



## ACTION PLAN 2 OF 3

# IMPROVE WATER QUALITY THROUGH POINT SOURCE POLLUTION ABATEMENT (PS)

Traditionally, pollution abatement efforts in the region focused on regulating PS discharges, like effluent from industry and municipal wastewater treatment facilities (WWTFs). These types of discharges are highly scrutinized under the requirements and oversight of regulatory permits. In more recent years, flows from stormwater systems joined these traditional discharges as part of the focus on permit controls to improve degraded water quality. Although permit requirements help ensure the safety of stormwater discharges, these regulated systems remain a focus of water quality efforts.

Failing infrastructure overflows from sanitary sewer systems or improperly treated wastewater can affect a waterway by introducing high levels of fecal bacteria. Excessive bacteria can endanger human health.

Stormwater system flows are typically untreated and can carry contaminants and nutrients from developed areas directly to local waterways. Nutrients can lead to low levels of dissolved oxygen and endanger aquatic life. Contamination from point sources contributes to the overall effect of water pollution on the environment and on the local economies of Galveston Bay.

### What is Point Source Pollution?

Point source pollution is any type of pollution affecting a waterway that originates from discrete sources or a single identifiable discharge point. Point sources of pollution can include regulated discharges from WWTFs and stormwater systems.

The watershed that flows to Galveston Bay has over 1,000 regulated wastewater discharges and a varied network of municipal stormwater systems (TCEQ, 2014, TCEQ\_AU\_Line\_14). With regional growth projected to continue at a rapid pace in the coming decades, both wastewater and stormwater capacity and discharges will increase proportionally.

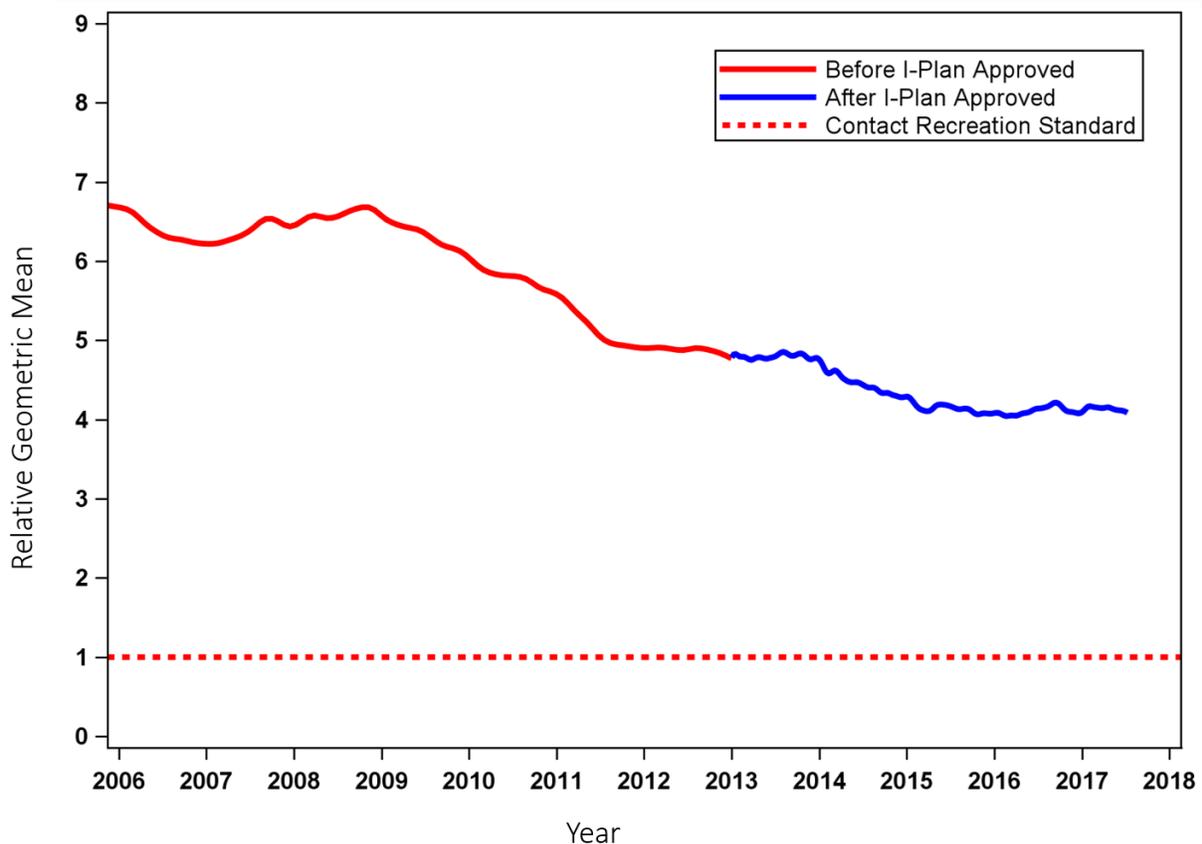
The combination of rapid growth, highly variable and rapid precipitation events over a short period of time, poorly draining soils, and large collection systems based on low-density development presents unique challenges to area wastewater and stormwater utilities. Although these sources are the focus of regulatory controls, the number of dischargers, elevated risk of human waste as a public health concern, insufficient enforcement capacity, and increasing volumes of discharges mean point sources will continue to be a source of concern for water quality in the Galveston Bay watershed.

Extreme weather events can cause flooding, storm surge, and windstorms that stress wastewater and stormwater systems with quantities of water far greater than their maximum designed capacity. When these hazards occur more frequently, they overburden the resiliency of the bay.

## Example of Point Source Pollution Action Implementation

Bacteria impairments in the region continue to be the most pressing issue. The GBEP and its partners are addressing this issue and reducing PS pollution through projects such as the BIG. The BIG is a partnership between the H-GAC, local governments, businesses, and community leaders to develop and implement a plan to reduce bacteria. The project area is a combination of more than 100 TMDLs in adjacent watersheds with common stakeholders working to create a single plan.

**FIGURE 13**  
**BACTERIA IN THE BIG PROJECT AREA:**  
**MOVING SEVEN-YEAR RATIO OF GEOMETRIC MEAN TO PCR STANDARD**



The BIG offers a menu of water protection activities, most of which are voluntary; however, one regulatory area of success is an initiative to halve the standard bacteria permit limit to 63 most probable number (MPN) of fecal coliform per 100 milliliters (mL) for some wastewater permit holders in the BIG project area. This initiative, along with other non-regulatory actions, has contributed to continued water quality improvement (see Figure 13). \*

*\*It is important to note that 96.5 percent of the reported grab / daily maximum bacteria samples meet required permit limits for bacteria.*

With the increase of centralized wastewater treatment, water quality for the lower Galveston Bay watershed is characterized as good for many water quality parameters. However, potential contaminants, such as personal care products and pharmaceuticals, have not been routinely tested. Wastewater treatment technology has not been thoroughly evaluated to determine if it will prevent these contaminants from passing through without being treated. In other parts of the country, one class of these compounds, endocrine disruptors, is linked to changes in the sex ratio of fish and deformities in aquatic life (Vajda et al., 2008). The GBEP and its partners continue to monitor new research on these contaminants and will incorporate findings into future efforts where appropriate.

**FIGURE 14**  
**PS ACTION PLAN MATRIX**

ACTION PLANS AND CORRESPONDING ACTIONS		PLAN PRIORITIES			
		Ensure Safe Human and Aquatic Life Use	Protect and Sustain Living Resources	Engage Communities	Inform Science-Based Decision Making
<b>Action Plan: Improve Water Quality Through Point Source Pollution Abatement (PS)</b>					
PS-1	Support Stormwater Education Programs	x		x	
PS-2	Achieve Sanitary Sewer System Capacity and Integrity	x		x	
PS-3	Increase Wastewater Treatment Facility Compliance	x		x	

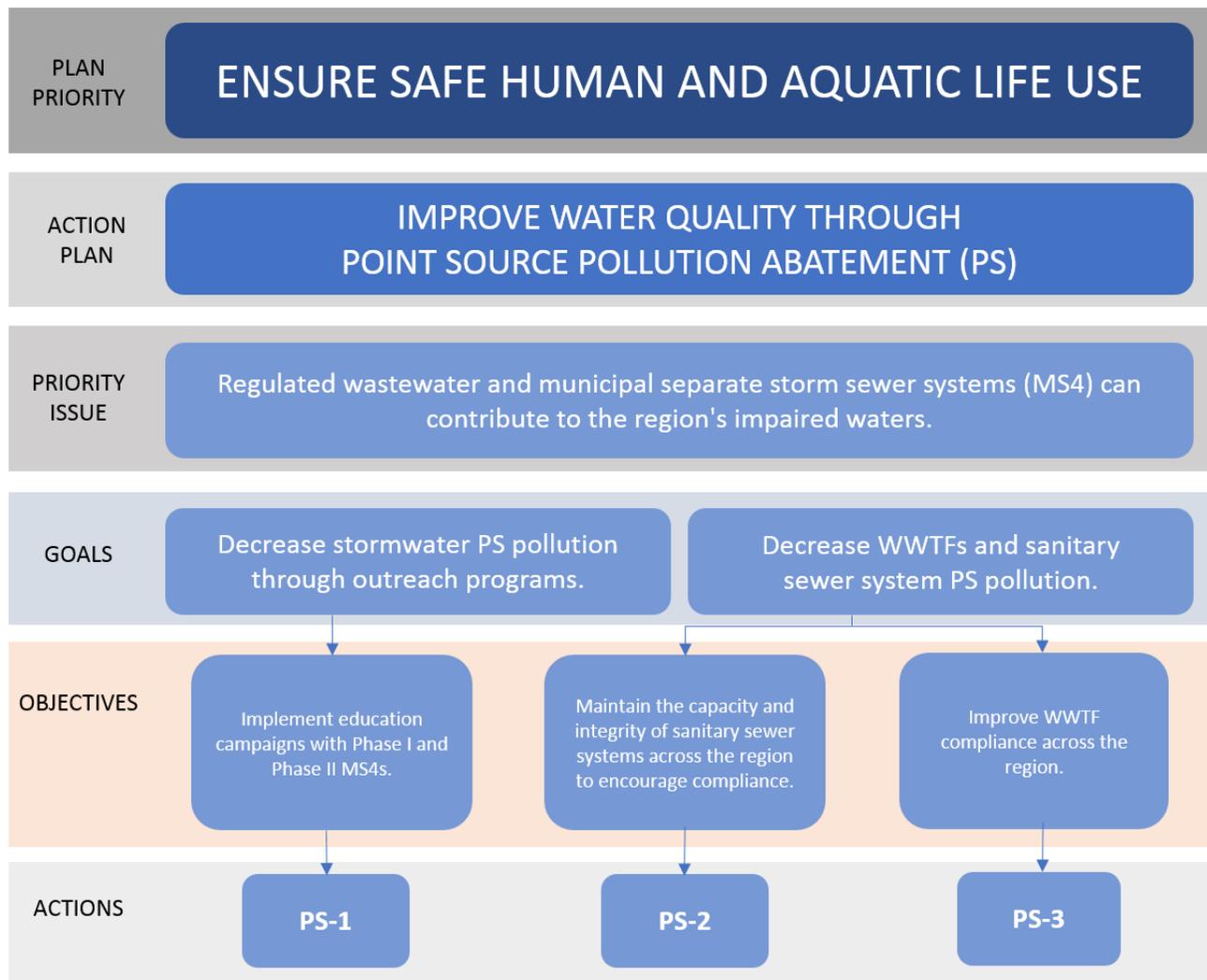
## Action Plan Overview

*GBP'18* identifies three Actions to improve water quality through PS pollution abatement. The first is to increase public awareness of stormwater issues and promote the use of green infrastructure to mitigate stormwater impacts (**PS-1**). Increasing public awareness of stormwater issues, precipitating a change in behaviors that negatively influence stormwater quality, is a key element in **PEA-1**, included under Plan Priority Three: Engage Communities. Coordination between the WSQ and PPE subcommittees on this issue is key to successful implementation.

Promoting TCEQ efforts and programs to reduce sanitary sewer overflows, such as regional education campaigns (**PS-2**) and seeking to increase compliance by WWTFs through coordination with the TCEQ and technical support for local utilities (**PS-3**) are crucial to reducing point source pollution. Successful implementation of **PS-2**, requires coordination with the PPE subcommittee on **SPO-3** and **PEA-1**. A similar coordination effort between the subcommittees will support the creation of a local utilities toolbox (**PS-3**), which is also supported by **SPO-3**.

More information on **PEA-1** is given on page 116. More information on **SPO-3** is provided on page 110.

**FIGURE 15**  
**POINT SOURCE ACTION PLAN**



# PS-1



## Support Stormwater Education Programs

Objective: Implement education campaigns with Phase I and Phase II MS4s.

Priority Issue: Regulated wastewater and MS4s can contribute to the region's impaired waters.

Description: The GBEP and its partners are collaborating on existing education campaigns with owners and operators of Phase I and II MS4 permits on the development and implementation of stormwater management programs to address sediment, litter, pet waste, and illicit discharges from the MS4s.

The GBEP and its partners will also promote BMPs, including low impact development / green infrastructure, construction BMPs and illicit discharge detection programs, and other water quality improvement techniques across the region.

Implementation location: Lower Galveston Bay watershed.

ACTIVITIES	TIMEFRAME AND OUTPUT(S)	IMPLEMENTATION COST
Increase collaboration between MS4 programs across the region.	Within 2-5 years, develop database to track existing MS4 programs and identify opportunities for collaboration.	\$0 - \$200,000
Work with PPE subcommittee and partners to coordinate and facilitate stormwater outreach efforts.	Within 2-5 years, coordinate with PPE to promote or host workshops and regional messaging campaigns to support point source education efforts.	\$0 - \$200,000
Finalize stormwater outreach plan and begin implementation activities, such as hosting or promoting workshops and promoting regional messaging.	Within 5-10 years, continue to coordinate with PPE on stormwater outreach efforts.	\$200,000 - \$1 Million
Complete stormwater outreach plan implementation activities.	Within 10-plus years, continue to coordinate with PPE on stormwater outreach efforts and host identified workshops.	\$200,000 - \$1 Million
Complete effectiveness monitoring and share results with partners, including possible data evaluations, white papers, and project mapping.	Within 10-plus years, track success of workshops by identifying the number of MS4s implementing BMPs.	\$0 - \$200,000

## POTENTIAL IMPLEMENTERS

H-GAC  
Local MS4 Permit Holders

Texans for Clean Water  
TCEQ

## PERFORMANCE MEASURES

1. Database of MS4s completed.
2. Number of stormwater workshops and educational programs completed.
3. Number of MS4s implementing BMPs post-workshops.

## REFERENCES

**GBP'95:** NPS-1, NPS-2, NPS-6, NPS-7, NPS-12, NPS-13, PS-5, SD-5, SD-6, SD-7

**SAP Reference:** Ecosystem and Human Health – WSQ: Goal 1 / Objective D; Ecosystem and Human Health – WSQ: Goal 2 / Objective B; Public Participation and Education - Public Education: Goal 1 / Objective B

## PS-2



### Achieve Sanitary Sewer System Capacity and Ensure Integrity

Objective: Maintain the capacity and integrity of sanitary sewer systems across the region to encourage compliance.

Priority Issue: Regulated sanitary systems can contribute to the region's impaired waters.

Description: The GBEP and its partners are promoting TCEQ programs to encourage repairs, improvements, and replacement of chronically failing sanitary sewer systems.

The GBEP and its partners are promoting TCEQ's Sanitary Sewer Overflow Initiative that develops compliance agreements with municipalities with sanitary sewer overflows and use of existing initiatives that address fats, oils, grease, and sanitary wipes--common causes of sanitary sewer overflows.

Implementation location: Lower Galveston Bay watershed.

ACTIVITIES	TIMEFRAME AND OUTPUT(S)	IMPLEMENTATION COST
Work with partners to improve or replace failing sanitary sewer systems in project area.	Within 2-5 years, identify and prioritize list of geographies with chronically failing sanitary sewer systems in need of repair, improvement, or replacement.	\$0 - \$200,000
	Within 5-10 years, support or host technical workshops (number to be determined) for targeted geographies.	\$0 - \$200,000
Host or support regular sanitary sewer systems workshops.	Within 5-10 years, track number of workshops supported or hosted and number of attendees.	\$0 - \$200,000
Track the number of TMDL / I-Plans in the project area.	Within 10-plus years, track number of TMDL / I-Plans initiated or completed in targeted geography.	\$0 - \$200,000
Demonstrate the effectiveness of sanitary sewer systems and efforts to repair, improve, or replace failing sanitary sewer systems.	Within 10-plus years, pull sanitary sewer overflow data for targeted geographies to determine whether a reduction occurred.	\$0 - \$200,000

### POTENTIAL IMPLEMENTERS

Bayou Preservation Association  
 City of Houston Public Works Department  
 Galveston Bay Foundation  
 Galveston County Health District  
 Harris County Pollution Control Department

H-GAC  
 Sanitary Sewer System Owners / Operators  
 TCEQ  
 Watershed-Based Plan Participants / Stakeholders

### PERFORMANCE MEASURES

1. List of geographies with failing sanitary sewer systems.
2. Number of workshops and educational programs completed.
3. Number of TMDL/I-Plans initiated.
4. Number of geographies that show a reduction in sanitary sewer overflows.

### REFERENCES

GBP'95: PS-1, PS-2

SAP Reference: Ecosystem and Human Health – WSQ: Goal 2 / Objective A

## PS-3



### Increase Wastewater Treatment Facility Compliance

Objective: Improve WWTF compliance across the region.

Priority Issue: Regulated wastewater systems can contribute to the region's impaired waters.

Description: The GBEP and its partners are coordinating with the TCEQ's Environmental Assistance Division on opportunities to improve WWTF compliance.

The GBEP and its partners are creating a compliance tool box that includes measures like technical workshops, increased regulatory compliance inspections and no-notice inspections, development of a non-regulatory inspection program, identification of funding sources, and potential for regionalization of chronically noncompliant WWTFs. The tool box may be promoted through the GBEP's Back the Bay.

Implementation location: Lower Galveston Bay watershed.

ACTIVITIES	TIMEFRAME AND OUTPUT(S)	IMPLEMENTATION COST
Create a toolbox to provide support to chronically failing WWTFs.	Within 2-5 years, identify chronically failing WWTFs and evaluate factors leading to noncompliance; create compliance toolbox.	\$0 - \$200,000
Promote toolbox to provide support to chronically failing WWTFs.	Within 5-10 years, use compliance tool box to work with chronically failing facilities, communicating through technical workshops and non-regulatory and regulatory visits (number to be determined {TBD}).	\$200,000 - \$1 Million
Track the success of support provided to chronically failing WWTFs.	Within 10-plus years, pull failure data for identified WWTFs to determine compliance tool box success.	\$0 - \$200,000

### POTENTIAL IMPLEMENTERS

City of Houston Public Works Department  
EPA  
Galveston County Health District  
Harris County Pollution Control Department  
H-GAC

Local Governments  
Local Health Districts  
Local Industry  
TCEQ  
Texas Parks and Wildlife Department

### PERFORMANCE MEASURES

1. Assessment of needs/gaps of failing WWTFs, to understand why they are failing, completed.
2. Compliance toolbox completed.
3. Number of WWTFs that received toolbox in compliance.

### REFERENCES

GBP'95: PS-3, PS -4

SAP Reference: Ecosystem and Human Health – WSQ: Goal 3 / Objective A / Objective B