

Developing Your Stormwater Management Plan: How Much Does It Cost?

CWEA

Stormwater Committee Seminar

December 11, 2019

Jason Maldonado, CFM

rjngroup
Engineering infrastructure for tomorrow

Agenda

- **Forecasting and Estimating Process**
 - **SWMP Resource Forecasting Tool**
 - **Benefits**
 - **Considerations**
-
- *** Acknowledgements: Taylor Danesi, Sugar Land, Texas**

MS4 Permits and SWMP

- **Public Education and Outreach**
- **Public Involvement**
- **Illicit Discharge Detection Elimination**
- **Construction Site Stormwater Runoff Management**
- **Post-Construction Stormwater Management: New Development and Redevelopment**
- **Pollution Prevention and Good Housekeeping**



Resource Forecasting Tool

- **Goals**
 - Understand Annual Costs/Resources
 - Determine Staff/Outsourcing Needs
 - Develop Adequate Schedules
 - Open Communication with Departments and Management
 - Justify Budgets

Resource Forecasting Tool Considerations

- **Defining All Cost Components**
 - Labor rates
 - Overhead rates
 - Equipment and Materials
 - Administrative costs
- **BMPs: Existing/New**
- **Activities and Schedules**
- **Develop Estimates in Concert with SWMP**
- **Evaluate**
 - Appropriate?

Resource Forecasting Tool

- **Identify Costs/Resources for the Program Annually**
- **Summarize Individual MCM Costs/Resources Annually**
- **Identify and Summarize Resources by Position**
- **Estimate Non-MCM Support Costs**

MCMs/Non-MCM Support

- Public Education and Outreach
- Public Involvement
- Illicit Discharge Detection Elimination
- Construction Site Stormwater Runoff Management
- Post-Construction Stormwater Management: New Development and Redevelopment
- Pollution Prevention and Good Housekeeping
- Administrative Support
- Software and Data Management Reporting Tools
- Impaired Waterbodies
- Delays in Permit Issuance

Sugar Land, Texas

- Located in Southeast Texas
- Less than 10 miles SW of Houston, Texas
- Population:
 - 78,817 (2010)
 - 117,800 (2017)
- 49.54 inches of rainfall annually
- Humid subtropical weather
- Early 1800s
 - Cotton, corn, sugarcane
 - Home of Imperial Sugar



Environmental Program

- Department staff is responsible for Stormwater and Solid Waste Programs
- Consists of 4 staff members
 - Environmental Manager
 - Environmental Coordinator
 - Two Environmental Inspectors
 - Utilize RJN Group for SWMP assistance
- Funded through City General Fund
 - 6% is allocated for Environmental & Neighborhood Services
 - Includes Administration, Code Enforcement, Fleet, Facilities, CDBG, and Animal Services
 - Utilize grant funding to support outreach programs

Texas Gulf Coast

- **Floods of 2015 (Memorial Day – 10 inches of rain in 8 hours)**
- **Floods of 2016 (Memorial Day – 20 inches of rain)**
- **Hurricane Harvey 2017 (Greater than 50 inches of rain)**
- **Loss of sales tax revenue, resulting in budget cuts**



Source: <http://swamplot.com/what-the-brazos-river-looks-like-when-it-shatters-all-previous-flooding-records/2016-06-02/>

TPDES General Permit for MS4s TXR040000

- **Tiered permitting approach based on population in the Urbanized Area**
 - **Level 1: Up to 10,000 residents**
 - **Level 2: 10,000 to 40,000 residents**
 - **Level 3: 40,000 to 100,000 residents**
 - **Level 4: More than 100,000 residents**

Texas Commission on Environmental Quality

P.O. Box 13087, Austin, Texas 78711-3087



**GENERAL PERMIT TO DISCHARGE UNDER THE
TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM**

under provisions of
402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

This permit supersedes and replaces
TPDES General Permit No. TXR040000, issued December 13, 2013


Small Municipal Separate Storm Sewer Systems
located in the state of Texas
may discharge directly to surface water in the state

only according to requirements and conditions set forth in this general permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ or Commission), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this general permit does not grant to the permittee the right to use private or public property for conveyance of stormwater and certain non-stormwater discharges along the discharge route. This includes property belonging to but not limited to any individual, partnership, corporation or other entity. Neither does this general permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This general permit and the authorization contained herein shall expire at midnight, five years after the permit effective date.

EFFECTIVE DATE: 1-24-19

ISSUED DATE: 1-24-19


For the Commission

New Permit – New Goals

- **Level 4 Tier**
 - **Additional Inspections**
 - **SOP Development**
 - **Industrial Stormwater Inspection Program**
 - **Floatables Monitoring**

SWMP Development

- Take Credit for Existing Programs
- Do Not Overcommit to Goals and Schedules
- Evaluate Staffing and Program Needs

**CITY OF SUGAR LAND
STORMWATER MANAGEMENT PROGRAM**

Prepared for:

City of Sugar Land



Prepared by:

rjngroup
Engineering

2550 Gray Falls Dr., Suite 203 • Houston, Texas 77077
Phone: 832.930.7876
www.rjn.com

July 2019

rjngroup
Engineering infrastructure for tomorrow

Preparing for the Future

DRAFT PROGRAM COST ESTIMATE

MINIMUM CONTROL MEASURES	ANNUAL TOTAL COSTS					5-YR Permit Cycle Cost
	2019	2020	2021	2022	2023	
MCM-1 - PUBLIC EDUCATION, OUTREACH, AND INVOLVEMENT	\$ 59,110	\$ 68,904	\$ 68,507	\$ 67,953	\$ 67,953	\$ 332,427
MCM-2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION	\$ 27,224	\$ 43,973	\$ 39,338	\$ 39,338	\$ 37,568	\$ 187,442
MCM-3 - CONSTRUCTION SITE RUNOFF CONTROL	\$ 67,881	\$ 69,284	\$ 61,004	\$ 67,402	\$ 67,550	\$ 333,120
MCM-4 - POST CONSTRUCTION RUNOFF CONTROLS	\$ 54,841	\$ 37,987	\$ 15,870	\$ 15,870	\$ 15,870	\$ 140,436
MCM-5 - GOOD HOUSEKEEPING IN MUNICIPAL OPERATIONS	\$ 38,076	\$ 88,078	\$ 76,617	\$ 35,148	\$ 32,768	\$ 270,686
MCM-6 - INDUSTRIAL STORMWATER SOURCES	\$ 27,141	\$ 59,979	\$ 62,127	\$ 50,122	\$ 49,079	\$ 248,447
ADMINISTRATIVE COSTS (Annual Reporting, etc.)	\$ 114,796	\$ 94,421	\$ 80,312	\$ 80,312	\$ 80,312	\$ 450,152
PHASE II COMPLIANCE TOTAL COSTS:	\$ 389,068	\$ 462,625	\$ 403,775	\$ 356,145	\$ 351,098	\$ 1,962,711
PHASE II COMPLIANCE TOTAL COSTS (w/ 5% annual inflation):	\$ 389,068	\$ 485,756	\$ 423,963	\$ 373,952	\$ 368,653	\$ 2,060,847
STAFFING NEEDS (FULL TIME EQUIVALENTS)						
TOTAL FTE's	2.63	3.11	2.67	2.56	2.54	

Assumptions

LABOR RATES	OVERHEAD APPLIED	RAW	UNITS	EQUIPMENT/ITEM RATES	ITEM	UNITS
				Newspaper Ad	\$ 400	Each
Dir of Env and N. Services	\$ 98.88	\$ 61.80	Hour	Curb Marker	\$ 5	Each
Environmental Manager	\$ 62.50	\$ 39.06	Hour	Detection Equipment	\$ 2,000	Each
Environmental Coordinator	\$ 49.60	\$ 31.00	Hour	Postage	\$ 0.50	Stamp
Environmental Svc Insp	\$ 38.50	\$ 24.06	Hour	Colored Public Education Copies	\$ 3,500	Each
GIS Specialist	\$ 51.52	\$ 32.20	Hour	Spill Kit	\$ 350	Each
Ass. City Attorney	\$ 68.10	\$ 42.56	Hour	Street Sweeper Machine	\$ 210,000	Each
311 Contact Ctr Ambassador	\$ 23.33	\$ 14.58	Hour	Workbook	\$ 5	Each
Water Quality Tech	\$ 33.49	\$ 20.93	Hour	Truck	\$ 40,000	Unit
General Maintenance Worker	\$ 49.60	\$ 31.00	Hour	Gasoline	\$ 5,100	Year
Devo Review Coordinator	\$ 38.50	\$ 24.06	Hour	Giveaway Item	\$ 2.00	Each
Communications Director	\$ 56.77	\$ 35.48	Hour	Furniture	\$ 500	Year
Website Manager	\$ 53.57	\$ 33.48	Hour	Software	\$ 5,000	Year
Publications Manager	\$ 53.57	\$ 33.48	Hour	Insurance		Year
				Gasoline (sweeper)	\$ 7,000	Year
				Repairs	\$ 1,000	Year
				Equipment	\$ 4,000	Year
Overhead Rate	1.60			Water Quality Training Material	\$ 20	Each
				Material Cost	\$ 5,000	Each
				Bluebeam License renewal	\$ 100	Each
				Bluebeam License (New)	\$ 450	Each
				Annual copier lease	\$ 2,700	Each

FTE hour assumptions: 52 wks/yr @ 40hrs/wk is 2,080 hrs. 12 holidays @ 8 hrs/day is 96 hrs. Two 15-minute breaks per day for 121.5 hours. Net hours available per person is 1,862.5 hrs. **1,850** is an approximate value.

Public Education and Outreach

BMP	Activity	Due Date / Frequency	Cost Item	Unit Cost	Units	FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR		FIFTH YEAR		Permit Cycle Cost
						Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	
Student Education	Annually sponsor water quality educational material to local schools within the community.	Annually	Environmental Manager	\$ 62	Hour	8	\$ 500	8	\$ 500	8	\$ 500	8	\$ 500	8	\$ 500	\$ 2,500
			Colored Public Education Copies	\$ 3,500	Each	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	2	\$ 7,000	\$ 35,000
	Expand the Storm water Education Program currently underway throughout FBISD and local private schools.	Annually	Environmental Manager	\$ 62	Hour	8	\$ 500	8	\$ 500	8	\$ 500	8	\$ 500	8	\$ 500	\$ 2,500
			Environmental Coordinator	\$ 50	Hour	8	\$ 397	8	\$ 397	8	\$ 397	8	\$ 397	8	\$ 397	\$ 1,984

Illicit Discharge Detection and Elimination

BMP	Activity	Due Date / Frequency	Cost Item	Unit Cost	Units	FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR		FIFTH YEAR		Permit Cycle Cost
						Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	
Detection and Elimination Program	Review and update illicit discharge detection and elimination procedures.	Once during the permit term	Environmental Manager	\$ 62	Hour	8	\$ 500	4	\$ 250							\$ 750
	Perform dry weather screening on 50% of known City-owned outfalls.	Over the life of the permit	Consulting Contracts (Field Screening)	\$ 12,000	LS			1	\$ 12,000	1	\$ 12,000	1	\$ 12,000	1	\$ 12,000	\$ 48,000
	Review and update source investigations, tracking methods, elimination procedures and corrective actions.	Annually	Environmental Manager	\$ 62	Hour			8	\$ 500	8	\$ 500	8	\$ 500	8	\$ 500	\$ 2,000
			Environmental Svc Insp	\$ 38	Hour	80	3,080	80	3,080	80	3,080	80	3,080	80	3,080	\$ 15,398
			Water Quality Tech	\$ 33	Hour	80	2,679	80	2,679	80	2,679	80	2,679	80	2,679	\$ 13,395
	Continue to perform grease trap inspections at businesses throughout the City.	Annually	Water Quality Tech	\$ 33	Hour	150	5,023	150	\$ 5,023	150	\$ 5,023	150	\$ 5,023	150	\$ 5,023	\$ 25,116

Industrial Stormwater Inspections

BMP	Activity	Due Date/Frequency	FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR		FIFTH YEAR		Permit Cycle Cost
			Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	
Industrial Stormwater Inspection Program	Update, as necessary industrial site inspection procedures and inspection forms.	Annually	8	\$ 397	8	\$ 397	8	\$ 397	8	\$ 397	8	\$ 397	\$ 1,984
	Conduct Industrial Inspections on 100% of MSGP and NEC facilities	Once during the Permit Cycle			240	\$ 11,904	240	\$ 11,904	240	\$ 11,904	240	\$ 11,904	\$ 47,616
		Once during the Permit Cycle			240	\$ 9,239	240	\$ 9,239	240	\$ 9,239	240	\$ 9,239	\$ 36,956
	Performed enforcement proceedings in accordance with ordinances.	As needed			24	\$ 2,373	24	\$ 2,373	24	\$ 2,373	24	\$ 2,373	\$ 9,492
		As needed			120	\$ 5,952	120	\$ 5,952	120	\$ 5,952	120	\$ 5,952	\$ 23,808
	Follow up on Industrial Stormwater Inspections/Enforcement	As needed			80	\$ 3,080	80	\$ 3,080	80	\$ 3,080	80	\$ 3,080	\$ 12,319
	Industrial Stormwater Complaint Investigation	As needed			32	\$ 1,232	32	\$ 1,232	32	\$ 1,232	32	\$ 1,232	\$ 4,927
	Update procedures based on inspections, TCEQ regulations, community and regulatory feedback.	Once Annually	20	\$ 1,250	20	\$ 1,250	40	\$ 2,500	20	\$ 1,250	20	\$ 1,250	\$ 7,500
		Once Annually	4	\$ 206	4	\$ 206	4	\$ 206	4	\$ 206	4	\$ 206	\$ 1,030
		Once Annually	20	\$ 992	20	\$ 992	80	\$ 3,968	20	\$ 992	20	\$ 992	\$ 7,936

By Position

		ANNUAL TOTAL HOURS					5-YR Permit Cycle Hours		
		Y1	Y2	Y3	Y4	Y5			
Environmental Manager									
MCM-1 - PUBLIC EDUCATION, OUTREACH, AND INVOLVEMENT		96	104	104	102	102	508		
MCM-2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION		74	114	72	72	72	404		
MCM-3 - CONSTRUCTION SITE RUNOFF CONTROL		524	503	386	426	366	2,205		
MCM-4 - POST CONSTRUCTION RUNOFF CONTROLS		484	352	88	88	88	1,100		
MCM-5 - GOOD HOUSEKEEPING IN MUNICIPAL OPERATIONS				ANNUAL TOTAL HOURS			5-YR Permit Cycle Hours		
MCM-6 - INDUSTRIAL STORMWATER SOURCES									
ADMINISTRATIVE COSTS (Annual Reporting, Etc.)				Y1	Y2	Y3		Y4	Y5
PHASE II COMPLIANCE TOTAL HOURS									
TOTAL FTEs	GIS Specialist								
	MCM-1 - PUBLIC EDUCATION, OUTREACH, AND INVOLVEMENT		8	8	8	8	8	40	
	MCM-2 - ILLICIT DISCHARGE DETECTION AND ELIMINATION		142	142	142	142	142	710	
	MCM-3 - CONSTRUCTION SITE RUNOFF CONTROL		17	19	18	20	22	96	
	MCM-4 - POST CONSTRUCTION RUNOFF CONTROLS		20	12	12	12	12	68	
	MCM-5 - GOOD HOUSEKEEPING IN MUNICIPAL OPERATIONS		29	25	25	25	25	129	
	MCM-6 - INDUSTRIAL STORMWATER SOURCES		12	12	12	12	12	60	
	ADMINISTRATIVE COSTS (Annual Reporting, Etc.)		80	104	80	80	80	424	
	PHASE II COMPLIANCE TOTAL HOURS		308	322	297	299	301	1,527	
	TOTAL FTEs		0.17	0.17	0.16	0.16	0.16		

Admin Support and Other Expenses

BMP	Activity	Due Date / Frequency	Cost Item	Unit Cost	Units	FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR		FIFTH YEAR		Permit Cycle Cost
						Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	
Annual Report	Prepare report.	Once Annually (October)	Environmental Manager	\$ 62	Hour	80	\$ 5,000	80	\$ 5,000	80	\$ 5,000	80	\$ 5,000	80	\$ 5,000	\$ 24,998
			Environmental Svc Insp	\$ 38	Hour	40	\$ 1,540	40	\$ 1,540	40	\$ 1,540	40	\$ 1,540	40	\$ 1,540	\$ 7,699
			Dir of Env and N. Services	\$ 99	Hour	12	\$ 1,187	12	\$ 1,187	12	\$ 1,187	12	\$ 1,187	12	\$ 1,187	\$ 5,933
Administration	Receive, organize & file appropriate paperwork.	Ongoing Process	GIS Specialist	\$ 52	Hour	80	\$ 4,122	80	\$ 4,122	80	\$ 4,122	80	\$ 4,122	80	\$ 4,122	\$ 20,608
		Ongoing Process	Environmental Manager	\$ 62	Hour	160	\$ 9,999	160	\$ 9,999	160	\$ 9,999	160	\$ 9,999	160	\$ 9,999	\$ 49,997
		Ongoing Process	Environmental Coordinator	\$ 50	Hour	120	\$ 5,952	120	\$ 5,952	120	\$ 5,952	120	\$ 5,952	120	\$ 5,952	\$ 29,760
	Printing	Ongoing Process	Annual copier lease	\$ 2,700	Each	1	\$ 2,700	1	\$ 2,700	1	\$ 2,700	1	\$ 2,700	1	\$ 2,700	\$ 13,500
Existing Trucks	Purchase truck for use by storm water utility personnel.	Complete	Truck	\$ 40,000	Unit		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -
	Annual gasoline costs	Ongoing Process	Gasoline	\$ 5,100	Year	1	\$ 5,100	1	\$ 5,100	1	\$ 5,100	1	\$ 5,100	1	\$ 5,100	\$ 25,500
	Vehicle repairs	Ongoing Process	Repairs	\$ 1,000	\$ -	3	\$ 3,000	3	\$ 3,000	3	\$ 3,000	3	\$ 3,000	3	\$ 3,000	\$ 15,000
	Reserved	Ongoing Process					\$ -		\$ -		\$ -		\$ -		\$ -	\$ -

Resource Forecasting Tool

- **Schedule Developed to Spend When Needed**
- **Builds Support to Justify:**
 - **Budget**
 - **Staff**
 - **Consultants**
 - **Equipment**
 - **Stormwater Utility Fees**

Resource Forecasting Tool

- Identify Costs/Resources for the Program Annually
- Summarize Individual MCM Costs/Resources Annually
- Identify and Summarize Resources by Position
- Estimate Non-MCM Support Costs
- Buy in from Other Departments and Management
- Reduce Over-committing
- Balance Spending and Schedules

Considerations

- **When Developing, Speak to All Affected Departments:**
 - **HR/Finance**
 - **Public Works/Engineering**
 - **Purchasing**
 - **Fire/Police**
 - **Drainage/Streets**
- **Get Management Input, Review, and Approval**
- **Evaluate Existing Programs**

Questions?

Jason Maldonado, CFM

832.272.7309

jmaldonado@rjnmail.com

rjngroup
Engineering infrastructure for tomorrow