



HOUSTON-GALVESTON AREA COUNCIL

# HOW'S THE WATER 2016

Basin Summary Report  
Executive Summary



# TABLE OF CONTENTS

Introduction	04
Basins in the H-GAC Region	06
Significant Findings	07
Water Quality Monitoring	08
Regional Water Quality Summary Chart	10
Special Projects	12
Activities and Accomplishments	14
Success Story	16
Recommendations	18

# INTRODUCTION

The Basin Summary Report, produced every five years, outlines water quality issues in the Houston-Galveston Area Council region based on technical analysis of historical and current trends. This summary document highlights significant findings, activities and accomplishments, and recommendations from the report.

The full report is available at [www.bsr2016.com](http://www.bsr2016.com).



## Clean Water Is Essential

Clean water contributes \$4 billion annually to the regional economy through ecotourism, oyster harvesting, and commercial fishing. However, **more than 80% of the region's streams fail to meet state water quality standards.** The good news is **water quality is improving** as a result of the efforts of the Houston-Galveston Area Council (H-GAC) and its local Clean Rivers Program (CRP) partners.

# Basins in the H-GAC Region

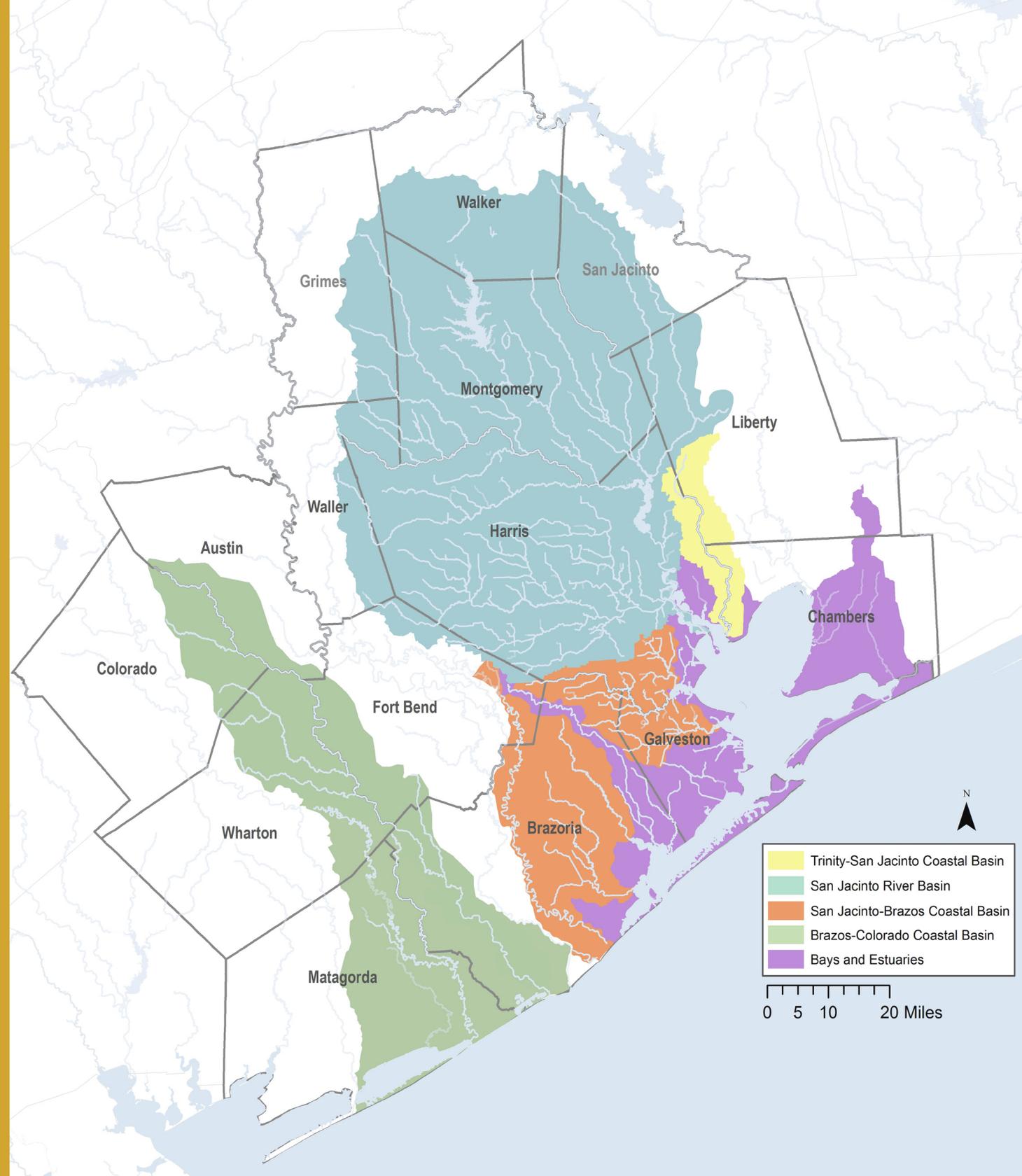
H-GAC's Clean Rivers Program region includes watersheds in all or a portion of 15 counties. The streams and rivers in the region drain into coastal bays and estuaries that eventually reach the Gulf of Mexico.

## Regional Issues

Bacteria is the most widespread and pervasive pollutant in the region; but, there's good news. More streams are getting better than are getting worse. The same is true for Dissolved Oxygen (DO) concentrations.

However, concerns for nutrients are growing, with 39% of streams showing increasing concentrations of nutrients. PCBs and Dioxins continue to be a problem; but, these levels remain constant.

The long-term challenge will be to maintain and improve water quality despite the cumulative impacts that will come with projected population growth and ongoing urban development.



## Significant Findings



\* There are currently no numerical standards for nutrient levels. A TCEQ screening criteria is used instead to evaluate stream health.

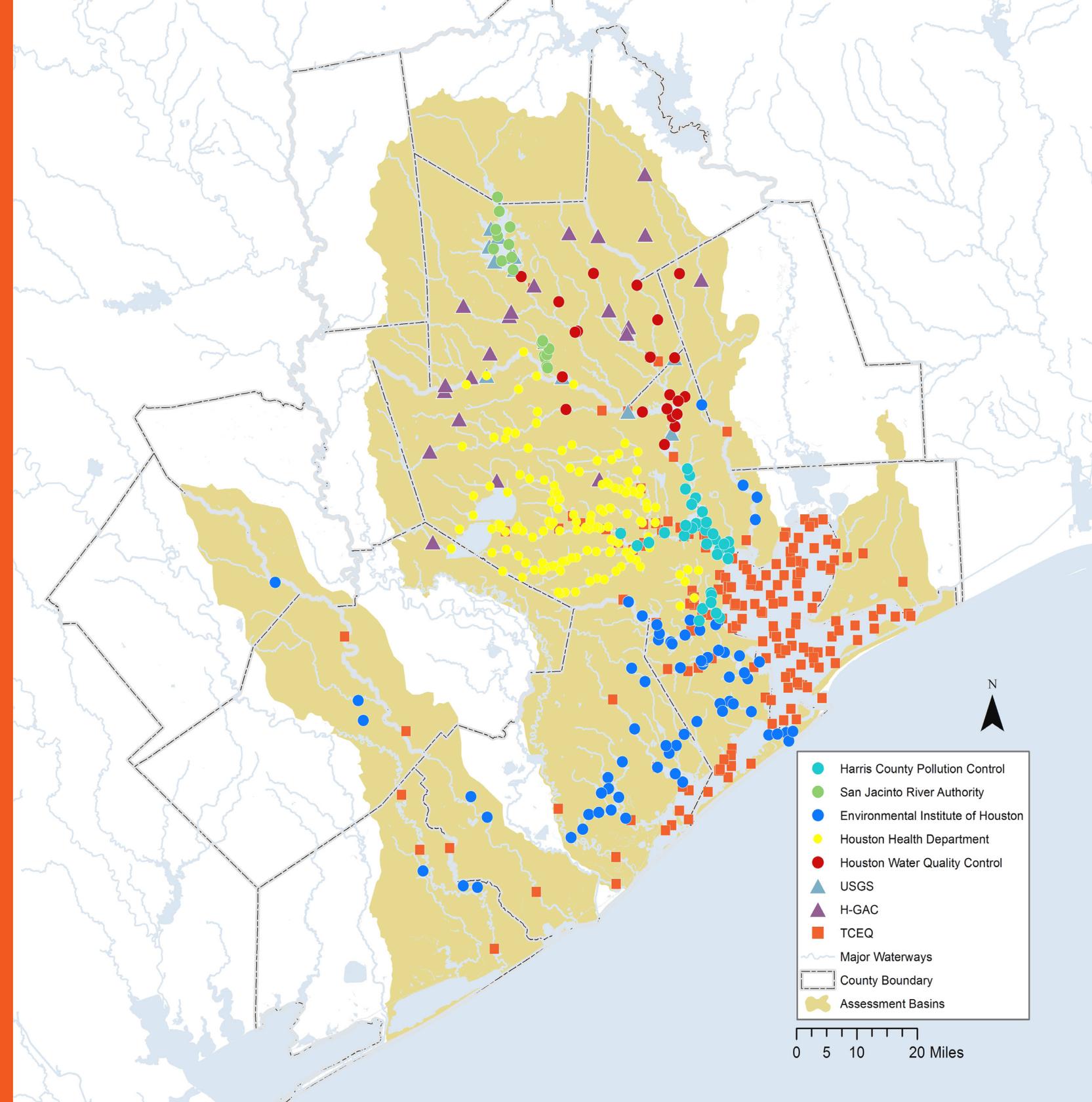
# Water Quality Monitoring

Routine water quality monitoring is conducted through a coordinated regional effort at over 450 sites by eight partner agencies.

H-GAC's Clean Rivers Program partners meet quarterly to discuss monitoring challenges, sampling protocols and equipment management, and to serve as a forum for sharing information from the Texas Commission on Environmental Quality (TCEQ) regarding quality assurance or data management issues.

All monitoring is completed under a TCEQ-certified Quality Assurance Project Plan, and all samples are analyzed by certified laboratories\*.

*\*Laboratories are certified by the National Environmental Laboratory Accreditation Program (NELAP).*



## Cost Savings

Coordinating monitoring efforts through H-GAC's Clean Rivers Program have helped partner agencies reduce costs by minimizing duplicated monitoring sites. These savings are reinvested in expanded monitoring, special studies, and other tools to better assess regional water quality whenever possible.

## Leveraging Funds

H-GAC's Clean Rivers Program combines program funding with in-kind partnerships, allowing the program to provide additional data to enhance the assessment process and support findings.

# Regional Water Quality Summary

Numbers represent the percent of total segment length impaired or of concern for each parameter. Cells without numbers represent stream segments that meet state standards but may be getting better or getting worse. For more information, see the watershed summaries at [www.bsr2016.com](http://www.bsr2016.com)

Basin	Segment Name	Segment #	DO	Bacteria	Chlorophyll <i>a</i>	Nutrients	Dioxin/ PCBs	Other*	Frog(s)
Trinity-San Jacinto Coastal	Cedar Bayou	0901	100	100	100		100		🐸
	Cedar Bayou Above Tidal	0902	100						🐸🐸🐸🐸
San Jacinto River	Buffalo Bayou Above Tidal	1014	10.8	79.4		70.7		2.2	🐸🐸🐸
	Buffalo Bayou Tidal	1013	30.8	63.3		36.4		27.0	🐸🐸🐸
	Caney Creek	1010	16.1	34.6					🐸🐸🐸🐸
	Cypress Creek	1009	41.0	84.6		84.6		10.4	🐸🐸🐸
	East Fork San Jacinto River	1003		100					🐸🐸🐸
	Greens Bayou Above Tidal	1016	9.0	91.2		80.3			🐸🐸🐸
	Houston Ship Channel	1006	16.5	47.2	7.8	86.5	36.7	36.7	🐸🐸
	Houston Ship Channel/ Buffalo Bayou Tidal	1007	19.6	72.8		83.9	23.8	23.8	🐸🐸
	Houston Ship Channel/San Jacinto River Tidal	1005				72.9	100	72.9	🐸🐸
	Lake Conroe	1012	11.0						🐸🐸🐸🐸🐸
	Lake Creek	1015	66.3	11.4				36.8	🐸🐸🐸
	Lake Houston	1002	19.6	6.6	14.1	41.3		0.1	🐸🐸🐸🐸
	Peach Creek	1011		100					🐸🐸🐸
	San Jacinto River Tidal	1001					43.4	43.4	🐸🐸🐸
	Spring Creek	1008	49.8	72.0	1.1	22.3		11.7	🐸🐸🐸
	West Fork San Jacinto River	1004		61.5		18.1			🐸🐸🐸
	Whiteoak Bayou Above Tidal	1017	11.4	84.6		80.8			🐸🐸🐸
San Jacinto-Brazos Coastal	Armand Bayou Tidal	1113	56.5	64.7	24.7	17.7	24.7	10.2	🐸🐸🐸
	Bastrop Bayou Tidal	1105	84.9	94.3		6.3			🐸🐸
	Chocolate Bayou Above Tidal	1108		100					🐸🐸🐸
	Chocolate Bayou Tidal	1107		100			100		🐸
	Clear Creek Above Tidal	1102	53.4	85.2		72.4	44.3	4.4	🐸🐸
	Clear Creek Tidal	1101	25.7	71.0	13.6	23.8	29.4		🐸🐸🐸
	Dickinson Bayou Above Tidal	1104	41.3	41.3					🐸🐸🐸
	Dickinson Bayou Tidal	1103	65.6	84.3	12.2		42.5		🐸
	Old Brazos River Channel Tidal	1111		100					🐸🐸🐸🐸
	Oyster Creek Above Tidal	1110	66.3	42.2	42.2			100	🐸🐸🐸
	Oyster Creek Tidal	1109		100					🐸🐸🐸

Basin	Segment Name	Segment #	DO	Bacteria	Chlorophyll <i>a</i>	Nutrients	Dioxin/ PCBs	Other*	Frog(s)
Brazos-Colorado	Caney Creek Above Tidal	1305	59.7	14.4		59.7		14.4	🐸🐸🐸
	Caney Creek Tidal	1304	33.2	100					🐸🐸🐸
	San Bernard River Above Tidal	1302	61.8	75.5		9.5		13.0	🐸🐸🐸
	San Bernard River Tidal	1301		100	100				🐸🐸🐸
Bays and Estuaries	Barbours Cut	2436				100	100		🐸🐸
	Bastrop Bay / Oyster Lake	2433							🐸🐸🐸🐸
	Bayport Ship Channel	2438	100		100	100	100		🐸
	Black Duck Bay	2428			100	100	100		🐸🐸
	Burnett Bay	2430			85.9	100	100	100	🐸
	Chocolate Bay	2432	23.4	41.4			38.7		🐸🐸🐸
	Christmas Bay	2434							🐸🐸🐸🐸
	Clear Lake	2425	8.4	10.8	65.1	80.0	92.3	65.1	🐸🐸
	Drum Bay	2435							🐸🐸🐸🐸
	East Bay	2423		30.0	100		100		🐸🐸
	Lower Galveston Bay	2439			100		100		🐸🐸
	Moses Lake	2431		47.5	15.8		43.8		🐸🐸🐸
	San Jacinto Bay	2427				100	100	100	🐸
	Scott Bay	2429				100	100	100	🐸
	Tabbs Bay	2426				35.1	100		🐸🐸
	Texas City Ship Channel	2437			100	100	100		🐸🐸
	Trinity Bay	2422			100	60.6	100		🐸🐸
	Upper Galveston Bay	2421			89.5	95.7	100		🐸🐸
	West Bay	2424	15.0	9.3	11.4		88.5		🐸🐸🐸
	Gulf of Mexico	2501						44.0	🐸🐸🐸🐸

GETTING BETTER GETTING WORSE NO CHANGE

## Chart Key

- 🐸 Severe, multiple water quality impairments and/or concerns exist in the majority of the waterbody.
- 🐸🐸 Significant, multiple water quality impairments and/or concerns exist in the majority of the waterbody.
- 🐸🐸🐸 Impairments or concerns exist in a substantial portion of the waterbody.
- 🐸🐸🐸🐸 Impairments or concerns exist in the waterbody.
- 🐸🐸🐸🐸🐸 No known water quality impairments or concerns exist in the waterbody.

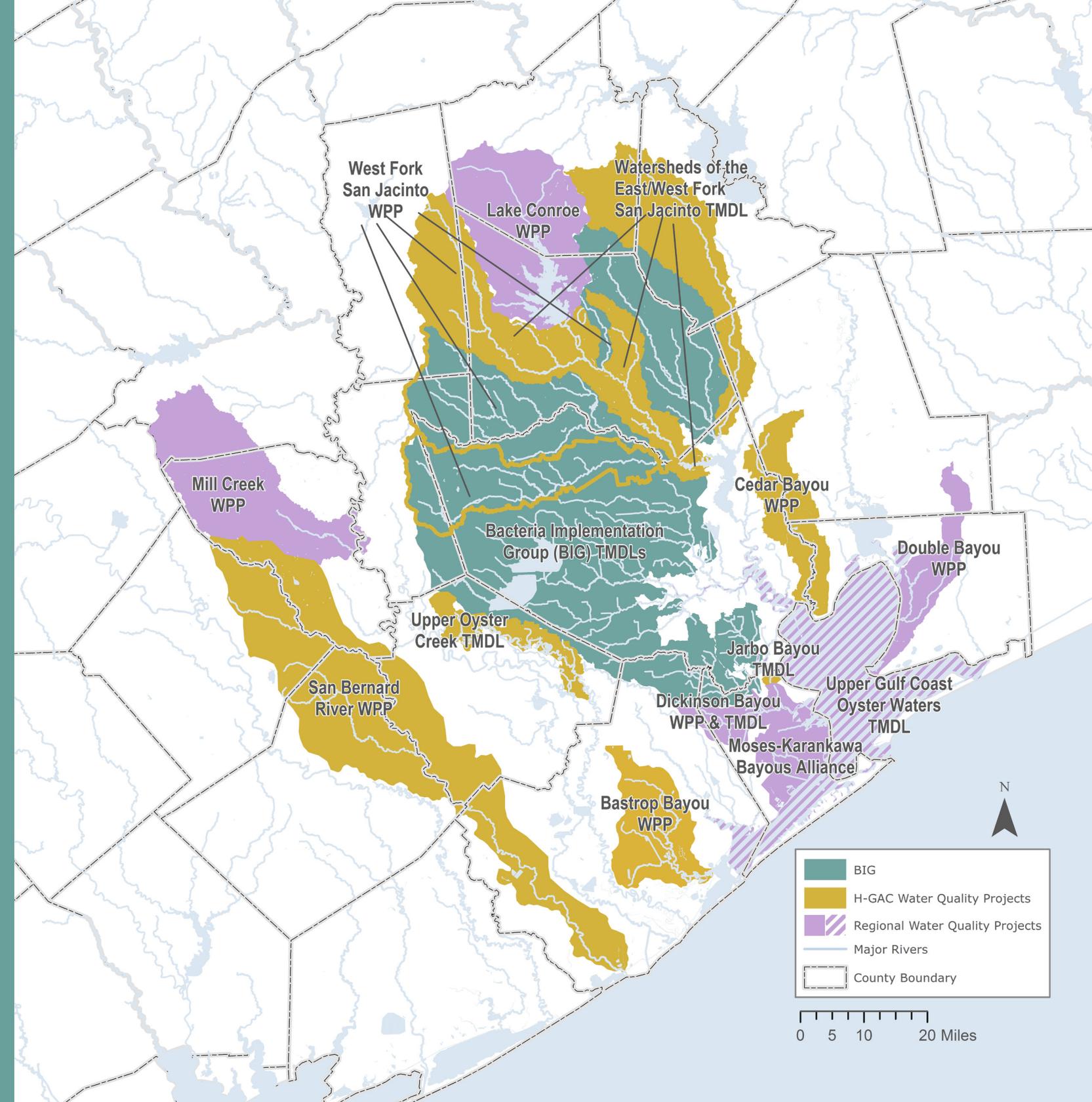
\* Other includes parameters such as metals in water, metals in sediment, impaired habitat, impaired benthic macroinvertebrates, impaired fish communities, sediment toxicity, fecal coliform, mercury in fish tissue, and fish contamination.

# CRP Special Projects

In addition to routine monitoring, H-GAC's Clean Rivers Program funds special projects to collect more data and identify problem areas.

- In an effort to better evaluate nutrient sources in the region, H-GAC conducted a nutrient and land use relationship study in 2013. Results determined that areas with more wetland or forest tended to have lower nutrient concentrations.
- H-GAC conducts 24-hour DO monitoring to verify or determine the extent of impairment and better evaluate DO fluctuations over a 24-hour period.

More information about CRP special projects is available at [www.bsr2016.com](http://www.bsr2016.com).



## Non-CRP Water Quality Initiatives

Based on Clean Rivers Program monitoring, H-GAC works with local stakeholders to develop plans to protect water quality, including Watershed Protection Plans (WPPs) and Total Maximum Daily Load (TMDL) Implementation Plans (I-Plans).

One of the most successful local initiatives is the Bacteria Implementation Group (BIG), a partnership of government, business, and community leaders working to implement a plan for reducing bacteria.

Since 2008, bacteria concentrations within the BIG project area have declined from nine times the state's standards to just above four times the standard.



# ACTIVITIES & ACCOMPLISHMENTS

Coordination and cooperation among a variety of agencies involved in water quality matters is key to educating more people about the importance of protecting water quality.

## Public Outreach

H-GAC informs and educates citizens and local governments about watershed stewardship and existing water quality issues through a variety of methods, including developing and distributing publications, providing educational information at special events, hosting workshops and forums, providing data in interactive formats, maintaining informative websites, and providing community education and volunteer opportunities.

## Public Outreach Highlights



**TRASH BASH®** H-GAC helps coordinate the River, Lakes, Bays 'N Bayous Trash Bash®, the largest single-day waterway cleanup in Texas. Since 2012, more than 24,000 volunteers have cleaned 821 miles of shoreline while learning about regional water quality issues through interactive displays and games.



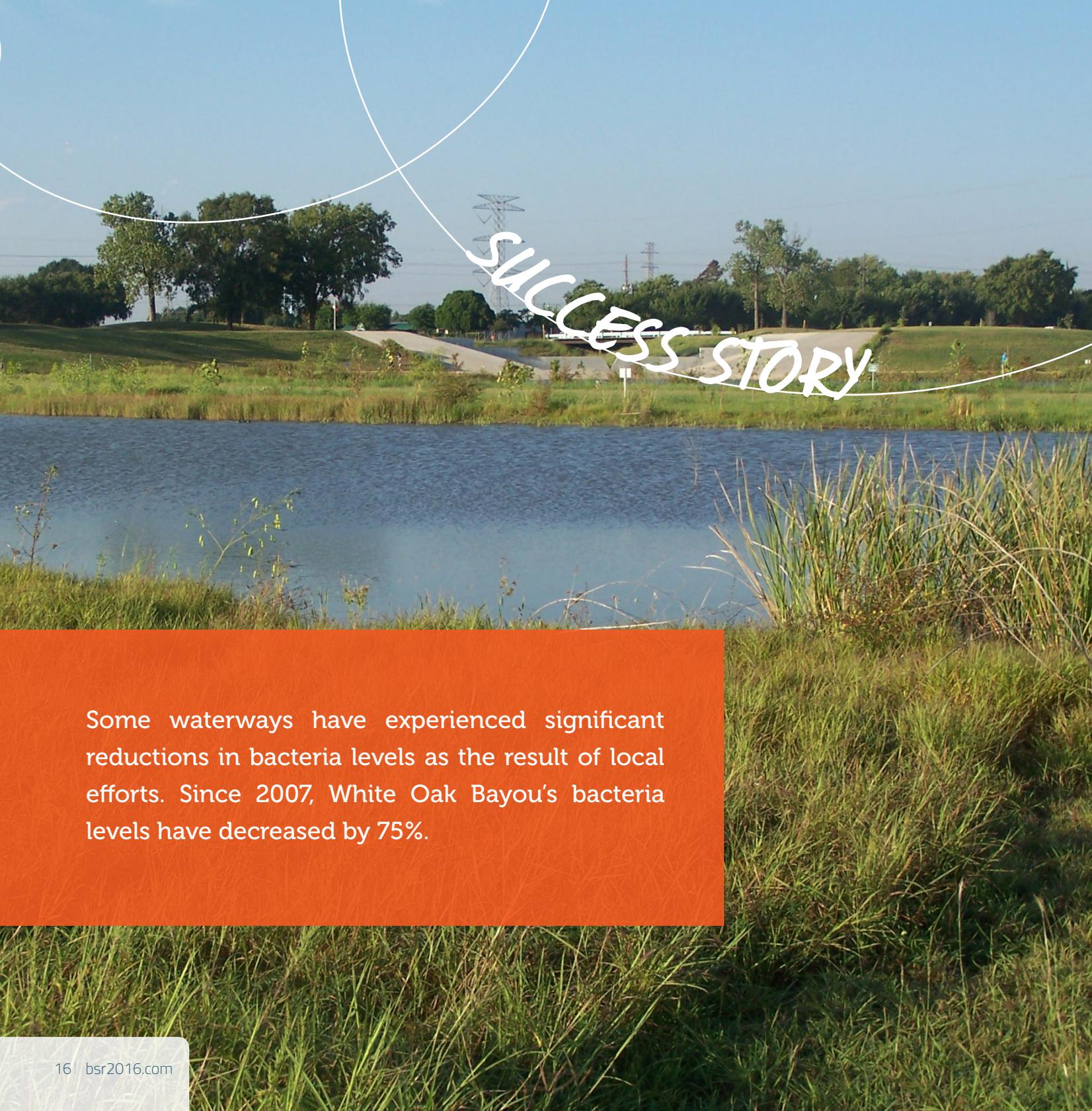
**CLEAN WATERS INITIATIVE** The Clean Waters Initiative (CWI) program offers free workshops to help local governments, landowners, and residents develop effective strategies to reduce pollution in area waterways. More than 1,400 participants have attended 34 workshops in the past five years.



**TEXAS STREAM TEAM** The regional Texas Stream Team program's 133 volunteers collect water quality samples at 123 sites in 33 watersheds. This data supplements professional monitoring data.



**COMMUNITY EVENTS** H-GAC hosts educational booths promoting proper pet waste disposal and addressing other regional water quality issues at community events, including the World Series of Dog Shows, an event that attracts more than 40,000 people each year.



Some waterways have experienced significant reductions in bacteria levels as the result of local efforts. Since 2007, White Oak Bayou's bacteria levels have decreased by 75%.

## Local Efforts to Reduce Bacteria

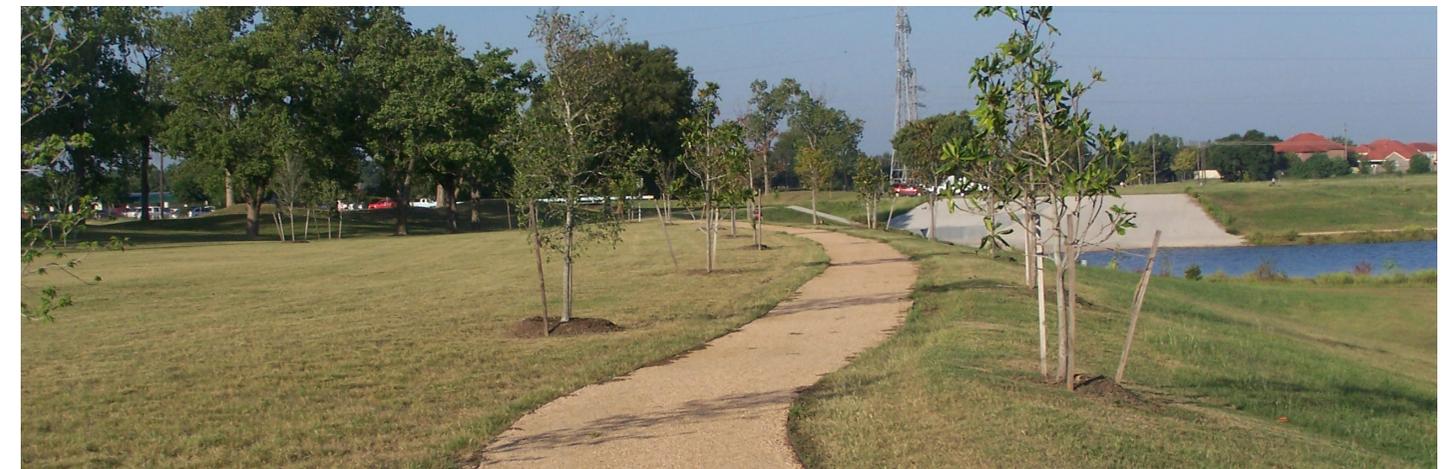
While over 80% of White Oak Bayou, in the BIG project area, is still impaired for bacteria, City of Houston and Harris County's efforts to reduce sewer system leaks and overflows and eliminate illegal sewer connections have helped reduce bacteria concentrations by 75% since 2007.

Additionally, the Harris County Flood Control District (HCFCD) now includes water quality features, such as wetlands, in stormwater detention basins they develop along the bayou.

HCFCD and the City of Jersey Village converted an old golf course into a 114-million gallon detention basin (one of five in the watershed) with water quality features, decreasing flooding risks and serving as an amenity to the surrounding community.

Other areas of the region will experience similar water quality success stories, as individuals, organizations, communities, and local governments help reduce bacteria by

- Maintaining and improving sanitary sewer collection systems;
- Ensuring wastewater treatment facilities do not release water with high bacteria levels into waterways;
- Implementing stormwater management programs that include water quality elements;
- Requiring maintenance, repair, and, in some cases, replacement of on-site sewage facilities; and
- Increasing public awareness to help residents learn how their choices affect water quality.



# RECOMMENDATIONS

Refer to the full 2016 Basin Summary Report for a detailed summary of all watersheds in the region and for more information about H-GAC's Clean Rivers Program efforts since 2011. Access the full report at [www.bsr2016.com](http://www.bsr2016.com).



The region's population is projected to increase by 3.5 million by 2040. As the region grows, monitoring water quality will become more important.

H-GAC's Clean Rivers Program will continue to provide high quality data to assess water health and provide insight as to what needs to be done to maintain or improve the quality of the region's waterways.

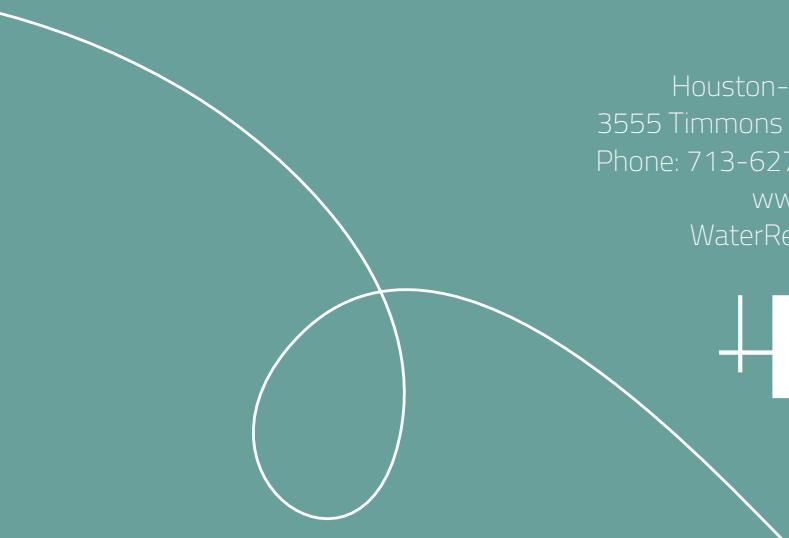
The region will face many water quality issues in the future. However, in areas where stakeholders have come together to make improvements, there has already been great success.

There are many recommendations for improving water quality in this summary and the full *2016 Basin Summary Report* at [www.bsr2016.com](http://www.bsr2016.com).

Recommendations are not a one-size-fits-all solution. However, the region can work together to protect water quality for years to come.

## Recommendations

- Encourage the addition of water quality features (rain gardens, rain barrels) to stormwater systems.
- Encourage Water Quality Management Plans or similar projects for agricultural properties.
- Use regional best management practices (BMPs) and on-site sewage facilities (OSSF) databases to prioritize problem areas.
- Offer educational webinars that can be accessed remotely to reach a larger demographic.
- Work with local agencies to implement management measures recommended in the *BIG I-Plan for Bacteria Reduction*.
- Expand the BIG area to increase connectivity of BMPs with neighboring watersheds.
- Support development and implementation of WPPs.
- Work with the TCEQ Standards Team to develop nutrient standards.
- Work with local partner and contract labs to lower detection limits for nutrients.
- Continue to expand routine water quality monitoring by adding new local agencies to the Regional Water Quality Monitoring Network.
- Continue to expand Texas Stream Team monitoring in priority areas.
- Begin working with USGS and EPA to develop guidelines for the monitoring of emerging pollutants.



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CE0816