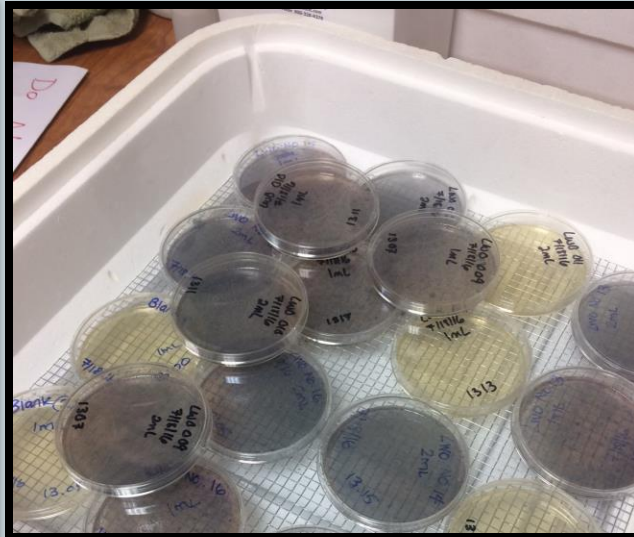


LOW IMPACT DEVELOPMENT



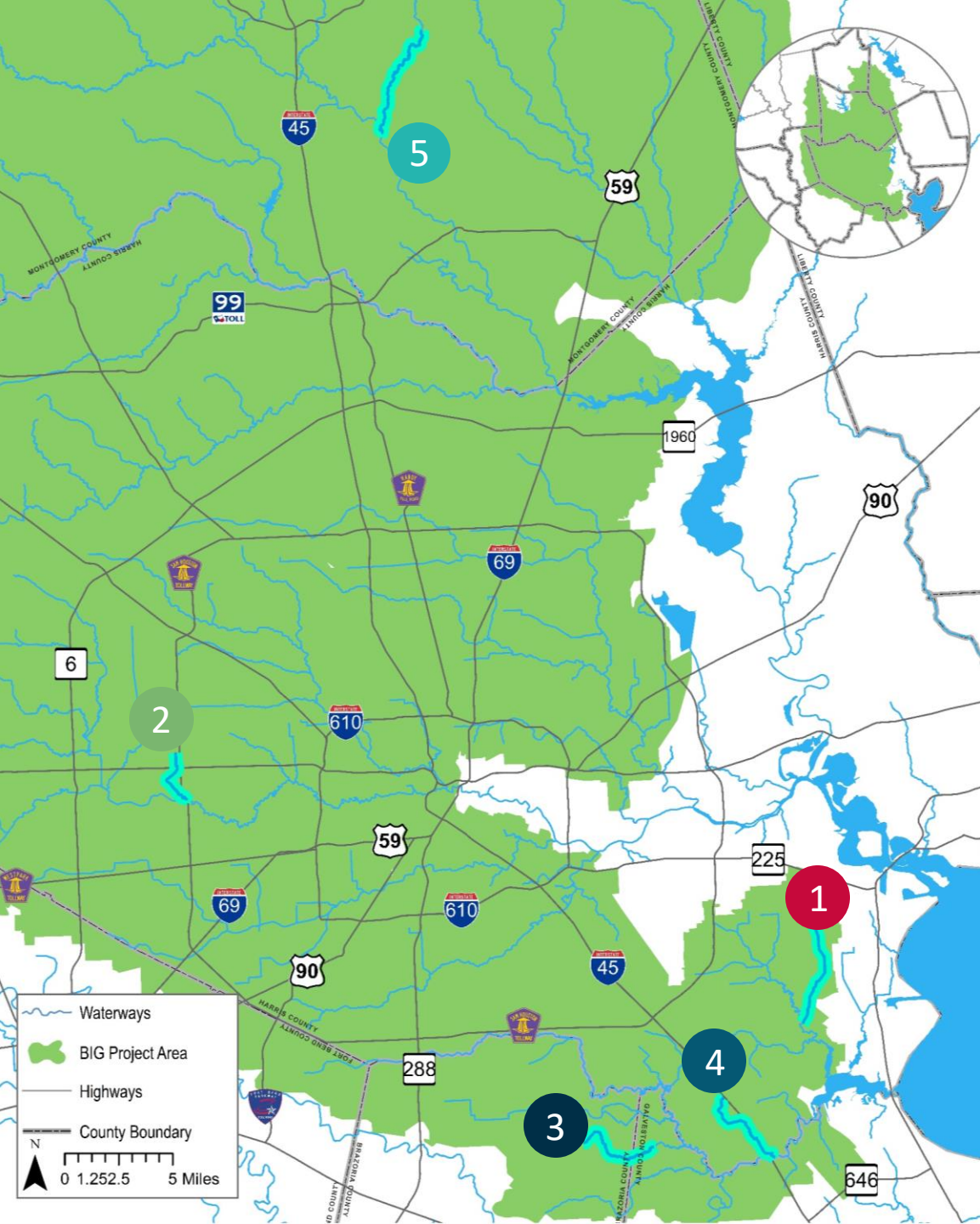
PUBLIC OUTREACH

TARGETED BACTERIA REDUCTION

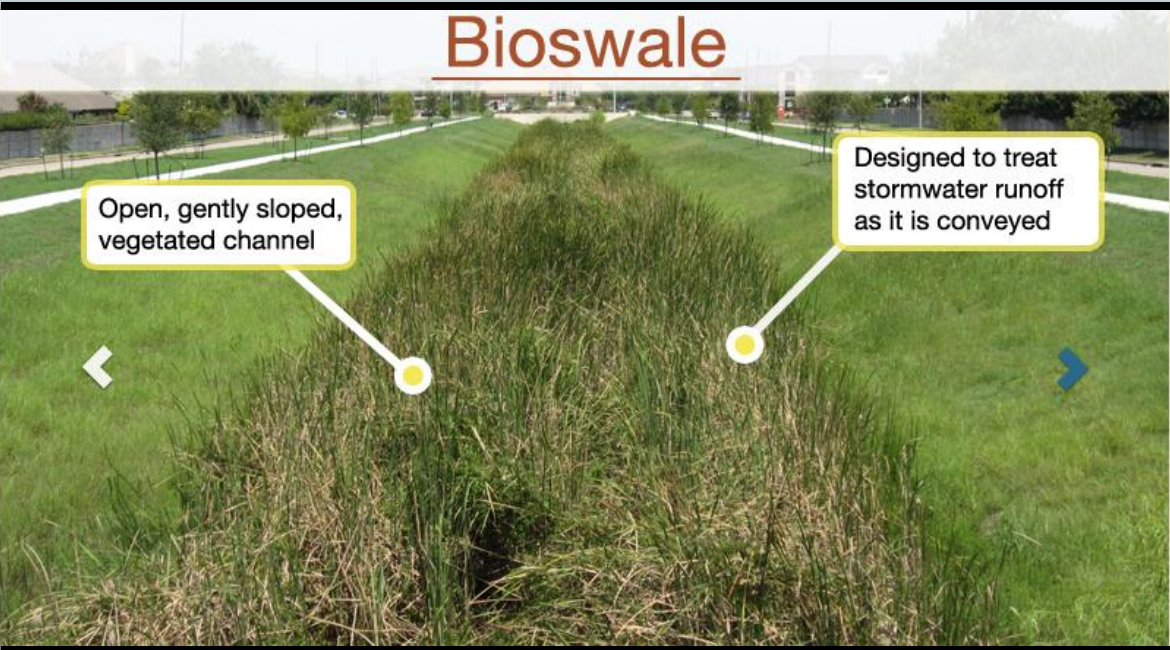


TOP 5 MOST IMPROVED SEGMENTS

- 1 Big Island Slough
- 2 Rummel Creek
- 3 Cowart Creek
- 4 Unnamed Tributary to Clear Creek
- 5 Crystal Creek



LOW IMPACT DEVELOPMENT



Outreach Toolbox & Roadmap

- Project website
- Roadmap messaging
- H-GAC & partner resources
- Model ordinances
- Links to funding, training, and meeting opportunities



www.coastalcommunitiestx.com

FOG in Rental Properties

- Community-Based Social Marketing Pilot Project
- Workgroup developing Outreach Plan and Resources
- Piloting Resources over the summer

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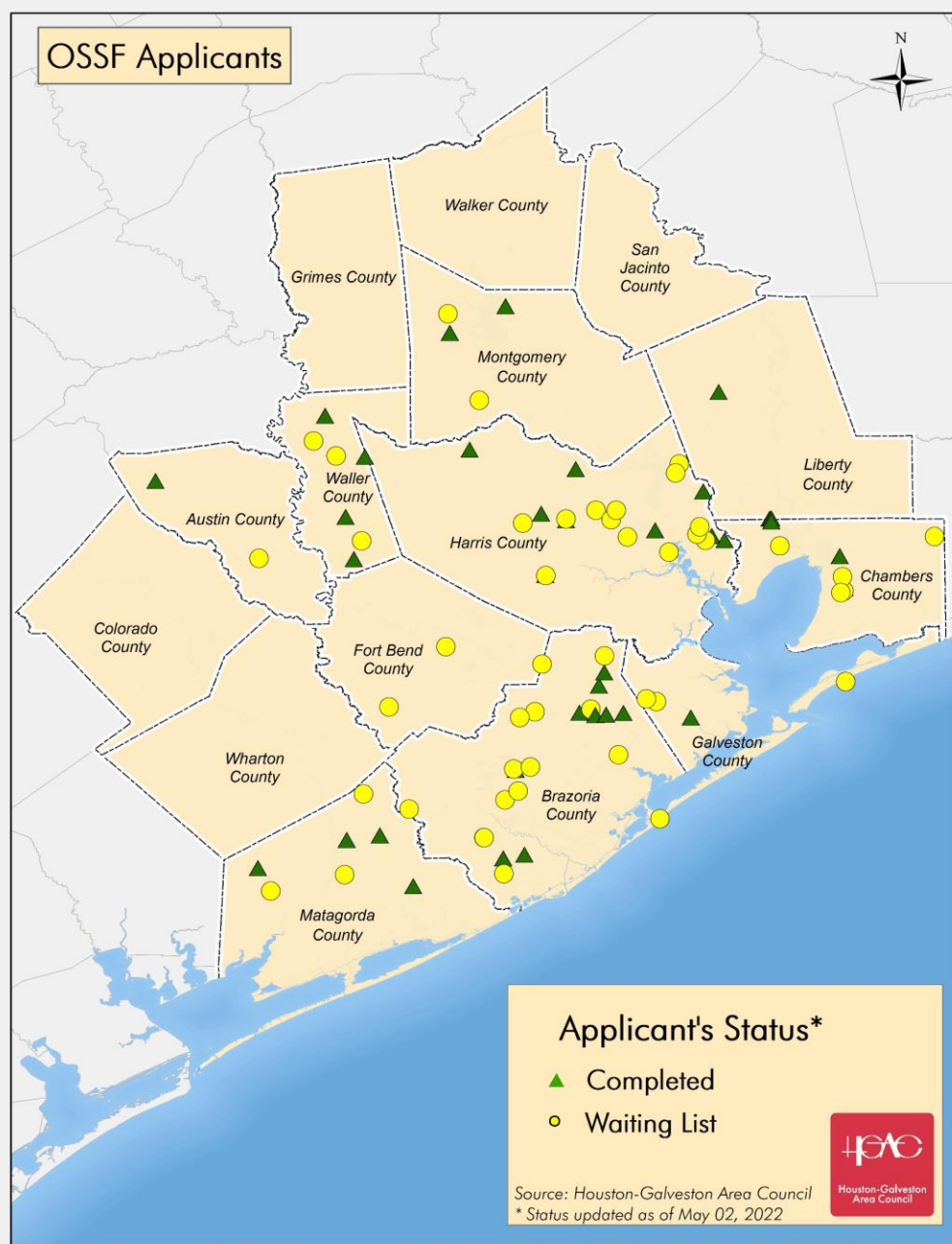
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On-Site Sewage Facility (OSSF) Resources

- Homeowner Education Workshops
- Homeowner Wastewater Assistance Program
- More information:
 - ossf@h-gac.com
 - [H-gac.com/on-site-sewage-facilities](https://h-gac.com/on-site-sewage-facilities)

Challenges and Opportunities

- **Challenges**
 - Stakeholder Involvement
 - Reach
 - Implementation Viability
- **Opportunities**
 - Short-term Funding
 - Long Range Planning



MOVING FORWARD

INVESTMENT

ASSET
MANAGEMENT

STORMWATER

ON-SITE SEWAGE
SYSTEMS



BEHAVIOR CHANGE

Resource Links

- Clean Rivers Program
 - <http://h-gac.com/clean-rivers-program/default.aspx>
 - <http://h-gac.com/clean-rivers-program/data/default.aspx>
- Basin Highlights Report
 - <https://www.h-gac.com/clean-rivers-program/basin-highlights-summary-reports.aspx>
- TCEQ's 2022 Integrated Report for Surface Water Quality
 - <https://www.tceq.texas.gov/waterquality/assessment/22twqi/22txir>
- Watershed-based Plans –
 - <https://www.h-gac.com/watershed-based-plans/default.aspx>
 - <https://www.h-gac.com/bacteria-implementation-group>
- Targeted Monitoring
 - <http://www.h-gac.com/community/water/tmdl/BIG/reports.aspx>
- EPA ECHO
 - <https://echo.epa.gov/>
- Low Impact Development
 - <http://www.h-gac.com/community/low-impact-development/default.aspx>

Acknowledgments



Texas Commission on Environmental Quality



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