



**CITY OF SUGAR LAND
STORMWATER MANAGEMENT PROGRAM
ANNUAL REPORT**

PERMIT YEAR 1

AUGUST 13, 2007 – AUGUST 12, 2008

PREPARED BY:

**CITY OF SUGAR LAND
111 Gillingham Lane
Sugar Land, Texas 77478**

EXECUTIVE SUMMARY

On August 13, 2007, the Texas Commission on Environmental Quality (TCEQ) issued Texas Pollutant Discharge Elimination System (TPDES) General Permit No. TXR040000 for stormwater discharges from Phase II cities in Texas. In accordance with the TPDES permit requirements, Phase II cities are required to obtain permit coverage within 180 days (February 11, 2008) of the permit issuance date and will be given five years (August 13, 2012) to fully implement a Stormwater Management Program (SWMP). In addition, each regulated entity is required to submit annual reports to the TCEQ during the permit period.

The City of Sugar Land submitted a Notice of Intent (NOI) and Stormwater Management Program to the TCEQ on January 30, 2008 in order to comply with permit requirements. In addition, the City submitted a series of SWMP amendments to the TCEQ on July 28, 2008. Since these submittals, the City has been issued Permit No. TXR040111; however, the permit application is currently listed as pending approval. Although the City of Sugar Land has not yet received permit approval from the TCEQ, Public Works staff began implementation of programs detailed within the City's SWMP that were identified for completion within permit year 1. The initial permit year concluded on August 12, 2008, and all permit year 1 programs were completed in compliance with the timeline specified within the City's SWMP.

In accordance with the TPDES permit requirements, the City of Sugar Land has drafted an annual report detailing the minimum control measure (MCM) best management practices, measurable goals, and evaluation mechanisms scheduled for development and implementation during permit years 1 and 2. In addition, the annual report also references minimum control measure activities initiated prior to TCEQ permit issuance in August 2007. Please reference Appendix A: Table 1 for an overview of program implementation; however, SWMP implementation details may be found in the subsequent text.

**TPDES PHASE II MS4 ANNUAL REPORT
CITY OF SUGAR LAND**

TPDES PERMIT NO. TXR040111

DATE SUBMITTED: February 4, 2009

REPORT YEAR: 1

REPORTING PERIOD: August 13, 2007 – August 12, 2008

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Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Entity: City of Sugar Land_____

Name: James A. Thompson_____

Title: Mayor_____

Signature: _____

Date: _____

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SECTION 1 – MCM 1: PUBLIC EDUCATION AND OUTREACH

1.0 OVERVIEW

Public education and outreach are key components to the success of a Stormwater Management Program (SWMP). The objective of a public education and outreach program is to promote a clear identification and understanding of the issues associated with stormwater pollution and to promote community ownership of the problems and solutions.

The City is dedicated to educating the Sugar Land community on the impacts stormwater can have on water quality, the hazards associated with illegal discharges, and the steps that can be taken to reduce pollutants in stormwater runoff. In order to promote this program throughout the community, the City has undertaken a wide variety of programs throughout permit year 1.

1.1 FEDERAL REGULATORY REQUIREMENTS

40 CFR 122.34 (b)(1) states that the MS4 operator must implement a public education program to distribute educational material to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

1.2 TPDES PHASE II PERMIT REQUIREMENTS

Public Education and Outreach on Storm Water Impacts

(a) A public education program must be developed and implemented to distribute educational materials to the community or conduct equivalent outreach activities that will be used to inform the public. The MS4 operator may determine the most appropriate sections of the population at which to direct the program. The MS4 operator must consider the following groups and the SWMP shall provide justification for any listed group that is not included in the program:

- (1) residents;
- (2) visitors;
- (3) public service employees;
- (4) businesses;
- (5) commercial and industrial facilities; and
- (6) construction site personnel.

The outreach must inform the public about the impacts that storm water run-off can have on water quality, hazards associated with illegal discharges and improper disposal of waste, and steps that they can take to reduce pollutants in storm water runoff.

- (b) The MS4 operator must document activities conducted and materials used to fulfill this control measure. Documentation shall be detailed enough to demonstrate the amount of resources used to address each group. This documentation shall be retained in the annual reports required in Part IV.B.2 of this general permit.

1.3 DISCUSSION OF ACTIVE STORMWATER PROGRAMS

The City of Sugar Land currently institutes a variety of public outreach and education programs to educate and inform the community of the effects their actions have on the environment.

1.3.1 Stormwater Quality Education Materials

The Public Works Department, in coordination with the Public Communications Department, has developed a variety of educational materials to inform the community of the effects polluted stormwater runoff can have on water quality and how individuals can minimize the impacts they have on the environment. Current publications include:

- *Stormwater and the Construction Industry* brochure
- *Sugar Land Today* community newsletter
- Annual stormwater educational magnet

In addition to the City-designed publications, the Public Works Department has also obtained a variety of educational resources from the TCEQ, the EPA, the Houston-Galveston Area Council (H-GAC), and other MS4 communities throughout the United States. These educational materials are currently distributed at community events, City departmental offices, local community meetings, through city-wide mailings and upon request.

The City of Sugar Land will continue to develop, obtain, and distribute educational materials to the public on a variety of topics including, but not limited to:

- Lawn and garden management;
- Proper handling and disposal of household hazardous waste (HHW);
- Pet waste;
- Stormwater pollution;
- Littering;
- Illicit discharges;
- Commercial and industrial stormwater impacts; and
- Waste management.

Measurable Goals:

Continue to develop and acquire stormwater quality education materials.

Permit Year 1

Distribute printed materials and promotional items throughout the community as appropriate in order to educate community residents, public service employees, businesses, commercial and industrial facilities, and construction site personnel on the importance of stormwater management activities.

Permit Year 1

Distribute printed materials to local hotels, real estate agencies, and other similar businesses that may have contact with visitors to the area.

Permit Year 2

Evaluation:

- Record the quantity of materials distributed throughout the community and report the data within the annual SWMP reports to the TCEQ.
- Utilize data from year one distribution quantities as a baseline of reference for additional permit year distributions and annually increase distributions.

Implementation:

In order to facilitate the development and implementation of a public education and outreach program, the City identified the development and distribution of stormwater quality education materials as a key component to a successful program. The City will continue to develop, acquire, and distribute educational materials to a variety of individuals and organizations throughout the five-year permit period. These materials educate the community on the effects that stormwater runoff can have on the environment and encourage individuals to actively participate in the protection of the community's natural resources.

A variety of educational materials were developed and acquired during permit year 1 and in years preceding the adoption of the City's SWMP. Please reference Appendix A: Table 2 for a detailed description of these educational materials. During permit year 1, the City focused on a variety of projects including the development of a brochure to educate the food service industry on the importance of stormwater management activities during daily operations. This group of individuals had not previously been addressed through the City's environmental education programs, so the City, in coordination with the Clean Water Campaign, developed a "Menu" of best management practices for restaurants within the community. This publication will be utilized during permit year 2 to educate the food service industry on the importance of proper best management practices. In addition, the City also developed the annual stormwater education magnet, the third in a series of magnets used to inform residents of the importance of stormwater management activities throughout the community. In the past, this magnet was mailed to each household within the City of Sugar Land; however, during permit year 1, the City decided not to print and distribute as many magnets as in previous years. In the upcoming permit year, these magnets will be given to residents at local community events to highlight the location where individuals can obtain additional information about water quality and the environment.

The City utilizes local newspapers and magazines to inform the community of upcoming environmental events and educational programs. When press releases are drafted, the City of

Sugar Land Communications Department sends the information to each of the local newspapers, magazines, and homeowners associations. The City also places paid advertisements in these publications in order to directly communicate with the Sugar Land community. Upon the TCEQ's completion of the Upper Oyster Creek Bacteria Total Maximum Daily Load (TMDL) study and subsequent adoption of the study on August 8, 2007, the City decided to initiate the development of a series of public education materials related to pet waste. Although the Implementation Phase of the TMDL process had not yet begun, the City placed an advertisement in the *Fort Bend Business Journal* to highlight the importance of picking up after your pet. The advertisement was also utilized as an educational poster at the City's Animal Services facility. During permit year 2, the City will be contacting local veterinary offices in order to display the posters as an educational tool for members of the community who own pets. In addition, the City purchased hand-held pet waste trash bag containers during permit year 1 that staff distributes at the City of Sugar Land Animal Services facility and local community events. Pet waste stations are also located in six community parks throughout the City.

Rather than solely utilize local publications as a communications tool, the City of Sugar Land publishes a community newsletter entitled *Sugar Land Today*. The newsletter is published on a quarterly basis and highlights a variety of topics. Please reference Appendix A: Table 3 for a detailed listing of articles published within the *Sugar Land Today* newsletter, press releases issued to the public, and advertisements placed in local magazines and newspapers during permit year 1 and in years preceding the adoption of the City's SWMP. These communication tools allow the City to educate and inform the community on a variety of issues, including stormwater management and the environment.

The development and distribution of stormwater quality education materials are effective means of community education. During permit year 2, the City plans to continue the development and distribution of educational materials to Sugar Land residents and local businesses; however, in the upcoming permit year, these materials will also be distributed to local hotels, real estate agencies, and other similar businesses that may have contact with visitors to the area.

1.3.2 Municipal Website and Cable Television Channel

The City of Sugar Land will utilize the municipal website and cable television channel to inform the public of the issues associated with stormwater pollution and the issues of concern detailed in the SWMP. The City website currently contains information about non-point source (NPS) pollution and the impact that NPS pollution has on water quality. However, the information is embedded in the web pages associated with the Public Works Department. In an attempt to highlight the SWMP and issues associated with NPS pollution, a section of the City's website will be dedicated to stormwater education and outreach. The web page will include general water quality information, educational materials that the City has developed, and information on topics such as litter control, recycling, water conservation, and the proper management of pesticides, fertilizer, used oil, and household hazardous waste (HHW).

The City currently operates a municipal cable television station where residents can obtain information regarding city policies, programs, procedures, and upcoming events. The municipal station will be utilized to highlight public service announcements (PSAs) obtained through the

TCEQ, the EPA, and additional outside educational sources and information regarding the development and implementation of the SWMP.

Measurable Goals:

Update the website and cable television channel as appropriate to reference changes to the SWMP, the availability of additional educational resources, public service announcements, and upcoming community events.

Permit Year 1

Expand stormwater section of the City’s website to include stormwater educational materials, the adopted SWMP, staff contact information, event dates and schedules, and annual reports.

Permit Year 2

Evaluation:

- Track and report the number of individuals who view stormwater education material on the website.
- Ensure that periodic updates of information are performed.
- Report the number of public service announcements and stormwater educational resources placed on the municipal television station.

Implementation:

With such a technology driven society, it is imperative that educational information be available to individuals and organizations on the internet and television. The City of Sugar Land hosts and maintains a variety of environmental education material on the City’s website, including web pages focused on Stormwater Management and Solid Waste and Recycling. These pages highlight information regarding non-point source (NPS) pollution and the impact that NPS pollution has on water quality, the many recycling opportunities available throughout the community, and details about local environmental events.

Residents and local businesses continuously utilize the City’s website. By visiting the Stormwater Management and Solid Waste and Recycling web pages, individuals can obtain a variety of educational information. For instance, individuals may view a series of public service announcements (PSAs) or review documents such as the City’s SWMP. Since the development and submittal of the City of Sugar Land SWMP, the document has been available on the City of Sugar Land website for public review and comment. In addition, all press releases issued by the City of Sugar Land are posted on the City’s website. Please reference Appendix A: Table 3 for a detailed listing of press releases related to stormwater management and the environment that were published during permit year 1 and in years preceding the adoption of the City’s SWMP.

Individuals throughout the community are taking advantage of the educational resources available on the City’s webpage. During permit year 1, the City received 445 page views of the

Stormwater Management webpage and 17,664 page views of the Solid Waste and Recycling webpage. We anticipate these numbers will continue to increase each permit year.

Individuals can also obtain information about our local recycling services, community event activities, and proper stormwater best management practices on the City's municipal television station. Residents who subscribe to local cable services can tune their television to a single station and obtain a variety of information about the City of Sugar Land. In addition, the municipal television simulcast can be viewed on the City's website by anyone with access to the internet. A series of slides focused on environmental education and awareness are continuously circulated on the municipal television station, and during permit year 1, six television slides related to stormwater management were developed and aired on the City's municipal television station.

Educational videos are also utilized as a communications tool on the City's municipal television station. During permit year 1 and in years preceding the adoption of the City's SWMP, a series of educational videos based on stormwater management, water quality, and non-point source pollution were produced by the City of Sugar Land Communications Department. Each of the videos highlights a specific aspect of the City's SWMP, and the topics range from the Storm Drain Marker Installation Program to best management practices residents can utilize on a daily basis. These videos are available on-demand on the City's website and are also circulated on the City's municipal television station. Please reference Appendix A: Table 4 for details regarding the development and distribution of these educational videos.

The municipal website and cable television station are continuously used to convey information to the Sugar Land community, and the City will continue to use these resources during subsequent permit years. The information on the City's website and television station is updated as new information becomes available and revisions are needed. In addition, the City plans to expand the stormwater section of the website during permit year 2 in order to include additional stormwater education materials, community event information, and reports regarding the development and implementation of the City's SWMP.

1.3.3 Storm Drain Marker Installation Program

In order to prevent pollution within our waterways and educate residents on the effects their actions may have on the environment, the Stormwater Division, in coordination with KSLB, initiated a Storm Drain Marker Installation Program. Since the program's inception in spring 2006, three neighborhoods with approximately 750 storm drain inlets have been marked through volunteer programs and residential development. In addition to marking the storm drains, the volunteers also place a door tag on residents' doors informing them of the program and educating them on their environmental responsibilities within the community.

Measurable Goals:

Expand the Storm Drain Marker Installation Program throughout the permit period to mark approximately 600 storm drains annually.

Permit Year 1

Utilize volunteer organizations such as Eagle Scouts, school organizations, & neighborhood organizations for implementation.

Permit Year 1

Evaluation:

- Record and report the number of storm drains marked and volunteers utilized through the Storm Drain Marker Installation Program.
- Compare the actual number of marked storm drains to the annual target goal of 600 marked storm drains.

Implementation:

The Storm Drain Marker Installation Program has received considerable support throughout the community. Volunteers ranging from boy scouts, girl scouts, and local community members have actively participated in the program. During permit year 1, 78 volunteers donated their time to mark 786 storm drains and place 3,451 door tags on residents’ doors informing them of the program and the importance of stormwater management activities. With this community support, the City exceeded the goal of marking 600 storm drains during the permit period. Please reference Appendix A: Table 5 for a detailed description of the marking activities conducted during permit year 1 and in years preceding the adoption of the City’s SWMP.

This program allows individuals throughout the community to become involved in an environmental education program that not only educates the participants on the importance of stormwater best management practices but also educates the residential community on the fundamental aspect of stormwater management. The storm drain marking activities will continue until storm drain markers are placed on storm drain inlets in every residential neighborhood within the City of Sugar Land. Each permit year, the City plans to mark at least 600 storm drains utilizing a variety of volunteer organizations.

1.3.4 Student Education

The City of Sugar Land currently employs a variety of avenues to educate students within the community. The City currently sponsors an annual water quality and conservation book cover contest that is open to elementary age children in Fort Bend Independent School District (FBISD) and local private schools. As an additional educational component to the contest, the City provides approximately 15,000 book covers of the winners’ artwork to area schools. The City, in coordination with KSLB, has also initiated a Stormwater Education Program within FBISD. Through this program, trained community volunteers will make presentations to local schools about stormwater pollution and water quality.

Measurable Goals:

Annually sponsor a water quality and conservation book cover contest and provide book covers detailing the winners' artwork to local schools within the community.	Permit Year 1
Provide book covers to local schools detailing stormwater related issues of concern.	Permit Year 1

Evaluation:

- Utilize data from year one book cover distribution quantities as a baseline of reference for additional permit year distributions and annually adjust these values according to school enrollment statistics.
- Record and report the number of presentations performed through the Stormwater Education Program and the number of children who view the presentations each permit year.
- Record and report the number of book covers annually provided to local schools.

Implementation:

The City of Sugar Land currently sponsors an annual water quality and conservation book cover contest in coordination with the City's H2O Expo. The contest is open to elementary age children in Fort Bend Independent School District (FBISD) and local private schools. In April 2008, 250 students participated in the contest, and the winners' artwork was displayed on 15,750 book covers given to local schools. As an additional educational component, the City also provided 15,750 book covers to local elementary and middle schools highlighting key components of stormwater education. These book covers educate the students about non-point source pollution, the importance of stormwater management, and the need to conserve our natural resources. By providing these book covers to local schools, the City is able to educate the youth within the community, and often times, the children will in turn educate their parents. This best management practice has the potential to educate a larger number of individuals than those students who receive the book covers. Please reference Appendix A: Table 9 for additional information regarding the number of book cover contest participants and book cover distribution quantities in years preceding the adoption of the City's SWMP.

In upcoming years, the City will continue to sponsor the annual water quality and conservation book cover contest, and each permit year, the City will purchase and distribute book covers highlighting the winners' artwork. In addition, the City will also continue to distribute book covers detailing the many aspects of stormwater management and environmental protection. Each year, the City will utilize the previous year's book cover distribution quantities and school enrollment statistics to annually adjust the book cover distributions.

During the 2006-2007 school year, the City of Sugar Land and Keep Sugar Land Beautiful (KSLB) developed a Stormwater Education Program where trained community volunteers make

presentations to local schools about stormwater pollution and water quality. The presentations are geared toward elementary and middle school age children. By educating children at a young age and encouraging responsible environmental activities, it is more likely that the children will continue these behaviors as they mature. In working with FBISD, the City and KSLB made a series of three presentations to teachers at FBISD workshops in March 2007 in order to inform the teachers of the environmental education resources and presentations available for their classrooms. The Texas Assessment of Knowledge and Skills (TAKS) test requirements have limited teacher’s participation in the program; however, the City and KSLB will continue to work with FBISD and local private schools to continue and enhance the Stormwater Education Program. Aspects of the program have been utilized by the City and KSLB at a variety of community events and presentations.

1.3.5 Community Events

Each Year, the Public Works Department sponsors and co-sponsors a variety of community events where residents can obtain educational information regarding stormwater pollution, water conservation, and recycling. These events include:

- Paint Collection;
- Christmas Tree Recycling;
- Don’t Mess With Texas Trash-Off;
- Electronics Recycling; and
- Earth Day Festivities.

During each of these events, participants receive educational materials on a variety of topics.

In addition to these events, residents can also obtain information at annual Community Town Hall Meetings where the Stormwater Division prepares a booth of educational materials and is on hand to answer any questions residents may have concerning water quality in the community.

Measurable Goals:

Continue to sponsor and co-sponsor community events to educate the community on the importance of stormwater management activities.	Permit Year 1
Annually expand the community events to incorporate additional members of the community.	Permit Year 2

Evaluation:

- Record and report the number of individuals who attend the community events and the quantity of educational materials provided to residents at the events.
- Utilize data from year one attendance as a baseline of reference for additional permit year attendance levels and annually increase attendance.

Implementation:

The City of Sugar Land Public Works Department annually sponsors and co-sponsors a series of environmental events where residents learn about a variety of topics including stormwater pollution, water conservation, and recycling. During these events, residents are able to recycle their waste materials, participate in community environmental awareness activities, and learn more about stormwater best management practices. Community participation continues to grow with more first-time participants attending the events each year.

The environment is very much on the minds of Sugar Land residents; however, convenience often plays a key role in an individual's willingness and ability to recycle and contribute to the protection of the local environment. With this consideration in mind, these events are quite valuable to the community, and they allow residents to actively participate in local environmental education and awareness activities.

The City of Sugar Land also hosts a series of annual Town Hall Meetings where staff from each department prepares booths of information about various city services. Typically, the City hosts three Town Hall meetings each year where residents can ask questions and receive educational information about the projects going on throughout the community. The Stormwater Division annually participates in these meetings and is on-hand to answer questions residents may have concerning water quality and the environment.

With Sugar Land's diverse community and growing population, the City will utilize the previous year's attendance levels to annually expand the community events and incorporate additional members of the community. Please reference Appendix A: Tables 6 through 11 for a detailed listing of the community events, attendance levels, and waste materials collected. Education also plays a key role in each of our community events. In order to educate the community on issues associated with recycling and stormwater pollution, the City and KSLB prepare educational materials for residents who attend the events. Prior to each event, volunteers assemble 100 giveaway bags containing a variety of educational information. Please reference Appendix A: Table 2 for a detailed listing of educational resources.

1.3.6 Cast Grates

Custom-designed storm drain cast grates heighten public awareness by informing the public that anything entering a storm sewer system is discharged untreated into the community waterways. The City's design standards currently reference the installation requirement of custom-made cast grates for new development and re-development of infrastructure within the corporate city limits. Under the current program, existing cast grates are not retrofitted unless their replacement is warranted; however, the City will consider the development of a program component to retrofit the existing cast grates.

New developments outside the corporate city limits but within the City's extraterritorial jurisdiction are contractually required to install the custom-designed cast grates through developmental agreements. The custom-designed grates contain the message, "Dump No Waste, Drains to Waterways."

Measurable Goals:

Evaluate and modify design standards for cast grates as needed.

Permit Year 2

Evaluation:

- Record the number of cast grates that are installed through the development and re-development process.

Implementation:

The City currently requires the installation of custom cast grates and covers for new development and re-development of infrastructure within the corporate city limits. These grates include custom storm sewer manhole covers, type “BB” catch basin grates, type “A” inlets, and inlet covers. During the August 2007 to August 2008 permit year, 724 custom grates and covers were purchased for installation within the City of Sugar Land. These grates and covers remind people that substances entering the storm drain enter our local waterways untreated. The grates are quite effective and continuously educate the commercial, residential, and business communities. During the upcoming permit year, staff will evaluate and modify cast grate design standards as needed.

1.3.7 Speakers’ Bureau

Organizations throughout the community hold regular meetings and request speakers to present community information to their members. These organizations range from gardening clubs, the Chamber of Commerce, school groups, Girl Scouts, Boy Scouts, and environmental clubs. Upon request, the City will make presentations to community organizations in regard to the causes and effects of stormwater pollution and what individuals can do to reduce their impact to the environment.

Measurable Goals:

Develop and implement a speakers’ bureau program to inform individuals of the issues associated with water quality and stormwater pollution within the community.

Permit Year 1

Develop and continue to update a list of civic organizations that may benefit from a presentation on water quality and stormwater pollution.

Permit Year 2

Annually submit at least four proposals to local community groups encouraging them to host a speaker at one of the group’s meetings.

Permit Year 2

Evaluation:

- Record the name of the groups who received proposals from the City and report which groups accepted the proposal.
- Document the presentation date, the community group addressed, and the number of individuals who attend each presentation.

Implementation:

The City of Sugar Land has developed a speakers' bureau program to educate the community on the importance of water quality and the environment. Through this program, staff will make a series of presentations to local community and civic organizations. Presentations may range from discussions on water quality and the City's Stormwater Management Program to solid waste and recycling. With the development of a speakers' bureau and presentations to local community and civic organizations, the City can educate a variety of individuals who may not be familiar with local environmental issues of concern.

In order to address organizations within the community who may benefit from an educational presentation, the City has developed a list of local community and civic organizations detailing the appropriate contact information for each group of individuals. Although the development of this list was not scheduled until permit year 2, the City completed this task ahead of schedule during permit year 1. Please reference Appendix A: Table 12 for the list of local community and civic organizations that have been identified. Each subsequent year, this list will be updated and expanded to provide the most up-to-date information available. Beginning in Permit Year 2, the City will annually submit proposals to at least four of these local community organizations encouraging them to host a speaker at one of the group's meetings. Staff will annually report the presentation dates, the community groups addressed, and the number of individuals who attend each presentation.

1.4 DISCUSSION OF SCHEDULED BEST MANAGEMENT PRACTICES

In addition to the programs the City is currently implementing, several additional programs will be developed and implemented during the upcoming permit period.

1.4.1 Mobile Business Education Program

In conjunction with the Business Education/Recognition Program, Sugar Land will develop and implement a multi-language mobile business education program. This program will focus on traditionally mobile businesses that are often more difficult to monitor because they undertake activities at a number of locations. Mobile businesses include lawn maintenance, carpet cleaning, painting and decorating, pest control, pool maintenance, and gardening.

Initially, Sugar Land's mobile business education program will be primarily targeted toward lawn maintenance companies, since many homeowners in the community pay a contractor for this service. Over time, the program can be expanded to include additional mobile businesses.

The primary objective of this program is to educate businesses on the ways they can change or improve their work practices to:

- Reduce or avoid stormwater pollution;
- Reduce the generation of waste;
- Increase resource recovery through recycling, reuse and composting;
- Achieve environmental best practices through cleaner production techniques;
- Achieve cost savings in terms of reduced materials and water usage; and
- Improve their environmental image within the local community.

Businesses engaged in landscaping activities should be educated in the proper use of landscaping chemicals and in proper green waste disposal methods. In addition, workers should be trained to pick up any litter before mowing so that the trash doesn't get shredded and washed into the storm drain. The goal of this educational outreach program is to reduce chemical and green waste runoff to natural watercourses. This is accomplished by minimizing the use of herbicides, fertilizers, and insecticides to no more than the recommended levels and by properly disposing of green waste resulting from mowing, tree trimming, weed eating, and edging.

Measurable Goals:

Develop or acquire multilingual educational training materials.

Permit Year 2

Evaluation:

- Track the quantity of educational outreach materials distributed to the business community to promote the program.

Implementation:

Prior to the development and implementation of a Mobile Business Education Program for businesses operating within the City of Sugar Land, staff will develop or acquire multilingual educational training materials for distribution throughout the community. This development and acquisition will begin during permit year 2 and continue throughout the remaining 5-year permit period. By obtaining these materials, staff can prepare for the development and implementation of the education program during permit year 3.

SECTION 2 – MCM 2: PUBLIC INVOLVEMENT AND PARTICIPATION

2.0 OVERVIEW

Public involvement and participation is important in the development and implementation of the SWMP. Involving the public goes hand-in-hand with a local government's public education efforts and can help accomplish some of the same goals. Public involvement and participation can also create more opportunities to gain expertise from interested individuals and other organizations or governmental entities. These added resources can add to the success of the program.

2.1 FEDERAL REGULATORY REQUIREMENTS

40 CFR 122.34 (b)(2) states that the MS4 operator must, at a minimum, comply with state, tribal, and local public notice requirements when implementing a public involvement/participation program.

2.2 TPDES PHASE II PERMIT REQUIREMENTS

Public Involvement/Participation

The MS4 operator must, at a minimum, comply with any state and local public notice requirements when implementing a public involvement/participation program. It is recommended that the program include provisions to allow all members of the public within the small MS4 the opportunity to participate in SWMP development and implementation. Correctional facilities will not be required to implement this MCM.

2.3 DISCUSSION OF ACTIVE STORMWATER PROGRAMS

The City of Sugar Land currently institutes a variety of public involvement and participation programs to educate and inform the community of the effects their actions have on the environment.

2.3.1 Storm Drain Marker Installation Program

In order to prevent pollution within our waterways and educate residents on the effects their actions may have on the environment, the Stormwater Division, in coordination with KSLB, initiated a Storm Drain Marker Installation Program. This program is further discussed in Section 1.3.3.

2.3.2 Adopt-a-Spot Program

In order to encourage litter reduction and beautification throughout the community, the City of Sugar Land developed the Adopt-a-Spot program, a program patterned after the Texas

Department of Transportation’s Adopt-a-Highway program, which encourages residents and businesses to actively participate in the environmental community.

KSLB currently administers the Adopt-a-Spot program on behalf of the City, and through the program, volunteer groups clean 23 city parks and roadways quarterly. As an element of the SWMP, Sugar Land will continue to expand this program to include litter reduction along community waterways, drainage ditches, and other stormwater channels throughout the City. This program expansion will also include an annual stream clean-up event, most likely in coordination with the community’s Don’t Mess With Texas Trash-Off litter collection event.

Measurable Goals:

Perform collection activities at active Adopt-a-Spot locations on a quarterly basis.	Permit Year 1
Expand the program to include additional active locations, specifically waterways, ditches, rights-of-way, and other stormwater channels.	Permit Year 2
Compile and distribute educational outreach materials to enhance program exposure and publicity.	Permit Year 2

Evaluation:

- Annually report the number of active Adopt-a-Spot locations.
- Record the names of participating organizations and report the number of volunteer hours each organization contributes to the program.
- Track the volume of garbage collected at each Adopt-a-Spot location.
- Compile the type and quantity of educational outreach materials distributed to the community to promote the program.

Implementation:

The City of Sugar Land, in coordination with KSLB, sponsors an Adopt-a-Spot program where local community members and organizations can adopt locations throughout the community. Volunteers are asked to organize and conduct a litter collection at their designated site on a quarterly basis. Over the years, this program has received considerable interest and public support. The Adopt-a-Spot program was initially developed in 1997. Over the years, the program has grown to include 23 active Adopt-a-Spot locations throughout the community, and each of the locations is currently in various stages of adoption. Please reference Appendix A: Table 13 for a detailed description of active Adopt-a-Spot locations, participating organizations, volunteer hours, and the volume of garbage collected at each location during permit year 1.

At the present time, 20 of the Adopt-a-Spot locations are within local community parks; however, during permit year 2, the City plans to expand the program to include additional locations such as waterways, ditches, and community rights-of-way. The Adopt-a-Spot program

is only effective if the sites are adopted, so in order to enhance program exposure and ensure site adoptions, the City plans to compile and distribute educational outreach materials highlighting the aspects of the program and the importance it plays within the community. During permit year 2, staff will track the distribution of the educational outreach materials and report the information within the annual report.

This program encourages public involvement and participation and plays a key role in environmental education and awareness. Individuals participating in the program contribute their time and energy to a community beautification project that not only cleans community parks and roadways but also prevents litter from entering the local waterways. This program is valuable, and we expect the program to only grow in the future.

2.3.3 Texas Stream Team Water Quality Monitoring Program

In order to obtain additional information regarding the community’s natural resources and educate residents on the effects of pollution on our local waterways, the City of Sugar Land coordinated with H-GAC in the summer of 2006 to develop a Texas Watch program within the City, and in the spring of 2008, Texas Watch formally changed their name to Texas Stream Team, *Caring for Our Waters*. Texas Stream Team is a network of trained volunteers who monitor our local waterways and collect quality-assured information about the natural resources of Texas that can be utilized by governmental organizations and the public. Since the program’s inception, seven volunteers have been trained to monitor locations within the City of Sugar Land.

As the program expands, additional volunteers will undergo Texas Stream Team training to become a water quality monitor. Volunteers will be given water quality monitoring kits and will be asked to monitor water quality in a designated area on a monthly basis. In order to ensure the quality of the data, the City reviews all data submitted by the Texas Stream Team volunteers, and all volunteers follow the Texas Stream Team certification guidelines. Volunteer efforts can provide a substantial amount of water quality data which can be used to analyze and assess water quality throughout the area. This data can also assist in identifying areas of concern where additional sampling may be necessary.

Measurable Goals:

Perform water quality monitoring activities at active monitoring locations on a monthly basis.	Permit Year 1
Expand the program to include additional active monitoring locations and volunteer water quality monitors.	Permit Year 2

Evaluation:

- Annually report the number of active Texas Stream Team Water Quality Monitoring locations.
- Record the names of participating individuals and report the number of volunteer hours each individual contributes to the program.

Implementation:

The City of Sugar Land, KSLB, and H-GAC have worked together to coordinate the City’s Texas Stream Team Program. Through this program, volunteers monitor locations throughout the City on a monthly basis in order to obtain water quality data and assist the City in identifying areas of concern. The program has been quite successful since its inception in 2006 with four active volunteer water quality monitors and three active monitoring locations.

Although program expansion was not scheduled to begin until permit year 2, the City issued a press release in June 2008 inviting the community to participate in the program. We received a number of responses and sponsored a training class for new volunteers on July 24, 2008 when two additional volunteers joined the Texas Stream Team. The City plans to continue program expansion during permit year 2 with the addition of water quality monitors and monitoring locations. Please reference Appendix A: Table 14 for a listing of the active Texas Stream Team Water Quality Monitoring locations, the participating individuals, and the number of volunteer hours contributed to the program.

2.3.4 Community Events

Each year, the Public Works Department sponsors and co-sponsors a variety of community events where residents can obtain educational information regarding stormwater pollution, water conservation, and recycling. These events are discussed in greater detail in Section 1.3.5.

2.3.5 Reforestation Program

Annually, the City of Sugar Land and KSLB co-sponsor a Tree Celebration in honor of Arbor Day. During the celebration, community volunteers and City staff participate in the planting of native trees at a designated location within the community. City staff will annually select a location for the implementation of the reforestation project. Representatives from KSLB and the City of Sugar Land are available to answer residents’ questions, and a certified arborist is on-hand to offer tree care and tree trimming tips.

Measurable Goals:

Continue to sponsor a Tree Celebration promoting community reforestation in honor of Arbor Day.	Permit Year 1
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Evaluation:

- Record the number of trees planted during each reforestation project.
- Track the number of residents who receive tree saplings and the number of tree saplings provided to the community.

Implementation:

The City of Sugar Land and KSLB annually co-sponsor *Trees Across Sugar Land*, a local reforestation project where city staff and volunteers participate in the planting of native trees. The event began in 2006 as a small tree celebration where residents were given tree saplings and educational information, and over the years, the program has evolved into a vast reforestation program with an increasing number of trees being planted each year. On January 26, 2008, City of Sugar Land staff and 437 volunteers planted 10,000 trees at Sugar Land Memorial Park. In addition, 150 tree saplings were given to Sugar Land residents for planting in their own backyards.

Reforestation is not only aesthetically pleasing but is also linked to erosion control and stormwater retention. During upcoming permit years, the City will continue to sponsor a tree celebration promoting community reforestation. The upcoming *Trees Across Sugar Land* event has already been scheduled for January 31, 2009. Please reference Appendix A: Table 7 for a detailed listing of volunteer participants, the number of trees planted, and the number of saplings given to residents.

2.3.6 Community Environmental Education Classes

In order to educate the community and promote public involvement and participation, KSLB, in coordination with the City of Sugar Land, sponsors a variety of environmental education classes throughout the year. The classes are open to members of the Sugar Land community and include information from a variety of topics:

- Tree Care
- Soil and Composting
- Vermicomposting

KSLB and the City of Sugar Land will continue to offer these classes to individuals throughout the community. Residents will be given multiple opportunities to attend classes offered during both the spring and the fall.

Measurable Goals:

Continue to sponsor community environmental education classes.	Permit Year 1
Increase the variety of educational topics to include water quality aspects such as stormwater, recycling, and conservation.	Permit Year 2
Compile and distribute educational outreach materials to enhance program exposure and publicity.	Permit Year 2

Evaluation:

- Record the number of environmental education classes held annually and the number of people attending those classes.
- Document the number of hours spent educating the attendees.
- Compile the type and quantity of educational outreach materials distributed to the community to promote the program.

Implementation:

KSLB, in coordination with the City of Sugar Land, annually sponsors a variety of environmental education classes for teachers and Sugar Land residents. Each semester, Fort Bend ISD (FBISD) schedules a teacher workday where teachers attend educational courses focused on a variety of topics. KSLB actively sponsors educational courses during these workdays with topics ranging from non-point source pollution to solid waste minimization and recycling. The course topics vary each semester, and teachers obtain continuing education credits for each course they attend. During the 2007 – 2008 school year, KSLB and the City of Sugar Land hosted two educational courses for FBISD teachers. Teachers in attendance received course curricula and a variety of educational resources that may be utilized in their classrooms. These courses are always well attended, and the teachers continuously provide positive feedback upon course completion.

Environmental education classes are also sponsored throughout the year for individuals who are interested in learning more about topics such as soil, composting, and vermicomposting. Attendees learn valuable information about a variety of topics and are able to implement what they have learned at their own homes. The courses are taught by trained individuals, and the soil and composting classes are affiliated with the state YardWise Program. During permit year 1, three environmental education classes were scheduled; however, two classes were cancelled due to a low number of registered participants.

These educational courses allow the City and KSLB to directly interact with residents and teachers within the community and educate them on a variety of environmental topics. Teachers receive a series of educational resources that can be utilized in their classrooms, while residents receive information about environmental practices that can be implemented in their homes on a daily basis. In the upcoming permit years, KSLB and the City will be working together to expand the variety of educational topics discussed at the community environmental education classes. Educational outreach materials will also be developed and distributed in order to increase awareness of the educational courses that are offered throughout the community. Staff will track the distribution of these educational outreach materials and document that information within the permit year 2 annual report.

Please reference Appendix A: Table 15 for a detailed listing of the sponsored courses, the number of attendees, and the hours spent on training.

2.3.7 Presentations on the Stormwater Management Program

Informing City Council, municipal staff, the regulated community, and the public on the requirements of the stormwater program will facilitate implementation of the SWMP. During the development process, City staff will make presentations to City Council in order to educate them about the TPDES requirements and finalize the adoption of the City's SWMP. Individuals who are unable to attend the City Council meetings will have an opportunity to view the presentations and discussions through the City's municipal cable television station and streaming video available on the City's website. Citizens also have an opportunity to comment on the development of the SWMP during public input sessions. During the initial development of the SWMP, the City held three public input sessions in July and August 2004 to obtain feedback from the community on the draft SWMP.

Public presentations will be available upon request to a variety of groups and individuals throughout the development and implementation of the SWMP. These groups include, but are not limited to:

- City council
- Municipal staff
- Homeowners associations (HOAs)
- Business associations
- Construction site operators
- Commercial property owners
- Local service clubs
- Other civic groups

Residents attending these meetings will be invited to provide feedback on the elements of the SWMP after each of the presentations. The SWMP will remain a working document where revisions can be made to reflect changing community needs and implementation requirements.

Measurable Goals:

Develop a presentation/program to inform individuals of the issues associated with water quality and stormwater pollution as detailed within the SWMP.	Permit Year 1
Develop and continue to update a list of civic organizations that may benefit from a presentation on the components of the SWMP.	Permit Year 2
Annually submit at least four proposals to local community groups encouraging them to host a speaker at one of the group's meetings.	Permit Year 2

Evaluation:

- Record the name of the groups who received proposals from the City and report which groups accepted the proposal.
- Document the presentation date, the community group addressed, and the number of individuals who attend the presentation.

Implementation:

Public involvement and participation are key aspects to the successful development and implementation of a SWMP. During permit year 1, the City of Sugar Land developed a program to inform individuals of the issues associated with water quality and stormwater pollution. Through this program, staff will make a series of presentations to local community and civic organizations. Presentations may include discussions on water quality and the City's Stormwater Management Program (SWMP), as well as, solid waste and recycling. With the development of this program, the City can educate a variety of individuals who may not be familiar with local water quality and the City's SWMP.

In order to address organizations within the community who may benefit from an educational presentation, the City has developed a list of local community and civic organizations detailing the appropriate contact information for each group of individuals. Although the development of this list was not scheduled until permit year 2, the City completed this task ahead of schedule during permit year 1. Each subsequent year, the list will be updated to provide the most recent information available. Beginning in permit year 2, the City will annually submit proposals to at least four of these local community organizations encouraging them to host a speaker at one of the group's meetings. These proposals will consist of a letter informing the organization of the City's SWMP and the City's interest in educating the organization's members of the program components. Please reference Appendix A: Table 12 for the list of local community and civic organizations that have been identified.

The submittal of proposals to local community and civic organizations is scheduled to begin during permit year 2; however, staff did make several presentations during permit year 1 in reference to the development and implementation of the City's Stormwater Management Program. Staff addressed a variety of individuals including City Council, Sugar Land 101 students, and residents within the community. Please reference Appendix A: Table 16 for a detailed description of presentation dates, the individuals and organizations addressed, and the number of individuals in attendance.

2.4 DISCUSSION OF SCHEDULED BEST MANAGEMENT PRACTICES

In addition to the programs the City is currently implementing, several additional programs will be developed and implemented during the upcoming permit period.

2.4.1 MS4 Jurisdictional Coordination

The City of Sugar Land's drainage operations have jurisdictional overlap with several levee improvement districts (LIDs), municipal utility districts (MUDs), and Fort Bend County.

There are several LIDs and MUDs that are partially or fully located within the corporate city limits of Sugar Land. These entities have the similar authority and responsibility over drainage operations within their boundaries as the City. Generally, LIDs are formed to coordinate and finance the construction of a levee whose purpose is to protect a designated area from the affects of potential floodwaters. In contrast, MUDs are political subdivisions of the State who are authorized by the Texas Commission on Environmental Quality (TCEQ) to provide water, sewage, and drainage services to residents within their boundaries. While LIDs will continue to operate in order to maintain a levee within their boundaries, MUDs located within the City of Sugar Land will be dissolved upon payment of the entity’s debt. Both LIDs and MUDs are classified as MS4s and are subject to the state and federal stormwater requirements.

In addition, Fort Bend County is also classified as an MS4 operator, subject to the state and federal stormwater requirements. Stormwater and drainage activities in Fort Bend County are implemented through the Fort Bend County Drainage District (Drainage District). The primary mission of the Drainage District is to maintain the drainage channels in their existing flow conditions. The secondary mission is to provide a review of plats and drainage plans of new development to be approved by the Commissioners Court to assure the elimination of an adverse drainage impact on current and future residents. The Drainage District’s primary activities are associated with flood control in Fort Bend County, and the Drainage District does not own or maintain storm sewer systems or drainage facilities other than local drainage channels.

In order to prevent duplication of efforts, the City will coordinate with these entities to combine resources and maximize program effectiveness. This coordination of resources will be performed during permit year two by an independent contractor.

Measurable Goals:

Coordinate with MS4s located within the corporate city limits to combine resources and prevent duplication of efforts.	Permit Year 2
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Evaluation:

- Document the names of the entities who have coordinated with the City to combine resources and maximize program effectiveness.

Implementation:

The City of Sugar Land’s drainage operations jurisdictionally overlap with several local MS4s, and in order to prevent a duplication of efforts and ensure program effectiveness, the City will be coordinating with these MS4s during permit year 2 to combine resources and unite under a single SWMP. This approach will be more efficient and allow the Sugar Land residents to receive one coherent message regarding stormwater management and the environment.

2.4.2 Environmental Listserv

During the implementation of the SWMP, it is imperative that we inform residents of community events and educational initiatives throughout the community. The City of Sugar Land, in coordination with KSLB, will develop an environmental listserv of individuals and businesses who would like to be informed of community environmental activities. Those individuals who are interested in becoming a member of the listserv will be able to sign-up on the KSLB website.

Measurable Goals:

Establish an environmental listserv.	Permit Year 2
Publicize the development of the environmental listserv to encourage community participation.	Permit Year 2

Evaluation:

- Record the number of individuals who become members of the environmental listserv and report that information within the annual SWMP reports to the TCEQ.
- Track the number of e-mails sent to listserv members.

Implementation:

In order to inform residents of community events and educational initiatives, the City of Sugar Land, in coordination with KSLB, will develop an environmental listserv of individuals and businesses who would like to be informed of community environmental activities. This development will begin during permit year 2 upon completion of the KSLB website revisions. The City of Sugar Land and KSLB will also publicize the listserv on their websites and at local community events. Those individuals who are interested in becoming a member of the listserv will be able to sign-up on the KSLB website. The environmental listserv will be a valuable communication tool. It will allow the City and KSLB to continuously educate and update the community on local environmental education and awareness events and issues of importance.

SECTION 3 – MCM 3: ILLICIT DISCHARGE DETECTION AND ELIMINATION

3.0 OVERVIEW

The illicit discharge detection and elimination MCM is intended to detect and eliminate discharges to the MS4 system that are not entirely composed of stormwater. As identified in the Phase II TPDES permit, MS4 permittees are required to develop a strategy to detect and eliminate illicit discharges to the storm drain system. An illicit discharge has been defined by the EPA as “any discharge into a separate storm sewer system that is not composed entirely of storm water.”

3.1 FEDERAL REGULATORY REQUIREMENTS

40 CFR 122.34 (b)(3) states that the MS4 operator must develop, implement, and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR Sec. 122.26 (b)(2)) into your small MS4.

The MS4 operator must:

- Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- To the extent allowable under State, Tribal, or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-stormwater discharges into your storm sewer system and implement appropriate enforcement procedures and actions;
- Develop and implement a plan to detect and address non-stormwater discharges including illegal dumping, to your system; and
- Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

You need address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if you identify them as significant contributors of pollutants to your small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the United States).

3.2 TPDES PHASE II PERMIT REQUIREMENTS

Illicit Discharge Detection and Elimination

(a) Illicit Discharges

A section within the SWMP must be developed to establish a program to detect and eliminate illicit discharges to the small MS4. The SWMP must include the manner and process to be used to effectively prohibit illicit discharges. To the extent allowable under state and local law, an ordinance or other regulatory mechanism must be utilized to prohibit and eliminate illicit discharges. Elements must include:

(1) Detection

The SWMP must list the techniques used for detecting illicit discharges; and

(2) Elimination

The SWMP must include appropriate actions and, to the extent allowable under state and local law, establish enforcement procedures for removing the source of an illicit discharge.

(b) Allowable Non-Storm Water Discharges

Non-storm water flows listed in Part II.B and Part VI.B do not need to be considered by the MS4 operator as an illicit discharge requiring elimination unless the operator of the small MS4 or the executive director identifies the flow as a significant source of pollutants to the small MS4. In lieu of considering non-storm water sources on a case-by-case basis, the MS4 operator may develop a list of common and incidental non-storm water discharges that will not be addressed as illicit discharges requiring elimination. If developed, the listed sources must not be reasonably expected to be significant sources of pollutants either because of the nature of the discharge or the conditions that are established by the MS4 operator prior to accepting the discharge to the small MS4. If this list is developed, then all local controls and conditions established for these listed discharges must be described in the SWMP and any changes to the SWMP must be included in the annual report described in Part IV.B.2 of this general permit, and must meet the requirements of Part II.D.3 of the general permit.

(c) Storm Sewer Map

(1) A map of the storm sewer system must be developed and must include the following:

- i. the location of all outfalls;

- ii. the names and locations of all waters of the U.S. that receive discharges from the outfalls; and
 - iii. any additional information needed by the permittee to implement its SWMP.
- (2) The SWMP must include the source of information used to develop the storm sewer map, including how the outfalls are verified and how the map will be regularly updated.

3.3 DISCUSSION OF ACTIVE STORMWATER PROGRAMS

The City of Sugar Land currently implements a variety of illicit discharge and detection programs to identify sources of stormwater pollution throughout the community.

3.3.1 Stormwater Quality Education Materials

In order to prevent pollution within our waterways and educate residents on the effects their actions may have on the environment, the City of Sugar Land has developed a variety of educational materials and has obtained numerous educational resources from the TCEQ, the EPA, the H-GAC, and other MS4 communities throughout the United States. This program is further discussed in Section 1.3.1.

3.3.2 Storm Sewer Mapping

The City of Sugar Land has developed a GIS work plan and is currently in the process of developing a map of the storm drainage system to show the waters of the U.S. and the location of storm sewer pipes, ditches, and other conveyances owned by the City. The map will also detail the locations of major outfalls to the waters of the U.S. These map features include:

- All stormwater discharge points 24 inches or larger from City owned or maintained drainage systems; and
- An initial program focus within the city limits with a shifted focus to areas within the City's ETJ once the initial map has been completed.

The Public Works and Utilities Departments have developed a GIS work plan that details a phased building of the public infrastructure system (water and wastewater systems, pumping facilities, storm sewer systems, roadway and sidewalk systems, street lighting, drainage ditches, basins, etc.). Completion of the Public Works and Utilities GIS project will provide graphic representations of all infrastructures within the city limits. In order to obtain source information for the development of the storm sewer map, the City utilizes the construction as-built drawings which directly reflect the infrastructure installed throughout the City. Storm sewer information for new developments is acquired directly from the construction developers.

An up-to-date storm sewer map is crucial in detecting and removing illicit sewer connections and thereby eliminating illicit discharges. The City currently requires developers to provide GIS-compatible electronic files of commercial and residential development drawings. Once acquired,

these files are integrated into a City drainage system map. Outfall locations are visually inspected and verified by field crews, and ongoing field verification may be necessary to keep the map up-to-date. In the future, updates will be incorporated into the City’s work order system, and as work on the storm sewer system is completed, the information will be integrated into the GIS system. Additional City drainage features located in areas outside the coverage of the developer-provided drawings will be identified and located by field surveying or GPS and included on the drainage system map. The Public Works and Utilities Departments will develop a series of policies and procedures to ensure that the map is updated to ensure program accuracy.

The completion of the Public Works and Utilities GIS work plan will provide the City with a comprehensive layout of all public infrastructure networks. The City will continue to evaluate the GIS system to determine if additional information is needed to better serve the purposes of the SWMP. It is estimated that the GIS project will be completed by the end of Permit Year 4. Funds have been requested to provide updates to the system and to scan construction plans on an annual basis. Future funding will be requested to complete the development of all infrastructures within the City’s ETJ and to integrate the AS/400 work order system data into GIS, which will attach a considerable amount of historical information to specific locations and appurtenances.

Measurable Goals:

Evaluate the GIS work plan to determine if additional information is needed to better manage stormwater quality.	Permit Year 1
Continue to complete data capture of all infrastructure within the city limits.	Permit Year 1

Evaluation:

- Complete data capture for infrastructure located within the City of Sugar Land.
- Report the percentage of public infrastructure mapping completed during each permit year.

Implementation:

As detailed in the City’s SWMP, the Public Works and Utilities Departments have developed a GIS work plan detailing a phased building of the public infrastructure system. Through this process, the stormwater drainage infrastructure is currently being mapped within the City’s GIS database. At this time, approximately 80% of the drainage network has been mapped, and data capture is ongoing with new data being submitted by developers as residential and commercial developments are completed.

During the base level evaluation of our GIS data capture process and database management system, a few weaknesses were identified. For example, connections between features such as ditches and detention ponds need to be completed to allow for a completely connected stormwater network. In addition, the City has not yet completed an in depth evaluation of the captured data and how the data is integrated to allow for stormwater modeling. This identified

weakness will be addressed through the third phase of the Integrated Stormwater Management Model project (submitted for approval FY 09). The scope for this phase of the project includes an evaluation of the GIS data to date, an assessment of the data in order to determine what areas still need to be completed, and the initiation of work to fill in any remaining data gaps. Once the work is completed, we will have a comprehensive stormwater drainage network for use on a variety of stormwater related issues such as ponding and flow paths.

3.3.3 Household Recycling Program

The City of Sugar Land and KSLB, in conjunction with Fort Bend County, conduct annual neighborhood collections of latex paint and consumer electronics. The purpose of these collection events is to provide convenient drop-off locations for residents to dispose of recyclable materials. Residents who arrive with unacceptable items are directed to the Fort Bend County Recycling and Household Hazardous Waste (HHW) Collection Center in Rosenberg, located approximately ten miles south of Sugar Land. Historically, the City has coordinated with Fort Bend County staff to ensure facility operation during the neighborhood collection events in order to encourage residents to properly dispose of their wastes.

In addition to sponsoring these neighborhood collection events, the City publicizes the Fort Bend Recycling and HHW Center through a variety of avenues including informational brochures, magnets, and residential telephone inquiries and encourages residents to dispose of their HHW and recyclables at the facility. Items accepted at this facility (year-round) include batteries, motor oil, oil filters, latex paint, antifreeze, transmission oil, power steering fluid, flammables, caustics, toxics, cooking oil, consumer electronics, and other recyclables and HHW wastes.

Measurable Goals:

Continue to sponsor at least one neighborhood latex paint or electronics collection event each year.	Permit Year 1
Assess the feasibility of sponsoring a HHW collection event within the City.	Permit Year 1
Continue to publicize Fort Bend County’s Recycling and HHW Collection Center.	Permit Year 1
Compile and distribute a master list of recycling options throughout the community.	Permit Year 2

Evaluation:

- Track the number of individuals attending the neighborhood collection events.
- Report the volume of material collected at the neighborhood collection events.
- Track the number of Sugar Land residents who visit the Fort Bend County Recycling and HHW Collection Center.

- Compile the type and quantity of educational outreach materials distributed to the community to promote the program.

Implementation:

The City of Sugar Land, in coordination with KSLB and Fort Bend County, annually sponsors neighborhood collections of latex paint and consumer electronics. Historically, the Latex Paint Collection Event has been conducted as a Battery, Oil, Latex Paint, and Antifreeze (BOPA) Collection; however, HHW rule interpretations changed during 2007, which made it economically unfeasible for the City to sponsor a BOPA event. Rather than cancel the event entirely, the City modified the program and decided to sponsor a Latex Paint Collection. Collection information for the 2005 - 2007 collection events is detailed in Appendix A: Table 11.

As referenced in the City's SWMP, staff will annually assess the feasibility of sponsoring a HHW event within the City of Sugar Land. Locally, the H-GAC has contracted with Philip Services Corporation for the collection, transportation, and disposal of household hazardous wastes. By analyzing the H-GAC pricing contract, the City determined that it is economically unfeasible to conduct a HHW event within the City of Sugar Land during the 2008-2009 permit year. Rather than host a HHW event, the City will host a BOPA collection and continue to encourage residents to dispose of their household hazardous wastes at the Fort Bend County Recycling and HHW Collection Center. During subsequent permit years, the City will continue to assess the feasibility of sponsoring a HHW event.

The City of Sugar Land's Earth Day Recycling Event allows residents to recycle a variety of materials including consumer electronics, paper products, eye glasses, and clothing/household items. This event began as an electronics recycling program and has expanded over the years to include a much larger variety of materials. The Earth Day Recycling Event continues to grow and develop each year. However, staff anticipates that in subsequent years, the City may no longer collect electronics during the event. Locally, several organizations are collecting electronics for reuse and recycling. The City plans to publicize the fact that these organizations collect the materials year round. By encouraging residents to utilize these opportunities throughout the year, residents may be more likely to participate in the program. In upcoming years, the City's electronics collection may transition to an educational program rather than a collection event. Please reference Appendix A: Table 10 for a detailed listing of participating households and the materials collected at the Earth Day Recycling Event.

In addition to partnering with Fort Bend County for a variety of recycling events throughout the year, the City also encourages residents to utilize the Fort Bend County Recycling and Household Hazardous Waste Collection Center. The facility's location and contact information can be found on the City's website and within a variety of brochures that the City distributes at public education events. The City actively promotes the Fort Bend County Recycling and Household Hazardous Waste Collection Center and will continue to publicize the facility throughout the five-year permit period. Fort Bend County also utilizes our events to distribute information detailing the items accepted at the facility. This partnership allows us to reach a larger group of individuals within the community. During August 2007 to July 2008, the Fort Bend County facility was visited by 2,764 Sugar Land residents, approximately 18% of their patronage for this time period.

Several local businesses also collect a variety of materials for recycling. In order to encourage residents to recycle, staff has begun developing a master list of recycling options within the City of Sugar Land. Upon completion in permit year 2, the information will be placed on the City’s website, and a brochure will be developed to educate residents who attend our public education events. This information will encourage residents to recycle locally and more frequently. In addition, the City and KSLB distribute a variety of educational outreach materials at community events throughout the year. Please reference Appendix A: Table 2 for a detailed description of educational resources and the quantities distributed.

3.3.4 Illicit Discharge Ordinance

The City of Sugar Land will develop and adopt an ordinance to prohibit and eliminate illicit discharges to the MS4. The Public Works and Code Enforcement Departments will work together to ensure ordinance compliance throughout the community. The ordinance will prohibit illicit discharges and connections, all non-stormwater discharges that significantly contribute pollutants to the MS4, and illegal dumping. It will include appropriate enforcement procedures and actions. In addition, the ordinance will establish the legal authority to carry out inspection and monitoring procedures that may be necessary to ensure compliance.

Measurable Goals:

Evaluate existing ordinances that may require modification.	Permit Year 1
Develop a draft ordinance and modify existing ordinances as needed.	Permit Year 2

Evaluation:

The evaluation methodology identified within the City’s SWMP for the development and implementation of an illicit discharge ordinance will be utilized upon adoption of the ordinance during permit year 3.

Implementation:

The development and implementation of an illicit discharge ordinance is essential in detecting and eliminating illicit discharges to the City’s drainage system. As identified within the City’s SWMP, the City of Sugar Land’s Code of Ordinances was evaluated during permit year 1 to identify existing ordinances related to illicit discharges and stormwater pollution. Through the evaluation process, staff determined that the City of Sugar Land does not have ordinances in place to prevent illicit discharges and stormwater pollution. However, an exception to this statement does exist as identified in *Article VII. Water and Waste Water*. Chapters within this section of the City’s ordinance specifically relate to commercial and industrial waste water services, along with regulations regarding grease traps, sand traps and swimming pool discharges. Swimming pool discharge regulations are vague and will likely be revised to include dechlorination verbiage. During permit year 2, the City will begin development of a draft ordinance to address illicit discharges and pollution prevention.

3.3.5 Detection and Elimination Program

A range of options is available to address illicit discharge detection and elimination. The City will develop a program to utilize a combination of complaint-driven investigations and proactive detection and elimination procedures to identify illicit discharges. In order to detect illicit discharges throughout the community, the City will conduct community-wide outfall screenings during dry-weather conditions, investigate any identifiable dry-weather flows in order to isolate the source of the discharge, and coordinate with the responsible party to eliminate the discharge.

Dry-weather screening is weather-dependant, and may be difficult in some locations due to submerged outfalls. However, the City has performed a series of dry weather screenings throughout the community in order to develop baseline data for illicit discharge comparisons.

In addition to developing a detection and elimination inspection program, the City currently inspects the municipal infrastructure for health and construction-related issues of concern and responds to citizen requests regarding streets, drainage, and traffic. The City and contract crews are responsible for the operation, maintenance and repair of wastewater collection lines, manholes, and appurtenances. Crews make all necessary repairs to lines transporting wastewater from the customer to the treatment plant. These repairs include unstopping City wastewater transmission lines, investigating stoppages on homeowner's private sewer lines, preventive maintenance line cleaning and manhole repairs to ensure that wastewater is transported from the customers' sewer service to wastewater lift stations and eventually to a waste treatment facility with minimal disruption. In addition, the Utilities Department also assesses the operation and maintenance of grease traps at businesses throughout the City at least twice a year.

Measurable Goals:

Establish baseline measures for illicit discharge comparisons.	Permit Year 1
Continue to perform operation, maintenance, and inspection procedures on wastewater transmission lines throughout the City.	Permit Year 1
Continue to perform grease trap inspections at businesses throughout the City.	Permit Year 1

Evaluation:

- Record the miles of drainage ditches and the number of outfalls that are monitored annually.
- Report the number of complaint driven requests for infrastructure inspections.
- Track the miles of wastewater transmission lines that are inspected annually.
- Compile a list of the businesses that operate grease traps in the City and the dates on which the grease traps are inspected by City staff.

Implementation:

Historically, the City of Sugar Land conducted a dry and wet weather screening of drainage locations throughout the community to develop baseline data for illicit discharge comparisons. These screenings provide comparison data should an illicit discharge occur within the MS4 system. The reports for the wet weather screening conducted in September 2006 and the dry weather screening conducted in April 2007 are included in Appendix B. The analytical data reported during these screenings was within a normal range for the watershed. The reports indicated low dissolved oxygen and high fecal coliform and E.coli data for a series of sampling locations; however, this data is not unexpected, since bacteria and dissolved oxygen total maximum daily load studies (TMDLs) have been issued for Upper Oyster Creek. Upon completion of the TMDL studies, the findings concluded that the low dissolved oxygen content within Oyster Creek was not associated with stormwater runoff, and the bacteria content could not be linked to a single source. Rather, the high bacteria levels are generated from a variety of contributing sources. Staff will continue to conduct screenings as needed throughout the permit period in order to identify the type and source of illicit discharges as they occur.

City staff is responsible for the operation, maintenance and repair of wastewater collection lines, manholes, and appurtenances. During the permit period, staff responded to 81 complaint driven requests for infrastructure inspections and repairs. These repairs include unstopping city wastewater transmission lines and investigating stoppages on homeowner's private sewer lines. The City not only responds to complaint driven requests for investigations and maintenance. Staff also inspects and cleans wastewater transmission lines throughout the City. This data is reported quarterly by the Utilities Department, and in order to integrate the City's reporting period with the SWMP reporting period, the data will be annually documented and reported from July to June of each year. From July 2007 through June 2008, a total of 25.9 miles of wastewater transmission lines were inspected and cleaned. In addition, the City also performs preventive maintenance repairs. These repairs include preventive maintenance line cleaning and manhole repairs to ensure that wastewater is transported from the customers' sewer service to wastewater lift stations and eventually to a waste treatment facility with minimal disruption. During July 2007 through June 2008, 189 preventive maintenance repairs were completed within the City of Sugar Land. Throughout the five year permit period, staff will continue to perform these operation, maintenance, and inspection procedures on wastewater transmission lines throughout the City in order to detect and eliminate illicit discharges to the City's storm sewer system.

The City of Sugar Land Utilities Department also assesses the operation and maintenance of grease traps at businesses throughout the City at least twice a year. These businesses are placed on an inspection schedule based upon past inspection failures, cleaning records, and volume of containment. Staff maintains a database detailing the dates of the inspections and the businesses' inspection rating (i.e. whether the business passed or failed the inspection). The City will continue to perform these inspections and track their occurrence during subsequent permit periods.

3.3.6 Septic Systems

Sugar Land will evaluate the need to implement a septic system inspection program. As part of this program, Sugar Land will require and facilitate the repair of septic systems that are failing to treat wastewater properly. The City of Sugar Land only has a handful of remaining septic systems within the City limits, and the City currently has an ordinance in place that prohibits the installation of new septic systems within the corporate city limits. For new developments outside the city limits but within the City’s extraterritorial jurisdiction, the County allows septic systems to be installed only on properties that are larger than one acre. A septic system inspection program will facilitate the improvement of failing septic systems and reduce potential contamination of surface and groundwater, including water supply wells. Through program development, the City will assess the need to field screen areas for indications of failing systems and the need for system modifications in order to ensure proper treatment.

Measurable Goals:

Evaluate the need to implement a septic system inspection program.	Permit Year 1
Respond to 100 percent of complaints regarding septic systems.	Permit Year 1
Develop a septic system inspection program, if deemed necessary.	Permit Year 2

Evaluation:

- Report the number of septic systems identified within the city limits.
- Track the number of septic system investigations/complaints.

Implementation:

In order to prevent the occurrence of illicit discharges to the City’s storm sewer system from active and inactive septic systems, it is important to assess the septic systems located within the City. Through the City’s assessment, we have determined that no septic systems are currently in operation within the City of Sugar Land. All homes within the City are connected to the sanitary sewer system; thus, at this time, the City does not see the need to develop and implement a septic system inspection program. With no septic systems in operation within the City of Sugar Land, we have not received any complaints regarding the operation and maintenance of septic systems.

Should the status of septic systems within the City of Sugar Land change during upcoming permit periods, the City will reassess the need for the development of a septic system inspection program.

3.3.7 Database of Businesses

Sugar Land maintains a database of businesses within the municipality. This database will assist in the distribution of public education materials and in identifying those businesses that may be

contributing illicit discharges to the MS4 system. With this database, staff will be able to categorize businesses, more directly focus educational efforts, and prioritize commercial and industrial education and enforcement efforts for illicit discharges.

Measurable Goals:

Develop, modify, and update the database of businesses.

Permit Year 1

Evaluation:

- Perform annual updates of the information within the database.

Implementation:

In order to fully identify and assess the commercial and industrial facilities located within the City of Sugar Land, staff has developed a database of businesses. This database is vast, and in order to directly focus educational and enforcement efforts, staff has divided the database into a variety of categories depending upon the type of business conducted at each facility. By categorizing the businesses, we can prioritize commercial and industrial education and enforcement efforts in relation to illicit discharges to the City’s MS4 system.

Each business is different and does not require the same type of public education. Through this categorization, educational materials can be developed to focus on a specific type of industry. For instance, the City has developed a “Menu” of best management practices for the restaurants within the community. This publication will be utilized during permit year 2 to educate the food service industry on the importance of proper best management practices.

Each year, this database of businesses will be updated to reference businesses that have just recently moved into the community or that have left the community. Staff will continue to develop educational materials for these industries and will utilize the database of businesses during enforcement procedures as they arise.

SECTION 4 – MCM 4: CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

4.0 OVERVIEW

Construction site stormwater runoff control measures are designed to prevent soil and construction debris from entering the MS4 system from construction sites. During construction activities, vegetation and topsoil are stripped away, making the area especially vulnerable to erosion, and the activities performed on construction sites usually disturb a large amount of land and generate large amounts of waste. This process has generally been found to lead to high levels of sediment, phosphorus, nitrogen, pesticides, petroleum derivatives, construction chemicals, and solid wastes in receiving streams nationwide.

4.1 FEDERAL REGULATORY REQUIREMENTS

40 CFR 122.34 (b)(4) states that the MS4 operator must develop, implement and enforce a program to reduce pollutants in any storm water runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to 1 acre. Reduction of storm water discharges from construction activity disturbing less than 1 acre must be included in your program if that construction activity is part of a larger common plan of development or sale that would disturb 1 acre or more. If the NPDES permitting authority waives requirements for storm water discharges associated with small construction activity in accordance with 40 CFR Sec. 122.26(b)(15)(i), you are not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites.

Your program must include the development and implementation of, at a minimum:

- An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law;
- Requirements for construction site operators to implement appropriate erosion and sediment control best management practices;
- Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
- Procedures for site plan review that incorporate consideration of potential water quality impacts;
- Procedures for receipt and consideration of information submitted by the public; and
- Procedures for site inspection and enforcement of control measures.

4.2 TPDES PHASE II PERMIT REQUIREMENTS

Construction Site Storm Water Runoff Control

The MS4 operator, to the extent allowable under State and local law, must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the small MS4 from construction activities that result in a land disturbance of greater than or equal to the small one acre or if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more of land. The MS4 operator is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from sites where the construction site operator has obtained a waiver from permit requirements under NPDES or TPDES construction permitting requirements based on a low potential for erosion.

- (a) The program must include the development and implementation of, at a minimum, an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under state and local law.
- (b) Requirements for construction site contractors to, at a minimum:
 - (1) implement appropriate erosion and sediment control BMPs; and
 - (2) control waste such as discarded building materials, concrete truck washout water, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality.
- (c) The MS4 operator must develop procedures for:
 - (1) site plan review which incorporate consideration of potential water quality impacts;
 - (2) receipt and consideration of information submitted by the public; and
 - (3) site inspection and enforcement of control measures to the extent allowable under state and local law.

4.3 DISCUSSION OF ACTIVE STORMWATER PROGRAMS

The City of Sugar Land currently utilizes a variety of construction site stormwater runoff control measures to monitor and reduce pollutants from construction sites throughout the community.

4.3.1 Stormwater Quality Education Materials

In order to prevent pollution within our waterways and educate the community on the effects their actions may have on the environment, the City of Sugar Land has developed a variety of educational materials and has obtained numerous educational resources from the TCEQ, the

EPA, the H-GAC, and other MS4 communities throughout the United States. This program is further discussed in Section 1.3.1.

4.3.2 Municipal Website

The City of Sugar Land will utilize the municipal website to inform the general public and potential construction site operators of the state TPDES Construction General Permit TXR150000 requirements and the City of Sugar Land policies and procedures relating to construction site stormwater runoff control. This program is further discussed in Section 1.3.2.

4.3.3 Construction Site Runoff Control Ordinance

The City of Sugar Land will develop and adopt an ordinance to require construction site operators to utilize erosion and sediment control devices during construction-related activities, as well as sanctions to ensure compliance. The ordinance will mirror the requirements of the TCEQ Construction General Permit TXR150000 and mandate that construction site operators install, maintain, and properly dispose of erosion and sediment controls.

Measurable Goals:

Evaluate existing ordinances that may require modification.	Permit Year 1
Develop a draft ordinance and modify existing ordinances as needed.	Permit Year 2

Evaluation:

The evaluation methodology identified within the City’s SWMP for the development and implementation of a construction site runoff control ordinance will be utilized upon adoption of the ordinance during permit year 3.

Implementation:

In accordance with the TPDES permit requirements, the City must develop, implement, and enforce a program to reduce pollutants in any stormwater runoff from construction activities that result in a land disturbance of greater than or equal to one acre or construction activity that is part of a larger common plan of development that would disturb one acre or more of land. During permit year 1, the City of Sugar Land received 15 notices from construction site operators for non-municipal construction activities; however, the City processed 110 permit applications involving non-municipal construction activities throughout the permit year.

In order to regulate runoff from construction sites, the City will develop and implement a construction site runoff control ordinance during the five-year permit period. As detailed within the City’s SWMP, staff evaluated the City of Sugar Land’s Code of Ordinances during permit year 1 to identify existing ordinances related to construction site runoff and pollution prevention. The evaluation process determined that the City of Sugar Land does not have ordinances in place

to address construction site runoff and pollution prevention; however, during permit year 2, the City will develop a draft ordinance to address these issues.

4.3.4 Construction Site Waste Control Ordinance

The City of Sugar Land will develop and adopt an ordinance to require construction site operators to control and dispose of on-site waste materials such as discarded building materials, concrete truck washout water, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality, as well as sanctions to ensure compliance. The ordinance will mirror the City’s solid waste ordinance and mandate that construction site operators employ solid waste haulers who are licensed by the City of Sugar Land.

Measurable Goals:

Evaluate existing ordinances that may require modification.	Permit Year 1
Develop a draft ordinance and modify existing ordinances as needed.	Permit Year 2

Evaluation:

The evaluation methodology identified within the City’s SWMP for the development and implementation of a construction site waste control ordinance will be utilized upon adoption of the ordinance during permit year 3.

Implementation:

In accordance with the TPDES permit requirements, the City of Sugar Land will develop and implement a construction site waste control ordinance to regulate and control waste from construction sites within the City of Sugar Land. During permit year 1, staff evaluated the City of Sugar Land’s Code of Ordinances to identify existing ordinances related to construction site waste control and litter. Through the evaluation process, staff determined that the City of Sugar Land does not have ordinances in place to address construction site waste and litter; however, the City will develop a draft ordinance during permit year 2 to address these issues. As detailed within the City’s SWMP, the ordinance development and implementation process will span the five-year permit period and consist of a phased approach with an educational component to educate the community prior to ordinance implementation.

SECTION 5 – MCM 5: POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

5.0 OVERVIEW

Post-construction stormwater management in new development and redevelopment focuses on the implementation of controls to maintain good water quality conditions after an area has been developed. New development can also have a significant effect on water quality because during the course of development, natural landscapes are often replaced by impermeable roads, parking lots, sidewalks and other paved surfaces that lead to increases in both the volume of stormwater runoff and the accompanying pollutants that reach local water bodies.

The MS4s are required to develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale that discharge to the small MS4. The program must ensure that controls are in place to prevent or minimize water quality impacts.

5.1 FEDERAL REGULATORY REQUIREMENTS

40 CFR 122.34 (b)(5) states that the MS4 must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. Your program must ensure that controls are in place that would prevent or minimize water quality impacts.

The MS4 operator must:

- Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for your community;
- Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law; and
- Ensure adequate long-term operation and maintenance of BMPs.

5.2 TPDES PHASE II PERMIT REQUIREMENTS

Post Construction Storm Water Management in New Development and Redevelopment

To the extent allowable under state and local law, the MS4 operator must develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre of land, including projects less than one acre that are part of a larger common plan of development or sale that will result in disturbance

of one or more acres, that discharge into the small MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts. The permittee shall:

- (a) Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for the community;
- (b) Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and re-development projects to the extent allowable under state and local law; and
- (c) Ensure adequate long-term operation and maintenance of BMPs.

5.3 DISCUSSION OF SCHEDULED BEST MANAGEMENT PRACTICES

The programs associated with post-construction stormwater management in new development and redevelopment are not scheduled to begin until permit year 2. These programs will be developed and implemented during the remaining four year permit period. A timeline of development and implementation is referenced in the City of Sugar Land Stormwater Management Program (SWMP).

5.3.1 Post-Construction Stormwater Management Development Codes

The City of Sugar Land will review and revise, if necessary, the City’s Development Codes in order to address stormwater runoff from new development and redevelopment activities that disturb greater than or equal to one acre of land, including those projects less than one acre that are part of a larger common plan of development or sale that will result in the disturbance of one or more acres of land. A development code specification relating to post-construction stormwater management will enable the City to guide, regulate, and control the design, construction, and maintenance of construction activity throughout the community. As an element of the review and revision process, specific BMPs may be established for particular watersheds. The code specifications will facilitate the limitation of surface runoff volumes and the reduction of pollutants. In addition, developers will utilize the City’s Development Code specifications as a reference document in the development and management of community-wide projects.

Measurable Goals:

Evaluate existing development codes that may require modification.

Permit Year 2

Evaluation:

The evaluation methodology identified within the City’s SWMP for the review and potential revision to the City’s Development Codes to address stormwater runoff from new development and redevelopment will be utilized upon adoption of new development codes and education initiatives during upcoming permit years.

Implementation:

In accordance with the City of Sugar Land SWMP, staff will review and revise, if necessary, the City's Development Codes in order to address stormwater runoff from new development and redevelopment. The evaluation process will begin during permit year 2 when staff will review existing development codes that may require modification to properly address stormwater runoff. As detailed within the City's SWMP, the process will be phased over the five-year permit period in order to thoroughly review and revise the development codes and incorporate an education initiative within the process.

SECTION 6 – MCM 6: POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS

6.0 OVERVIEW

Municipalities conduct a variety of activities throughout their daily operations which have the potential to affect water quality throughout the community. With the adoption and implementation of stormwater management policies and procedures, the City of Sugar Land will protect stormwater quality and continue to deliver public services at the present service levels. A variety of municipal operations, as referenced in Figure 1, will be affected by stormwater management policies and procedures. These municipal operations include, but are not limited to, parks maintenance, open space management, road and rights-of-way maintenance, water/wastewater utilities, fleet and building maintenance, city construction projects, and stormwater system maintenance.

6.1 FEDERAL REGULATORY REQUIREMENTS

40 CFR 122.34 (b)(6) states that the MS4 operator must develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. Using training materials that are available from EPA, your State, Tribe, or other organizations, your program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

6.2 TPDES PHASE II PERMIT REQUIREMENTS

Pollution Prevention/Good Housekeeping for Municipal Operations

A section within the SWMP must be developed to establish an operation and maintenance program, including an employee training component, that has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

(a) Good Housekeeping and Best Management Practices (BMPs)

Housekeeping measures and BMPs (which may include new or existing structural or non-structural controls) must be identified and either continued or implemented with the goal of preventing or reducing pollutant runoff from municipal operations. Examples of municipal operations and municipally owned areas include, but are not limited to:

- (1) park and open space maintenance;
- (2) street, road, or highway maintenance;
- (3) fleet and building maintenance;
- (4) storm water system maintenance;
- (5) new construction and land disturbances;

- (6) municipal parking lots;
- (7) vehicle and equipment maintenance and storage yards;
- (8) waste transfer stations; and
- (9) salt/sand storage locations.

(b) Training

A training program must be developed for all employees responsible for municipal operations subject to the pollution prevention/good housekeeping program. The training program must include training materials directed at preventing and reducing storm water pollution from municipal operations. Materials may be developed, or obtained from the EPA, states, or other organizations and sources. Examples or descriptions of training materials being used must be included in the SWMP.

(c) Structural Control Maintenance

If BMPs include structural controls, maintenance of the controls must be performed at a frequency determined by the MS4 operator and consistent with maintaining the effectiveness of the BMP. The SWMP must list all of the following:

- (1) maintenance activities;
- (2) maintenance schedules; and
- (3) long-term inspection procedures for controls used to reduce floatables and other pollutants.

(d) Disposal of Waste

Waste removed from the small MS4 and waste that is collected as a result of maintenance of storm water structural controls must be properly disposed. A section within the SWMP must be developed to include procedures for the proper disposal of waste, including:

- (1) dredge spoil;
- (2) accumulated sediments; and
- (3) floatables.

(e) Municipal Operations and Industrial Activities

The SWMP must include a list of all:

- (1) municipal operations that are subject to the operation, maintenance, or training program developed under the conditions of this section; and
- (2) municipally owned or operated industrial activities that are subject to TPDES industrial storm water regulations.

6.3 DISCUSSION OF ACTIVE STORMWATER PROGRAMS

The City of Sugar Land currently performs street sweeping activities at selected locations throughout the community in order to keep our streets clean and reduce the amount of pollutants reaching our waterways.

6.3.1 Street Sweeping

Street sweeping can capture a substantial amount of solids and pollutants from street surfaces before they are washed into the stormwater drainage system and discharged into local waterways. The City of Sugar Land will evaluate the frequency of street sweeping and prioritize areas by pollution potential. The City will then determine whether increased street sweeping would be beneficial to its stormwater management effort.

The City of Sugar Land currently budgets approximately \$146,000 per year to fund 40 hours per month of street sweeping. The City’s street sweeping program targets boulevards and major intersections along Highway 6, Highway 90, and Eldridge Road. Currently, the City does not sweep in front of residential homes unless the home is located on a major roadway.

The City will evaluate the financial resources available to increase contracted services for street sweeping or to purchase a street sweeper. The City does not currently have a street sweeper in its fleet. If the City deems it necessary to purchase a sweeper, capital costs for a conventional sweeper would range from \$100,000 to \$160,000. A newer technology sweeper would cost approximately \$180,000. In addition, operation and maintenance costs are approximately \$30 per curb mile for conventional sweepers and \$15 per curb mile for newer technology sweepers. The average cost for street cleaning is estimated at \$68 per curb mile at 11 curb miles per day.

Materials swept from streets have a significant pollution potential and must be disposed of properly. Personnel operating street-sweeping equipment will be trained in proper collection, handling, and disposal methods. Most street sweeping debris can be disposed of in a Type II landfill, with costs ranging from \$10 to \$20 per cubic yard. If street sweeping is contracted out, the estimated cost for capital investment, operation and maintenance, and disposal may range from \$130 to \$150 per curb mile.

Measurable Goals:

Review current operations and procedures, and prioritize locations based on pollution potential.	Permit Year 1
Determine whether increased street sweeping would be beneficial to the stormwater management effort.	Permit Year 1
Evaluate the financial resources available to increase contracted services for street sweeping or to purchase a street sweeper.	Permit Year 1
Implement program changes as needed.	Permit Year 2

Evaluation:

- Track the volume of litter collected from street sweeping activities.
- Report the number of hours spent sweeping the streets of Sugar Land.

Implementation:

The City’s street sweeping program has historically included the sweeping of most major intersections and several major corridors throughout the City. The program was initially structured to provide street sweeping at specified locations on a monthly basis. However, the program has been modified so that instead of sweeping monthly at every designated location, there are bi-weekly, monthly, and quarterly frequencies. The areas with the most traffic receive the most frequent sweeping.

Staff continuously evaluates the scheduled frequency of street sweeping operations within the City and prioritizes areas based upon pollution potential. The City’s street sweeping contract designates the street sweeping frequency for designated locations depending upon the level of litter and pollution historically observed. Should staff determine that an additional area within the City needs to be swept based upon its pollution potential, there is flexibility within the City’s street sweeping contract to make sure this area is swept on an as needed basis.

Street sweeping reduces the amount of litter and debris entering the City’s storm sewer system and assists in maintaining the natural environment. The City’s contract for street sweeping activities designates routes that are swept on a bi-weekly, monthly, and quarterly basis, and the amount of debris collected during each route varies.

Route Schedule	Debris Collected Per Route
Bi-weekly	5 Yards
Monthly	12 Yards
Quarterly	12 Yards

During August 2007 to August 2008, approximately 792 hours were spent sweeping the streets of Sugar Land. It is only understandable that increased street sweeping is beneficial to the stormwater management system; however, by continuously increasing public awareness, street sweeping efforts may remain at a minimum. The City’s stormwater education and awareness program continues to expand, and with this expansion, we are able to educate additional members of the community.

The City has performed a cost benefit analysis to determine whether it is more beneficial to outsource the City’s street sweeping services or perform them in-house. Through this analysis, strengths and weaknesses have been identified for both program options, and the City’s managerial staff is in the process of assessing the analysis in order to determine which option best fits the City’s needs. The City is currently under contract with a street sweeping vendor for FY08, and the contract may be extended for two additional one-year terms. In September 2008, the Sugar Land City Council approved and adopted the FY09 Operating Budget, and no additional money was allocated to increase the City’s street sweeping operations. Each permit

year, staff will assess the need to increase street sweeping operations and the amount of money and resources needed to complete those program modifications.

6.3.2 Municipal Operations and Facility Survey

Sugar Land is a full-service municipality providing the highest quality of services to meet the needs of its citizens. In order to provide these services, the City of Sugar Land operates and maintains a variety of facilities throughout the community which have the potential to affect stormwater quality. Please refer to Figure 1 of the City’s Stormwater Management Program for a summary of municipal facilities. In order to assess the need for pollution prevention policies and procedures at these facilities, the City will perform a survey of each facility to determine the nature of activities performed at the facility, the appropriate stormwater management BMPs, and a means of BMP implementation.

By reviewing the facility operation and maintenance activities, the municipal operations and facility survey will identify the need for stormwater management BMPs at each facility and provide an implementation plan for the effective management of the stormwater BMPs. The information collected during the survey will serve as a baseline for BMP development and implementation at each facility, and staff will use this information in the development of a facility inspection program.

Measurable Goals:

Perform a municipal operations and facility survey.	Permit Year 1
Develop policies and procedures to implement stormwater BMPs as deemed necessary in the municipal operations and facility survey.	Permit Year 2

Evaluation:

- Complete the municipal operations and facility survey.
- Report the number of facilities surveyed and compare the number to the total number of City facilities.
- Track the development and implementation of stormwater BMPs to make sure all facilities are effectively utilizing stormwater management BMPs.

Implementation:

In March 2008, the City of Sugar Land contracted with TCB, Inc. (TCB) to perform a Municipal Operations and Facility Survey. During this survey, TCB visited each city-owned facility to determine the nature of activities performed at the facility, assess existing activities and procedures in relation to stormwater management, and make recommendations for additional best management practices where needed. A total of 61 municipal facilities representing various municipal departments, including the airport, and a total of eight field operation activities were observed during the assessment. The field operations observed and documented included

excavation during water tapping activities when installing new water meters, construction activities, broken water line repairs, pressure washing, mosquito larvicide application, and household solid waste collection.

The Municipal Operations and Facility Survey was completed in September 2008, and according to the report, good management and stormwater pollution prevention practices are generally in place at the City of Sugar Land facilities. Where potential sources of stormwater pollution were noted, TCB provided recommendations for the implementation of additional best management practices to minimize the exposure of potential pollutant sources to stormwater runoff. With the completion of the survey, the City will begin to develop policies and procedures to implement the recommended stormwater best management practices. As referenced in the City’s Stormwater Management Program, this implementation will begin during permit year 2 and continue through permit year 5.

6.3.3 Good Housekeeping Operations

With the numerous municipal operations performed throughout the City, it is important to ensure that the City performs all public services in a manner that protects stormwater quality. The City has identified several key areas of importance where good housekeeping measures are imperative to proper municipal operations:

Outdoor Storage

Stockpiles and used equipment are potential sources of stormwater pollution. The City of Sugar Land will evaluate its facilities to ensure that usable materials are properly stored and that potentially harmful materials are disposed of in accordance with state and federal law. The goal of this BMP is to prevent stored materials or any pollutant associated with them from reaching local waterways. This can be accomplished through a variety of means, including, but not limited to, covering stockpiles under a roof or tarp, diking storage areas to prevent runoff, or collecting the runoff and providing for its treatment.

The Public Works and Utilities Service Center and other municipal facilities currently remove and dispose of stockpiled materials that are unusable or are not intended for reuse. The City will perform quarterly and annual facility inspections to ensure that stormwater management BMPs are utilized and implemented according to staff recommendations and that potentially harmful materials are disposed of properly and in a timely manner.

Measurable Goals:

Inventory all storage locations, and identify the types of materials utilized for municipal operations.	Permit Year 1
Assess the adequacy of storage and measures of protection at existing storage areas.	Permit Year 1
Recycle or properly dispose of unused, potentially harmful materials.	Permit Year 2

Evaluation:

- Document the disposal volumes of unused potentially harmful materials.

Fleet and Equipment Maintenance

During the initial facility inspections, City staff will inventory all vehicle maintenance locations. Staff will assess the facility policies and procedures for the storage and containment of vehicle maintenance products and the handling and disposal of waste. The goal is to reduce the runoff of pollutants from these facilities. For instance, the wash down water from the Public Works fleet maintenance facility flows into an oil separator and is then routed to the storm sewer system. The City will evaluate the maintenance schedule of this catch basin, and any additional catch basins at City facilities, to determine if improvements or additional catch basins and oil/grit separators are needed. Used motor oil from fleet vehicles and equipment is currently recycled by a third party contractor on an as needed basis, and staff will review the facility recycling operations during the assessment of facility policies and procedures.

The City of Sugar Land will also develop and implement a training program that addresses the proper methods of storing, handling, and disposing of vehicle maintenance materials. Maintenance sites will be quarterly and annually inspected and spill responses will be documented. During the inspections, staff will also evaluate fleet operations to determine what additional measures can be taken to reduce pollutants.

Measurable Goals:

Inventory vehicle maintenance locations.	Permit Year 1
Assess spill prevention and protection measures for stored products.	Permit Year 1
Evaluate the catch basin maintenance schedule and revise as needed.	Permit Year 1
Perform quarterly and annual inspections of fleet and equipment maintenance operations.	Permit Year 2

Evaluation:

- Track the number of inspections performed.

Vehicle and Equipment Washing

The City of Sugar Land will evaluate the operation and maintenance procedures of the vehicle and equipment wash facility during the initial facility inspections. The Public Works and Utilities Service Center vehicle and equipment wash facility utilizes catch basins to collect the wash water and facilitate drainage into the sanitary system.

Currently, most City vehicles are washed at this facility; however, there is no policy that mandates all vehicles be washed there. The City will develop a policy requiring all City departments, excluding the Fire Department, to wash City vehicles at the Public Works facility. The Fire Department normally washes the fire trucks at the stations, and the City will evaluate the need to install catch basins at each fire station to prevent the automotive wash off from entering the storm sewer system.

Measurable Goals:

Evaluate the need to install catch basins at City fire stations.	Permit Year 1
Develop and implement policies and procedures detailing the vehicle and equipment washing requirements necessary to protect water quality.	Permit Year 2

Evaluation:

- Document maintenance operations performed on the vehicle and equipment wash facility catch basin.
- Install catch basins at City fire stations, if deemed necessary.

Implementation:

As previously referenced in Section 6.3.2, the City of Sugar Land contracted with TCB to perform a Municipal Operations and Facility Survey. During this survey, TCB inventoried and assessed the outdoor storage locations in order to identify the types of materials utilized for municipal operations and evaluate the adequacy of storage, including measures of stormwater runoff protection within the outdoor storage areas.

In addition, the survey also included the inventory and assessment of vehicle maintenance locations and vehicle/equipment washing operations. During the survey, spill prevention and protection measures for stored products within vehicle maintenance locations were assessed, and the catch basin maintenance schedule was evaluated. In visiting the City of Sugar Land fire and police stations, TCB also noted the Police Department’s utilization of a third party vendor for vehicle washing activities and evaluated the need to install catch basins at each of the fire stations in order to control and eliminate stormwater runoff from vehicle washing operations.

The Municipal Operations and Facility Survey was completed in September 2008, and according to the report, good management and stormwater pollution prevention practices are generally in place at the City of Sugar Land facilities. Where potential sources of stormwater pollution were noted, TCB provided recommendations for the implementation of additional best management practices to minimize the exposure of potential pollutant sources to stormwater runoff. With the completion of the survey, the City will begin to develop policies and procedures to implement the recommended stormwater best management practices. As referenced in the City’s Stormwater Management Program, this implementation will begin during permit year 2 and continue through permit year 5.

The City will also begin quarterly and annual inspections of fleet and equipment maintenance operations during permit year 2, and these inspections will continue throughout the remaining permit term. Staff will also be recycling or properly disposing of unused, potentially harmful materials from city-owned facilities in order to minimize exposure to stormwater runoff and protect water quality. The evaluation methodology identified within the City’s SWMP for good housekeeping operations will be utilized upon implementation of best management practices and measurable goals identified within the City’s Municipal Operations and Facility Survey and those detailed within the City’s SWMP that are scheduled for implementation during upcoming permit years.

6.3.4 Spill Prevention and Response

The City of Sugar Land will develop and adopt spill response procedures to ensure that stormwater quality protection measures are considered during spill response activities. The City currently operates a regional hazardous material response (HAZMAT) unit with a team trained to respond to spills in a manner that protects water quality and the environment. In addition to the HAZMAT personnel, the City will provide training to applicable employees in spill response procedures and will provide spill response kits in convenient locations at City facilities where daily activities may potentially contribute to stormwater pollution. An inspection and maintenance program will be developed to ensure that the spill kits are properly maintained at each facility. In addition, the City will examine spill response procedures for field personnel in order to prevent spilled materials from entering the drainage system.

Measurable Goals:

Examine spill response procedures to ensure proper procedures are followed to prevent spilled materials from entering the drainage system.	Permit Year 1
Train applicable employees in spill response procedures.	Permit Year 2

Evaluation:

The evaluation methodology identified within the City’s SWMP for spill prevention and response will be utilized upon implementation of a spill response training program and distribution of spill response kits.

Implementation:

The City of Sugar Land, Missouri City and Stafford Fire Departments have formed a partnership for response to hazardous materials spills throughout the community. Firefighters from all three cities have obtained certified HAZMAT training and are equipped with a HAZMAT response vehicle. Sugar Land is also part of the Fort Bend County and regional hazardous materials response plan. Response policies and procedures have been developed for responding to spills and can be obtained through the City of Sugar Land Fire Department.

Policies and procedures do not currently exist for spills caused or discovered by city staff. We are currently working with the Fire Department to develop appropriate policies and procedures for staff who cause or discover spills during daily activities. We anticipate that these policies and procedures will be completed during permit year 2. The spill response employee training program will begin during permit year 2, and spill response kits will be provided to City employees during permit year 3. As identified within the City's SWMP, both of these measurable goals will continue throughout the remaining permit period.

6.4 DISCUSSION OF SCHEDULED BEST MANAGEMENT PRACTICES

In addition to the programs the City is currently implementing, several additional programs will be developed and implemented during the upcoming permit period.

6.4.1 Employee Training Program

The City will develop and implement an employee training program to prevent and reduce stormwater pollution from activities such as park maintenance, fleet and building maintenance, new construction, land disturbance, and stormwater system maintenance and promote good housekeeping procedures. Training programs ensure that stormwater quality programs are properly implemented and BMPs are properly installed and maintained. In addition, ensuring proper management practices can reduce the need for costly structural controls.

City staff will develop a training curriculum by incorporating the City's own stormwater management policies and procedures with educational materials obtained through the EPA, the TCEQ, and additional MS4 entities throughout the country. Stormwater quality training will be incorporated into new employee orientations, and ongoing training and review on various topics will also take place on a quarterly basis at the required monthly safety meetings. The training programs will likely consist of both classroom instruction and field exercises. Training modules may include, but are not limited to:

- Proper fueling techniques
- Good housekeeping and material management practices
- Spill prevention, response, and notification procedures
- Proper waste handling procedures
- Proper tank and drum filling and transfer procedures
- Proper vehicle and equipment cleaning procedures
- Proper painting, sanding, blasting, and refinishing techniques
- Inspection procedures
- Temporary sediment control measures
- Stormwater sampling techniques.

As additional O & M stormwater BMPs are identified during the quarterly and annual facility and operational inspections, additional training may be developed and performed.

Measurable Goals:

Develop training modules.

Permit Year 2

Evaluation:

The evaluation methodology identified within the City's SWMP for the development and implementation of an employee training program will be utilized once employee training begins during permit year 3.

Implementation:

In accordance with the City of Sugar Land SWMP, staff will develop training modules for the employee training program during the upcoming permit year. These modules will include a variety of topics and address activities associated with stormwater management and water quality. The training program will begin during permit year 3 and continue throughout the remaining permit period.