



#EndTheStreakTX



TxDOT's Stormwater Roles and Responsibilities

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TEXAS DEPARTMENT OF TRANSPORTATION

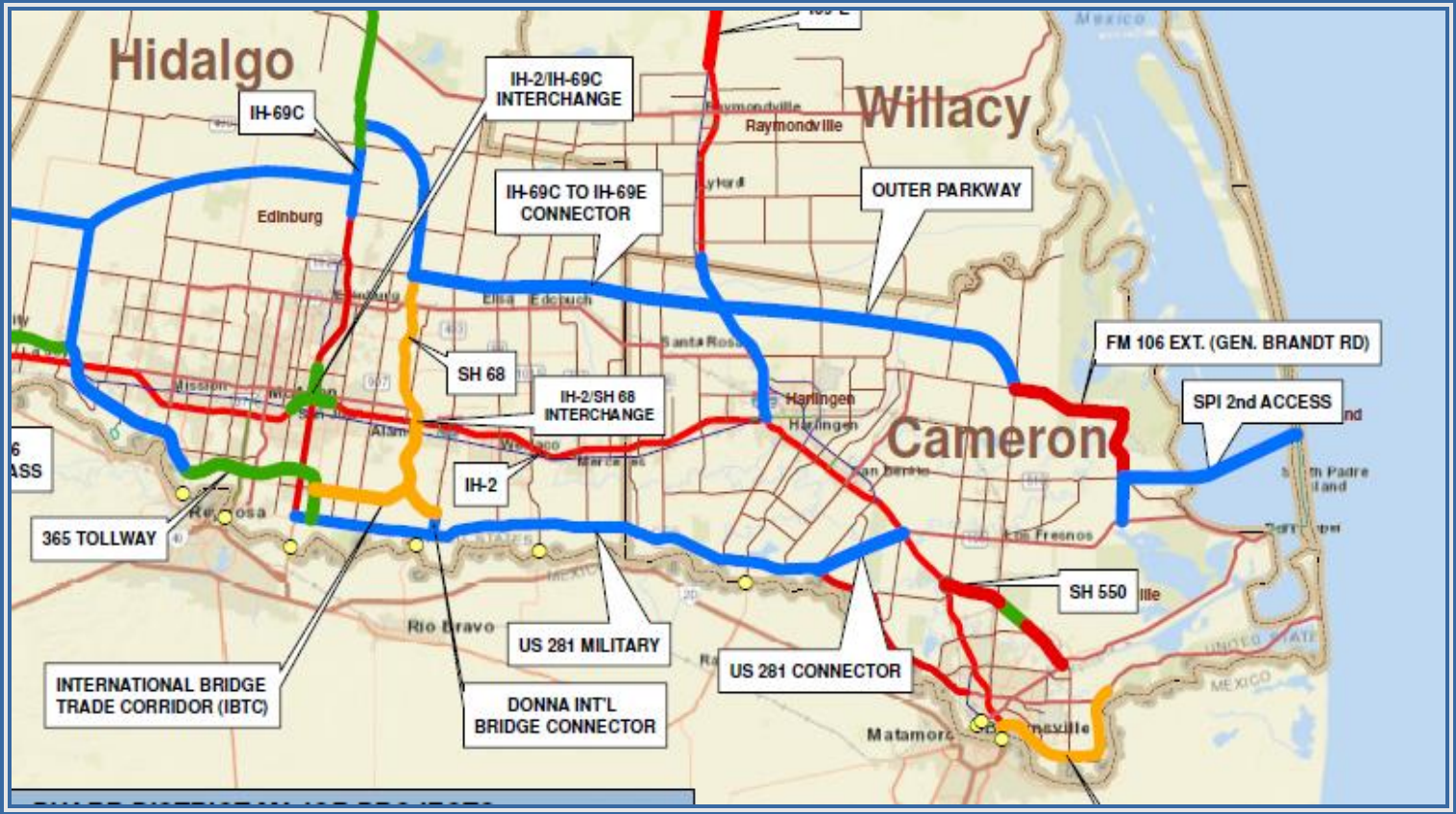
Safety: Mission

ZERO



Safety Never Stops!







Hydraulic Design Manual



Revised September 2019

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Chapter 2 – Hydraulic Practices and
Governing Law (Federal and State)

Chapter 3 – Processes and Procedures in
TxDOT Hydrologic and Hydraulic
Activities (State)

Chapter 4 – Hydrology

Chapter 13 – Stormwater Management



National Flood Insurance Act – Established in 1968 to reduce flood losses through local floodplain management. FEMA is the coordination agency.

Executive Order 11988 – Established in 1977 to reduce the risk of flooding, etc. and requires TxDOT to consider alternatives that will not impact the floodplain.

National Environmental Policy Act – Passed in 1969 to protect the environment.

Rivers and Harbor Act – Established in 1899 regulating activities in navigable waters. USACE is the coordination agency.

Clean Water Act – Established in 1972 to maintain and restore the chemical, physical and biological integrity of the waters of the U.S. USACE and TCEQ are the coordination agencies.

- Section 402 – National Pollutant Discharge Elimination System

- Section 404 – Regulatory Program

- Section 401 – Water Quality Program



23 Code of Federal Regulations 650 Subpart A – When a TxDOT project with participation by the FHWA involves an encroachment on the 1% Annual Exceedance Probability (AEP) (100-ye event) floodplain.

23 Code of Federal Regulations 650 Subparts C and H – Guidance on a Plan of Action (POA) for scour critical bridges.



Texas Water Code Chapter 11 – The water of the ordinary flow, underflow, and tides of every flowing river, natural stream, and lake, and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater, and rainwater of every river, natural stream, canyon, ravine depression, and watershed in the state is the property of the state.

Texas Water Code Chapter 16 Subchapter 1 – Established the positive interest of the State of Texas in the National Flood Insurance Program (NFIP). TxDOT is not a participating community in the NFIP; however, work with communities to prevent flood damage and minimize impacts.

Title 30 Texas Administrative Code Chapter 299 – Regulation of the Texas Dam Safety Program. Coordination agency is TCEQ.



Title 43 Texas Administrative Code Rule 15.54(e) – Describes the conditions under which state, federal and local financing of drainage construction costs are to be shared. TxDOT's responsibility includes:

- **Constructing drainage systems, including outfalls, within the state right of way.**
- **Adjusting or relocating existing drainage channels when necessary.**
- **Adjusting structures and channels to accommodate ant approved drainage plan.**

Local governments wanting to connect to a TxDOT drainage system must first have approval from TxDOT, and then must bear the cost of collecting and carrying its water to the TxDOT system as well as contribute a share of the TxDOT system costs.



The nature and scope of hydraulic analysis and design work varies depending on the type of project being undertaken and on the hydrologic/hydraulic (H&H) setting of the project.

Scope – scoping and reconnaissance are the investigative processes aimed at determining which issues are to be addressed by the project.

Risk – because it is not economically feasible to design a structure for the maximum possible runoff from watershed, the designer must choose a design frequency, or inversely the Annual Exceedance Probability (AEP) of a flood appropriate for a structure. A risk assessment is recommended for highly complex, expensive projects.



Planning and Programming – Develop a cost estimate.

Preliminary Design – The design hydraulic engineer should participate in the Design Concept Conference to provide general background, drainage features and regulatory constraints. List the various coordination agencies.

Environmental – The identification of temporary and permanent stormwater quality best management practices for preparation of the environmental document.

PS&E Development – Occurs after most of the background data is gathered and the H&H is complete.

Hydraulic Documentation – Federal and State regulatory criteria needs to be followed. TxDOT contains procedures and practices for each type of project.



Table 3-5: Bridge Documentation Requirements

Documentation Item (by facility type)	Stage			Location of Information		
	Preliminary Review	PS&E Review	Field Changes	Construction Plans	Permanent File	Report
Bridges						
See Hydrology for discharge data	X	X	X	X	X	X
See Channels for highwater data	X	X	X	X	X	X
Design criteria/parameters/assumptions (velocities, back-water, FEMA, etc.)	X	X	X	X	X	X
Plan showing location of HEC-RAS cross sections	X	X	X	X	X	X
Bridge hydraulic computations (cross-section output)	X	X	X			X



In the context of hydraulic design, hydrologic analysis provides estimates of flood magnitudes as a result of precipitation. These estimates consider process in a watershed that transform precipitation to runoff and the transport water through the system to a project's location.

- The design of drainage facilities requires the designer to:
- Select the level of protection desired.
- Find the corresponding flow rate and or volume, computing in many cases the corresponding water surface elevation.
- Use that as a basis for design.



Table 4-2: Recommended Design Standards for Various Drainage Facilities

Functional classification and structure type	Design AEP (Design ARI)				
	50% (2-yr)	20% (5-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)
Freeways (main lanes):					
Culverts					X
Bridges ⁺					X
Principal arterials:					
Culverts			X	[X]	X
Small bridges ⁺			X	[X]	X
Major river crossings ⁺					[X]
Minor arterials and collectors (including frontage roads):					
Culverts		X	[X]	X	
Small bridges ⁺			X	[X]	X
Major river crossings ⁺				X	[X]
Local roads and streets:					
Culverts	X	X	X		
Small bridges ⁺	X	X	X		
Off-system projects:					
Culverts	FHWA policy is “same or slightly better” than existing.				
Small bridges ⁺					
Storm drain systems on interstates and controlled access highways (main lanes):					
Inlets, drain pipe, and roadside ditches			X		
Inlets for depressed roadways*					X



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For TxDOT purposes, storm water includes overland flow, and flow in ditches and storm drain systems. Stormwater management includes non-structural and structural measures such as the following:

- Erosion control to minimize erosion and sediment transport.
- Storm water detention and retention systems to reduce peak runoff rates and improve water quality.
- Sedimentation and filtration systems that remove debris, suspended solids, and insoluble pollutants.
- Vegetation buffers to reduce transport of pollutants.

Measures intended to mitigate storm water quantity and quality problems are termed “best management practices” (BMPs).



Section 402 of the Clean Water Act (CWA) established the National Pollutant Discharge Elimination System (NPDES) which is administered by USEPA but delegated in Texas to TCEQ as The Texas Pollutant Discharge Elimination System (TPDES), to regulate stormwater discharges to surface waters of the State. Some of TxDOT's activities are regulated under this program.

Compliance with TPDES CGP/MS4 is required regardless of NEPA classification.

TxDOT and Contractor Primary Operators as Co-Permittee

Two main types of TPDES permits that apply to TxDOT operations:

- Construction General Permit (CGP) TXR 150000
 - Disturbance of ground greater than 1 acre
 - Implement a Stormwater Pollution Prevention Plan (SWP3) describing Best Management Practices (BMP's) to decrease erosion and sedimentation.



- **MS4 Permit (currently being renewed)**
 - Required to discharge stormwater from ditches and storm sewers that meet a certain population density. (Hidalgo and Cameron Counties)
 - Implement Stormwater Management Program (SWMP) that describes Minimum Control Measures (MCM's) to decrease pollutants and improve the water quality that comes out.

TPDES CGP/MS4 authorization and compliance requirements are independent of, and usually occur after the NEPA process. Compliance with the CGP generally involves the development of a SWP3, usually by the project designer prior to letting.

Construction Site Notice if required, is usually completed by construction staff and submitted prior to ground disturbing activities.



Environmental Management System (EMS) Training Matrix (to develop and implement processes that focus on improving environmental compliance) -- TxDOT Employees

-<https://ftp.dot.state.tx.us/pub/txdot-info/env/ems/070-04-fig.pdf>

Non-TxDOT Employees

TxDOT EMS Policy Statement— <https://ftp.dot.state.tx.us/pub/txdot-info/env/ems/190-01-pol.pdf>

EMS Forms

- Advanced Planning and Development (APD) Stage Gate Checklist (Form 2442)
- Plans, Specifications, and Estimates (PSE) Stage Gate Checklist (Form 2443)
- Construction Stage Gate Checklist (Form 2448)
- Construction Stormwater Pollution Prevention Plan Field Inspection and Maintenance Report (Form 2118)



TxDOT Road Construction Environmental Management System Policy Statement

The Texas Department of Transportation (TxDOT) fully integrates environmental considerations into road construction operations through an environmental management system (EMS).

TxDOT commits to:

- Compliance with all applicable environmental laws and regulations, minimizing pollutants and associated risks to the environment, and supporting an ongoing process for continual improvement in TxDOT's environmental performance.
- Communicate environmental management practices and compliance requirements to all affected TxDOT personnel, consultants, contractors, and other participants in TxDOT's road construction operations.

TxDOT's management is fully committed to support all aspects of the EMS including personnel and resources for development, implementation, maintenance, and improvement. Each employee is expected to exercise his or her responsibility on behalf of TxDOT to ensure that the commitments and goals of the EMS are diligently carried out.

James M. Bass
Executive Director
Texas Department of Transportation

TxDOT Policy Statement



Course Title	Class Code	Deadlines	Delivery Method	TxDOT Employees						
				District Engineer, Director	Area Engineer, Assistant AE	Road Construction, Project Engineer	Design, Plan Review	MNT Field Engineers, Rest Area, Vegetation Specialist	ENV staff, EC (based on job duties)	DEQC
Construction Stage Gate Checklist	CON816	Within 30 days of hire or job assignment and repeated every 3 years	ELM UTA AASHTO			✓			✓	✓
Stormwater Inspection Checklist	CON817	Within 90 days of hire or job assignment and repeated every 3 years	ELM							
AP&D Stage Gate Checklist	DES435	Within 90 days of hire or assignment and repeated as needed	ELM UTA AASHTO				✓		✓	✓
PS&E Stage Gate Checklist	DES907	Within 90 days of hire or assignment and repeated as needed	ELM UTA AASHTO				✓		✓	✓
How to Create an EPIC Sheet	DES908	Within 90 days of hire or job assignment and repeated every 3 years	ELM UTA AASHTO			✓	✓		✓	✓
Introduction to Construction Stormwater BMPs ¹	EL4030	Within 6 months of hire or job assignment and repeated as needed	ELM UTA AASHTO		✓	✓	✓	✓	✓	✓



		Non-TxDOT Personnel			
Construction Inspector	Recordkeeper (recommended courses based on job duties)	Consultant Design, Plan Review	CEI	Assigned CRPE and CRPE Backup, CRPE Subcontractor	Contractor & Subcontractor Personnel
✓	✓		✓	✓	
	✓				
		✓			
		✓			
✓		✓	✓		
✓		✓	✓		
✓			✓		



District Environment Quality Coordinator was established in 2003 as TxDOT commitment to preserve and enhance the environment and to comply with Federal and State laws.

- Each AO has an Environmental Specialist serving as DEQC
- Maintain records and documentation
- Resolve any SWP3 issues
- Train other staff
- Prioritize deficiencies to correct and avoid violations

Bulletin board Requirements for construction sites (easy access for the public)

- Construction Site Notice (CSN) (Small or Large)
- Both TxDOT and Contractor CSN
- Contact names for AE for TxDOT and Superintendent for Contractor
- Location of SWP3 binder Field Office or AO



SWP3 Binder for construction site

- Living document (if a BMP is ineffective, then inspector or field personnel may adjust to a more adequate type)
- Must be accessible by resource agencies (TCEQ or EPA)

Best Management Practices (BMP's)

- An effective and practicable means of preventing or reducing the amount of pollution generated by nonpoint sources (like construction sites) to a level compatible with water quality goals set forth by the TCEQ, TxDOT, and/or the EPA.
- Structural (silt fence, erosion control logs, sedimentation ponds, drainage inlet protection)
- Non-structural (Phased construction, good housekeeping, sweeping, staff training)
- Vegetation Establishment





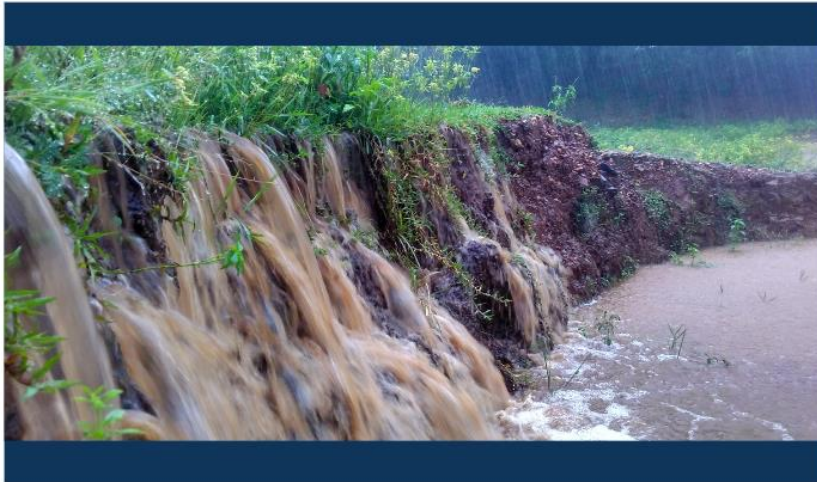


Revised 03/28/2022

CONSTRUCTION BULLETIN BOARD CHECKLIST – Federal-Aid Construction Projects					
Visit for most up to date information					
https://www.fhwa.dot.gov/programadmin/contracts/poster.cfm			https://www.twc.texas.gov/businesses/posters-workplace		
CCSJ:	Project:			County:	Highway:
#	Revised	Yes	No	CONSTRUCTION JOB SITE POSTERS	
Equal Employment Opportunity Posters (EEOC-P/E-1)					
1	Nov 2009	<input type="checkbox"/>	<input type="checkbox"/>	(English) "THE LAW"	
2		<input type="checkbox"/>	<input type="checkbox"/>	(Spanish) "LA LEY"	
Mandatory Supplement Posters to EEOC-P/E-1					
3	Sept 2015	<input type="checkbox"/>	<input type="checkbox"/>	(English) "EEO is the Law" Poster Supplement	
4		<input type="checkbox"/>	<input type="checkbox"/>	(Spanish) "IOE es la Ley" Cartel Suplementario	
Prime Contractor EEO Policy Statement					
5	~	<input type="checkbox"/>	<input type="checkbox"/>	Includes designation of the company EEO officer, minority referral statement, and company training program policy	
Name and phone number of EEO Officer – provided by the Prime Contractor					
6	~	<input type="checkbox"/>	<input type="checkbox"/>	May be included in the Company EEO policy statement	
Pay Transparency Nondiscrimination Provision					
7	Dec 2016	<input type="checkbox"/>	<input type="checkbox"/>	(English) "PAY TRANSPARENCY Nondiscrimination Provision"	
8		<input type="checkbox"/>	<input type="checkbox"/>	(Spanish) "TRANSPARENCIA EN EL PAGO Disposición sobre no discriminación"	
False Statement Notice (FHWA-1022) Must include FHWA Division Administrator Name and Address					
9	May 2015	<input type="checkbox"/>	<input type="checkbox"/>	(English) "NOTICE Federal-Aid Project"	
10		<input type="checkbox"/>	<input type="checkbox"/>	(Spanish) "AVISO Proyecto Federal"	
Davis-Bacon Wage Posters (WH1321)					
11		<input type="checkbox"/>	<input type="checkbox"/>	(English) "EMPLOYEE RIGHTS Under the Davis Bacon Act"	



POTENTIAL STORMWATER POLLUTANTS



Environmental Compliance

Understanding Potential Pollutants and
Pollution Sources at Construction Sites

Developed by ENV Compliance Division as
a Stormwater Guidebook.

Stormwater

Pollutants

Sediment

BMP's

- **Vegetation**
- **Mulching**
- **Rock Filter Dams**
- **Soil Retention Blankets**
- **Biodegradable Erosion Control Logs**
- **Inlet Protection**
- **Stabilized Construction Exits**
- **Stockpile Management**
- **Silt Fence**







Oil spills are violation especially if they get into a water of the US, if one occurs immediately notice ENV, and Safety, if it is reportable will need to report to resource agencies.



There are special forms to be completed please ensure you use them







■ Erosion Control BMPs

- Rock filter dams and rock check dams
- Vertical tracking
- Inteceptor swale
- Riprap
- Diversion dike
- Temporary pipe slope drain
- Embankment for Erosion Control
- Paved flumes
- Protection of existing vegetation
- Vegetated buffer zones
- Soil retention blankets
- Geotextiles
- Mulching and hydro-mulching
- Temporary seeding
- Permanent planting, sodding or seeding
- Biodegradable erosion control logs

■ Sediment Control BMPs

- Biodegradable erosion control logs
- Dewatering controls
- Inlet protection
- Rock filter dams and rock check dams
- Sandbag berms
- Sediment control fence (silt fence)
- Stabilized construction exit
- Floating turbidity barrier
- Vegetated buffer zone
- Vegetated filter strip



Properly installed check dam using a rock filter dam.



Failing BMP – dam is filled to capacity and in need of maintenance. The check dam should cover the entire length of the drainage. Silt and debris should be removed from the dam on a regular basis.



Erosion and sediment controls that have do not function properly should be replaced possible with Rock filter dams or corrected immediately upon discovery.





Properly installed inlet protection - fabric properly toed in, stakes are secure, adequate overlapping of fabric.



Failing BMP - inlet device has not been properly maintained. It is overwhelmed by sediment and is collapsing.



Erosion and sediment controls that have been intentionally disabled, run-over, removed, or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.



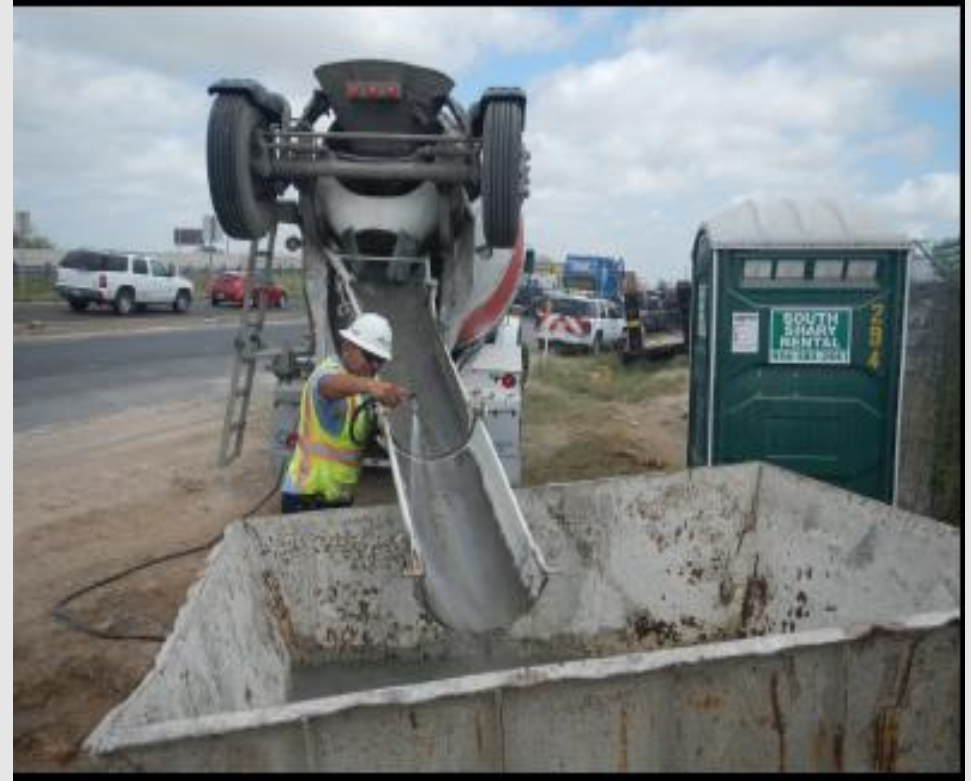




Proper implementation of dry cleanup methods using absorbents.



An obvious leak has not been addressed – clean up should already be in place. Always address spills as soon as possible. Drip pans can be placed under the vehicle overnight while parked as a secondary containment.





Designated washout area is fully contained.



Washout area does not have proper containment which led to washout on the road. Post signs clearly labeling the washout location. BMPs surrounding the area should be maintained and managed and BMPs to prevent offsite tracking and runoff should be in place.

Municipal Separate Storm Sewer System (MS4) Permit Number



Texas Department of Transportation Stormwater Management Program



Municipal Separate Storm Sewer System (MS4) Permit Number WQ0005011000

Texas Department of Transportation
Environmental Affairs Division
125 East 11th Street
Austin, Texas 78701

(512) 416-3001
Fax (512) 416-2746

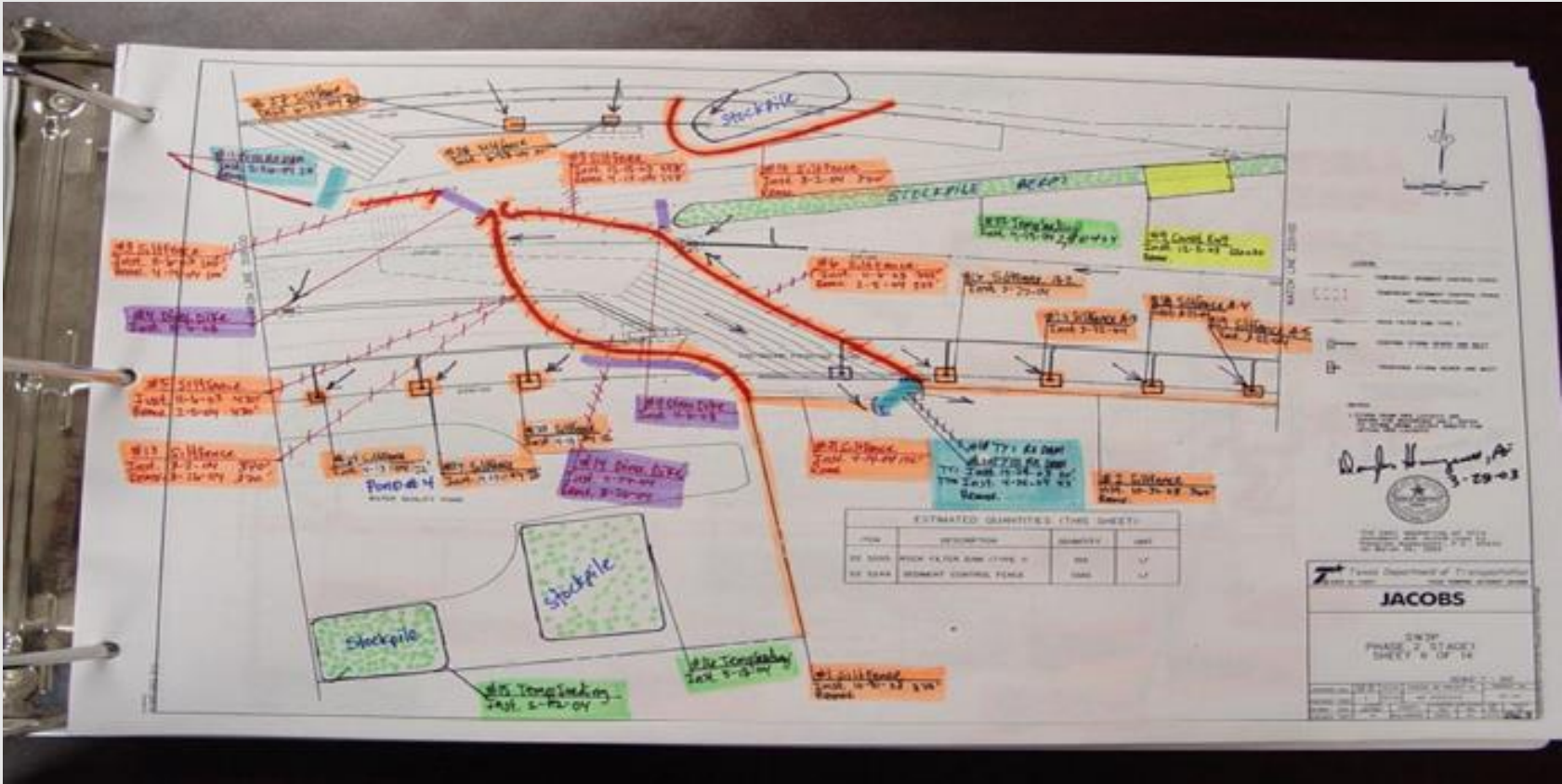
May 2017 – Revised February 2018

The Texas Department of Transportation (TxDOT) has developed this Stormwater Management Program (SWMP) in accordance with the requirements of the Texas Commission on Environmental Quality (TCEQ), Texas Pollutant Discharge Elimination System (TPDES) Municipal Separate Storm Sewer System (MS4) permit WQ0005011000. The purpose of the SWMP is to describe the Minimum Control Measures (MCM) and Best Management Practices (BMPs) for implementation of specific programs, controls, and activities with the intent of reducing the potential discharge of pollutants from the MS4 that could reach Waters of the United States (WUS).

This document presents TxDOT's SWMP for TPDES Permit No. WQ0005011000 for the following 22 TxDOT districts:

District 1 – Paris	District 2 – Fort Worth	District 3 – Wichita Falls
District 4 – Amarillo	District 5 – Lubbock	District 6 – Odessa
District 7 – San Angelo	District 8 – Abilene	District 9 – Waco*
District 10 – Tyler	District 12 – Houston	District 13 – Yoakum
District 14 – Austin	District 15 – San Antonio	District 16 – Corpus Christi
District 17 – Bryan	District 18 – Dallas	District 19 – Atlanta
District 20 – Beaumont	District 21 – Pharr	District 22 – Laredo
District 24 – El Paso		

Storm Water 3 Plan – Living Document





Thank You