Implementation Strategy 8.0: Residential

Individual residents in the BIG area each make only small contributions to waterway pollution. However, the cumulative effect can be significantly detrimental. Similarly, the combined effort of millions of residents participating in activities that reduce bacteria pollution can have a significant positive effect.

Residential contributions to bacteria loading in waterways include:

- Bacteria discharging from a residential site, either during runoff events or directly;
- Nutrients, discharging from a residential site and contributing to re-growth; and
- Fats, oils, and grease clogging sanitary sewer lines and resulting in sanitary sewer overflows (SSOs).

OSSFs (septic tanks), decorative ponds, and pet waste can all contribute bacteria during runoff events or through direct discharge. Fertilizers, grass clippings, runoff from overwatering, and general lawn care practices can enhance the ability of bacteria to grow and regrow in the environment. Pouring fats, oils, and grease down sink drains can clog sanitary sewer lines, potentially leading to SSOs and direct discharges of bacteria to the bayous.

This implementation strategy is aimed at changing public behaviors through education efforts that empower residents to participate in actions that improve water quality. While enforcement, or the threat of enforcement, may be effective against stakeholders regulated by permits, this strategy instead focuses on positive activities that promote public education.

Public education efforts should inform the public about:

- why waterways are important to the region
- why bacteria is an issue
- what they can do to reduce bacteria in area waterways

Many of the activities are easy and inexpensive. Residents can properly dispose of cooking grease, use appropriate lawn care practices, and pick up and properly dispose of pet waste. The simple task of picking up after pets can have a great impact on water quality. It is required by some municipalities, such as in Chapter 6 Section 6-24 of the City of Houston's Code of Ordinances. Given the average dog produces three quarters of a pound of waste each day (Lunen, 2010), more than 312 tons of dog waste could be deposited in the watersheds covered by this I-Plan every day, the equivalent of approximately 31 dump truck loads.¹. When it rains, bacteria

¹ The amount of dog waste in tons was calculated by adding the number of dogs provided in the TMDL project Technical Documents and multiplying it by the amount of waste produced daily by the average dog. The result was then divided by the carrying capacity of an average dump truck as stated on the Skid Steer Loaders webite.

from this waste may be washed into area waterways, particularly bacteria from waste deposited on impervious surfaces and directly in roadside ditches or along the waterways.

Implementation Activity 8.1:

Expand homeowner education efforts throughout the BIG project area

As resources become available, communities, cities, counties, and other entities shall provide public education that individual residents can use to reduce bacterial loading to area waterways. Topics that should be addressed in a homeowner education program include pet waste disposal; best management practices for yard care; OSSF tips; and proper disposal of fats, oils, and grease.

Like storm water Implementation Action 4.2, Model Best Practices, this implementation action will take advantage of existing public education programs and materials. Some communities in the region already have educational programs that address bacterial loading and are willing to share materials, including the cities of Houston and Pasadena, as well as Harris County and a multi-jurisdictional effort, the *Clean Water, Clear Choice* program.

The City of Houston is currently developing a storm water education program where a stateapproved, Houston-specific, storm water education curriculum is being created. This curriculum will be made available on-line with measurement and tracking features to test its efficacy before and after implementation, and will be part of a larger storm water educational website. Other regional, local governments may access, use, and promote the curriculum and other educational material with no charge.

The Harris County Regional Watershed Education Program allows MS4-permitted communities to buy into their education program at a current rate of 53 cents per resident. Materials available through this program include brochures, presentations, advertisements and direct mail pieces.

Another resource for communities developing an education program is GBEP's Public Participation and Education Subcommittee. This group provides opportunities for idea sharing, learning about resources, and coordinating education and outreach efforts throughout the region.

In addition to local programs, resources are available from outside the region. The USEPA Toolbox is an excellent resource that provides public education materials, for radio, television, or print, as well as case studies on a wide range of topics, including OSSFs, pet waste, gardens and lawns, as well as general storm water and storm drain awareness (United States Environmental Protection Agency). Some materials may require small changes for application in local communities, but many will not.

A community may create its own education program and materials if it prefers. Funding may be available for these projects from the TCEQ's Galveston Bay Estuary Program (GBEP) and Texas' Nonpoint Source Grant Program, among other sources.

Continue [or begin] a homeowner education program based on existing models. For 8.1.1 areas currently under an MS4 permit, public education efforts shall continue to place a high priority on bacteria reduction activities. Communities that don't currently engage in homeowner education efforts will be strongly encouraged to implement a program with guidance from existing programs and materials. A consistent message throughout the area covered by this I-Plan is desirable and might be more effective. H-GAC or another appropriate agency shall convene an annual meeting to identify common messages appropriate for the region and specific to bacteria. This forum will also provide an opportunity to identify funding sources and highlight existing programs. When appropriate, this forum will be held in conjunction with a widely-attended, water-quality event. Messages may include bacteria reduction activities (such as a dog waste campaign), activities that promote responsibility and concern for the cleanliness of our waterways (such as water clean-up events like "River, Lakes, Bays 'N Bayous Trash Bash"), storm drain awareness activities (such as inlet marking), wastewater education (such as reminding residents that sewer lines clogged with grease or other materials will overflow or backup into homes), and activities to reduce illegal dumping (such as the use of strategically placed signage throughout the region). These education efforts should coordinate with education requirements of storm water quality permits.

8.1.2 Conduct pilot studies to evaluate results of education efforts. To measure success of public education efforts, communities shall, as resources are available, conduct studies to determine whether improvements in water quality have resulted from homeowner education efforts. Ambient water quality monitoring regularly conducted throughout the region may not adequately document the effectiveness of a specific education program at reducing bacteria in a waterbody. Pilot studies, which include water quality monitoring specific to the education efforts in question, should be conducted instead. For example, an appropriate location for a small scale study could be a neighborhood whose storm water discharges through a limited number storm sewer outfalls. Opportunities for collaboration between communities on studies may exist and should be explored. Studies should include pre-education monitoring, an education effort, and post-education monitoring. Studies may also document load reductions, public awareness of water quality issues, and behavior change as reported by individual residents. H-GAC water quality staff could provide technical assistance in developing a monitoring strategy for individual pilot studies as appropriate.