

# Flap Gate Fact Sheet

## OVERVIEW

### What is a Flap Gate?

A flap gate is a piece of steel or metal with a hinge at the top used on drainage pipes to keep water flowing in one direction. Flap gates function when a small difference in water level on the back side of the gate causes it to open automatically to allow the pipe to drain. When water on the downstream side of the gate rises above the water level on the back side (inside the pipe), the gate closes automatically to prevent backflow into the pipe.

### What is the Purpose of Installing Flap Gates in Bellaire?

To prevent floodwaters from Brays Bayou from backing into the City's storm sewer systems during low to moderate rainfall events.

### What are the proposed locations of Flap Gates in Bellaire?

The proposed flap gates would be installed at three major storm sewer outfall locations within the City of Bellaire: South Rice Avenue, Newcastle Street, and the railroad ditch on the east side of the City.

These three systems discharge into the Cypress Ditch that runs along the south boundary of the city and ultimately into Brays Bayou.

### What is the long term maintenance associated with Flap Gates?

The flap gates will require minimal on-going maintenance, inspection, and operation.

For example, the flap gates must be manually cleared of debris on a regular basis.

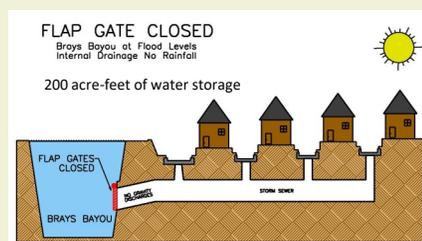
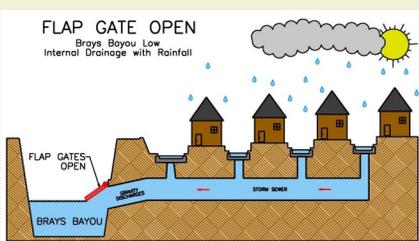
### What is the benefit of installing Flap Gates in Bellaire?

The proposed flap gates will provide the most benefit for low to moderate rainfall events that cause street ponding. (2-25 year events over a 24 hour period of rainfall)

The flap gates are designed to prevent backflow from Brays Bayou thus allowing better storage capacity utilization of the City's existing drainage system.

### What is Benefit Cost Analysis and Benefit Cost Ratio?

The Texas Division of Emergency Management Hazard Mitigation Grant Program requires a Benefit Cost Analysis (BCA) to determine the effectiveness of a proposed mitigation project, like flap gates. The BCA compares the future benefits of a mitigation project to its cost. This calculation results in a Benefit Cost Ratio (BCR). A project is considered to be cost effective when the BCR is 1.0 or greater.



### What is the Benefit Cost Ratio of Installing Flap Gates in Bellaire?

Total Cost: \$1.5 Million

Project Benefit: \$10.6 Million

Benefit Cost Ratio: 6.8 BCR