



Phase II MS4 Program: An Overview

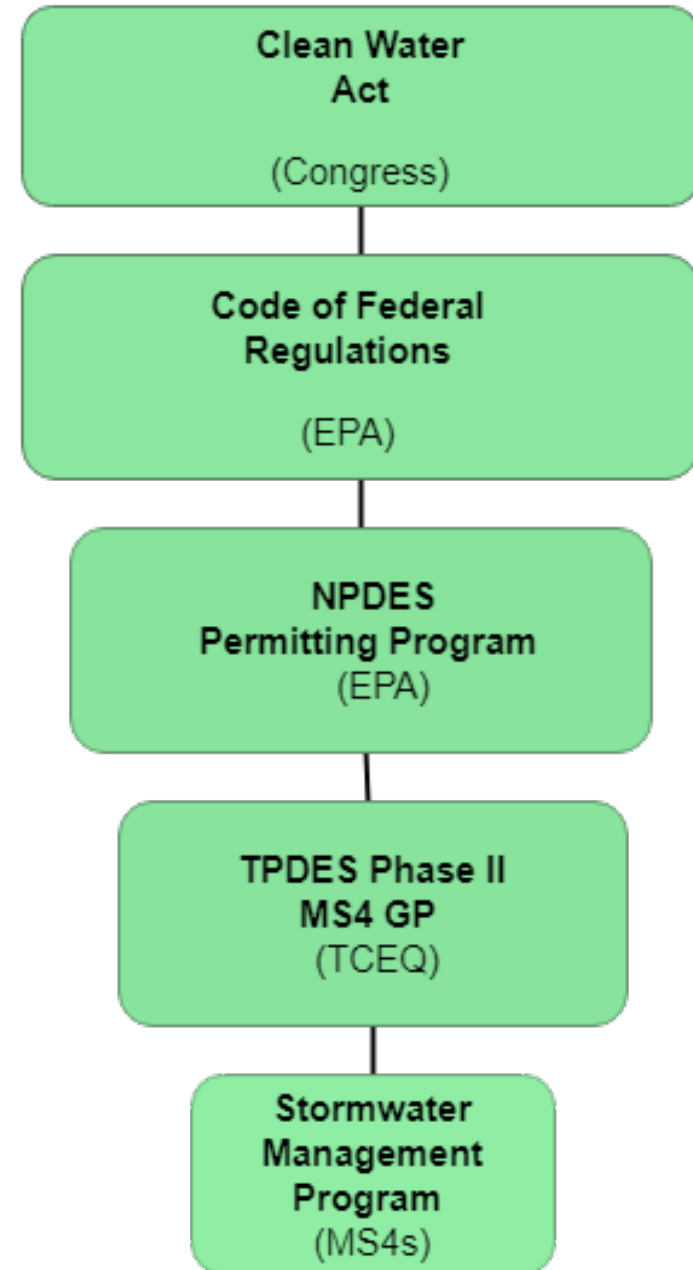
Virtual Webinar – November 12, 2024

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Hierarchy of Stormwater MS4 Permitting

Texas assumed the authority to administer the NPDES program from EPA on September 14, 1998



Why is Stormwater a Concern?

- Storm sewers do not treat or filter water
- Stormwater collects pollutants and debris and deposits them in waterbodies
- Sediment affects aquatic ecosystems
- Some pollutants bioaccumulate
- Water quality issues
- Degrades aquatic life habitat
- Flooding issues



Impervious Surface Concerns

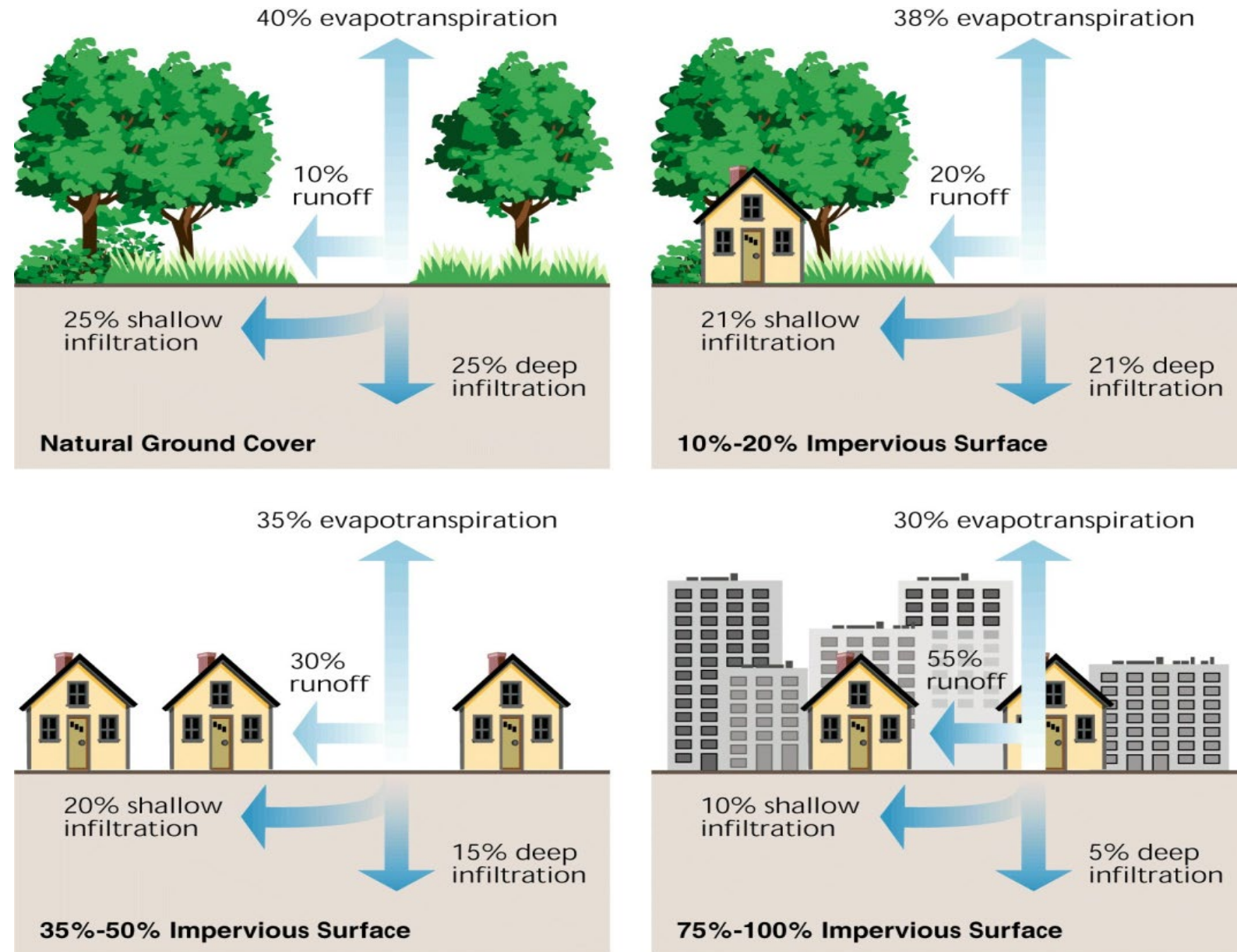


Fig. 3.21 -- Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation. In Stream Corridor Restoration: Principles, Processes, and Practices (10/98). By the Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)



Potential Pollutants from Entities and Public

- Floatables
- Hazardous Metals
- Oil
- Sediment
- Bacteria
- Organic Material



What is an MS4?

- **Municipal Separate Storm Sewer System (MS4)** – An MS4 is a publicly-owned or operated stormwater drainage system
 - Designed to collect or convey stormwater
 - Includes storm drains, ditches, curbs, gutters, municipal streets, and roads with drainage systems
- Federal regulations: 40 CFR §122.26(b)(8)
- Other uses of the term “MS4”
 - “The MS4” is also – the MS4 operator
 - “Within the MS4” – means area of the
 - MS4 that is located within the Urban Area
 - of 50,000 or more people



The U.S. Census Bureau and Phase II Stormwater Regulations

- To be a regulated MS4 under TCEQ's **2024 Phase II MS4 General Permit** (TXR040000) you must:
- Operate an MS4 which is:
 - Publicly Owned or Operated
 - Designed or used for collecting or conveying stormwater
 - Not a combined sewer
 - Not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2
- Be fully or partially located within an **Urban Area with a population of at least 50,000**, as determined in the 2000, 2010, or 2020 Decennial Censuses by the U.S. Census Bureau

Table 1: 2020 Urban Areas in Texas with a Population of 50,000 or More People

URBAN AREA NAME	POPULATION
Abilene, TX	118,138
Amarillo, TX	205,860
Austin, TX	1,809,888
Beaumont, TX	146,649
Brownsville, TX	216,444
College Station-Bryan, TX	206,137
Corpus Christi, TX	339,066
Dallas-Fort Worth-Arlington, TX	5,732,354
Denton-Lewisville, TX	429,461
Eagle Pass, TX	54,083
El Paso, TX-NM	823,732
Galveston-Texas City, TX	191,863
Harlingen, TX	118,838
Houston, TX	5,853,575
Killeen, TX	257,222
Lake Jackson, TX	56,054
Laredo, TX	251,462
Longview, TX	107,099
Lubbock, TX	272,280
McAllen, TX	779,553
McKinney-Frisco, TX	504,803
Midland, TX	141,997
New Braunfels, TX	100,736
Odessa, TX	154,818
Port Arthur, TX	116,819
San Angelo, TX	99,982
San Antonio, TX	1,992,689
San Marcos, TX	70,801
Sherman-Denison, TX	66,691
Temple, TX	114,632
Texarkana, TX-AR	53,144
The Woodlands-Conroe, TX	402,454
Tyler, TX	131,028
Victoria, TX	65,986
Waco, TX	192,844
Wichita Falls, TX	97,039



The U.S. Census Bureau and Phase II Stormwater Regulations

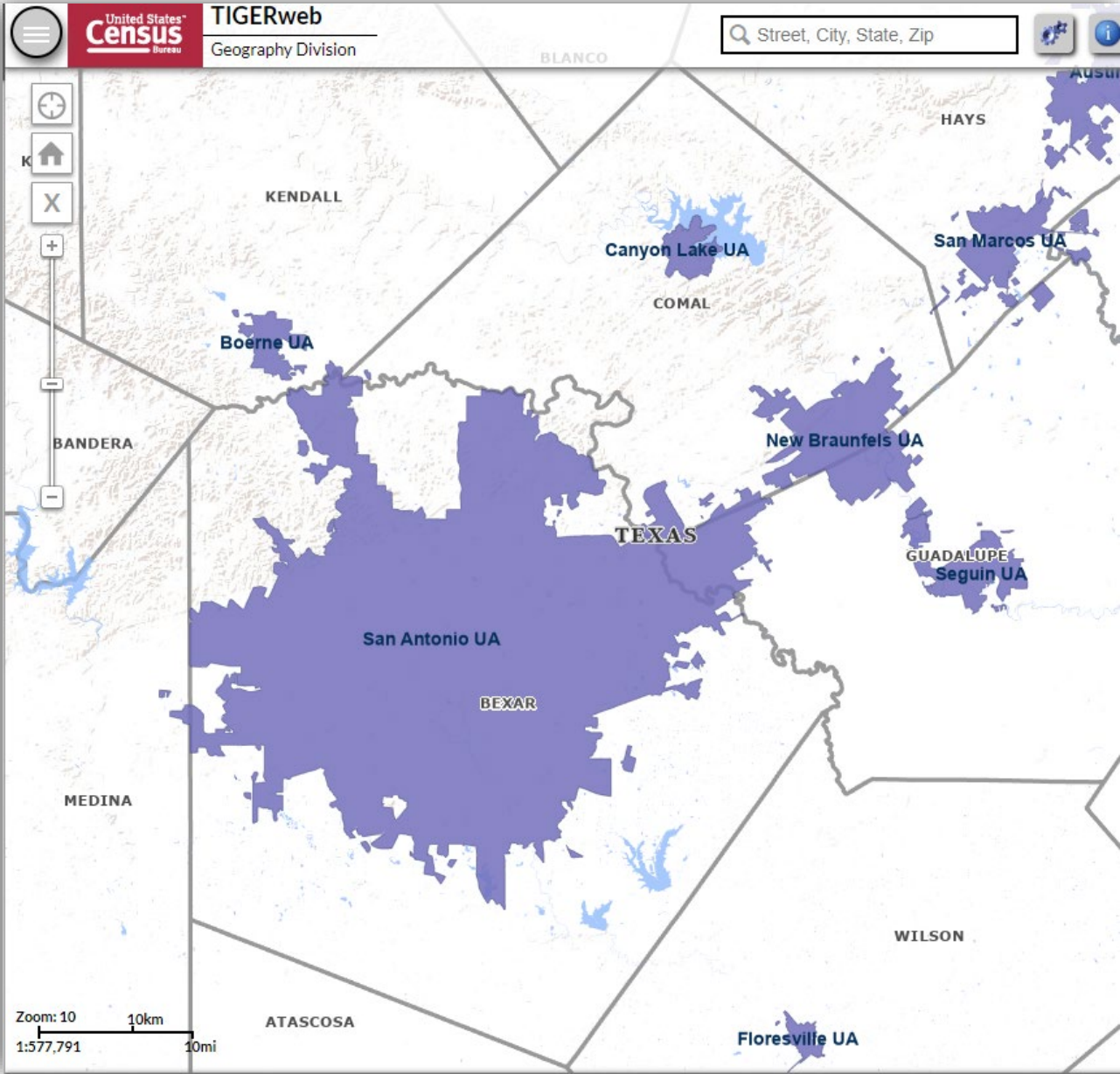
- Only the portion of the MS4 that falls within the boundaries of an *urban area with at least 50,000 people* is required to obtain coverage under the Phase II MS4 General Permit
- In special cases, MS4 operators located outside of an *urban area with at least 50,000 people* may be *designated* by the TCEQ to obtain coverage

2020 Decennial Census

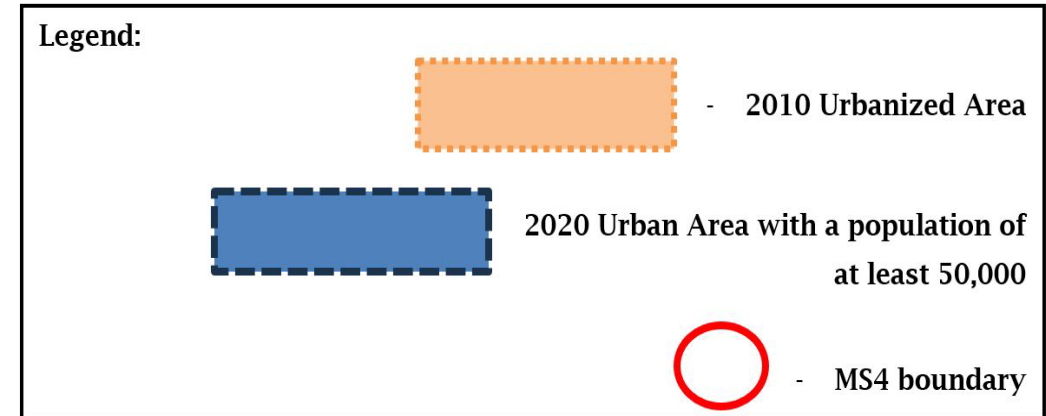
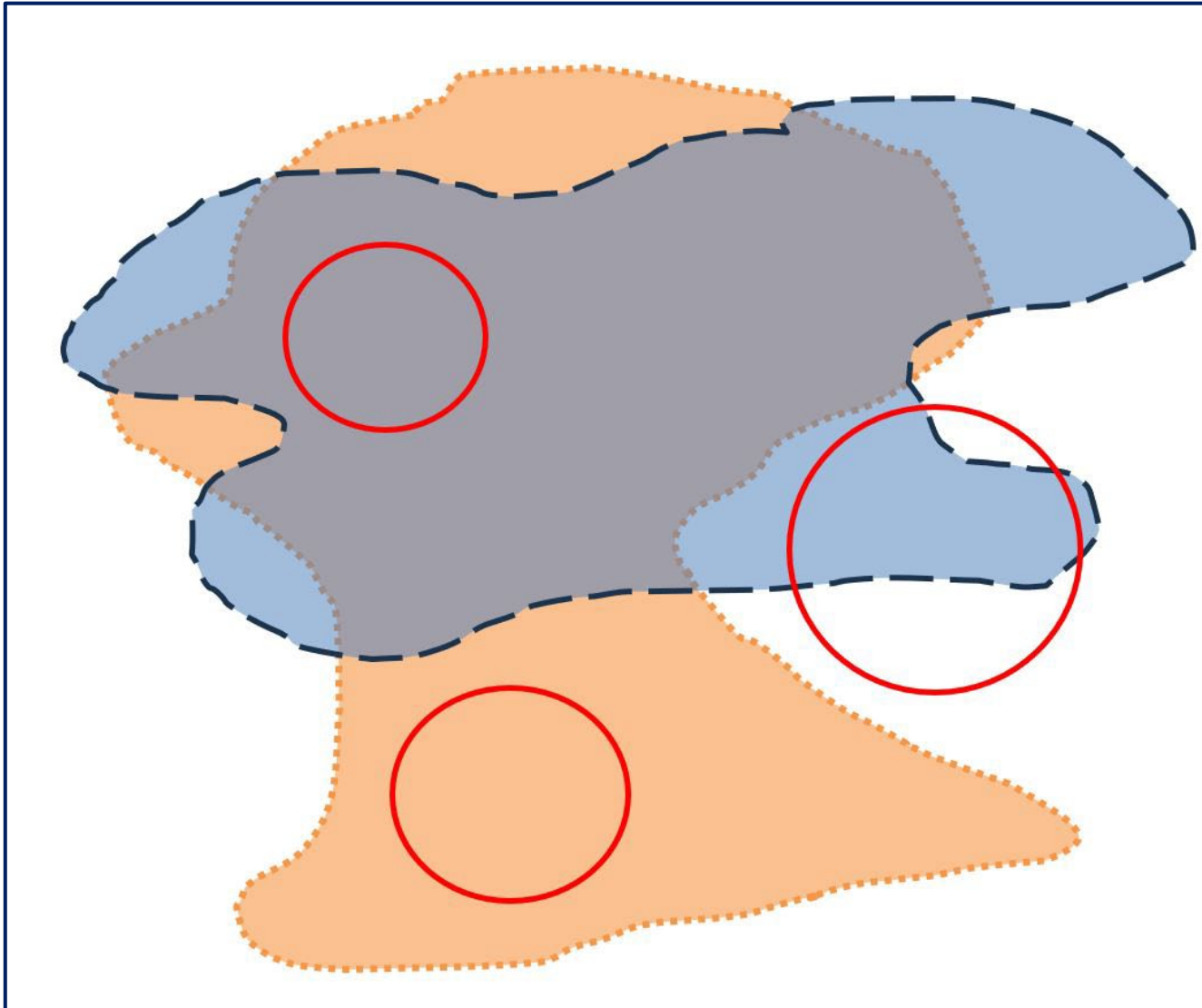
Example using U.S. Census Bureau Resources

Urban Area Name	Urban Area Population
San Antonio	1,992,689
New Braunfels	100,736
Boerne	18,320
San Marcos	70,801
Floresville	6,313

- “Urban Area with a population of 50,000 or more people”
 - Refers to **the population of the urban area**
 - Does not refer to the individual municipalities within the urban area



Simplified Urban Area Illustration:



Types of Phase II MS4s

- Traditional Phase II MS4s
 - City or town
- Non-traditional Phase II MS4s
 - Counties
 - Municipal utility districts, flood control districts, or other special districts
 - State or federal agencies
 - Prisons
 - Military bases
 - Public universities



Photo Provided by EPA (<https://www.epa.gov/research-grants/presentation-epas-stormwater-program-and-improving-resiliency-green-infrastructure>)



Source: TCEQ Public Domain Image Archive (internal)

Tiered Permitting Approach

Level 1

- Up to 10,000*

Level 2

- **Level 2a:** Includes traditional MS4s, 10,000 to 40,000*
- **Level 2b:** Includes non-traditional MS4s
- Additional Requirement in MCM 3 for both

Level 3

- 40,000 to less than 100,000*
- Additional Requirements in MCMs 3, 4, and 6

Level 4

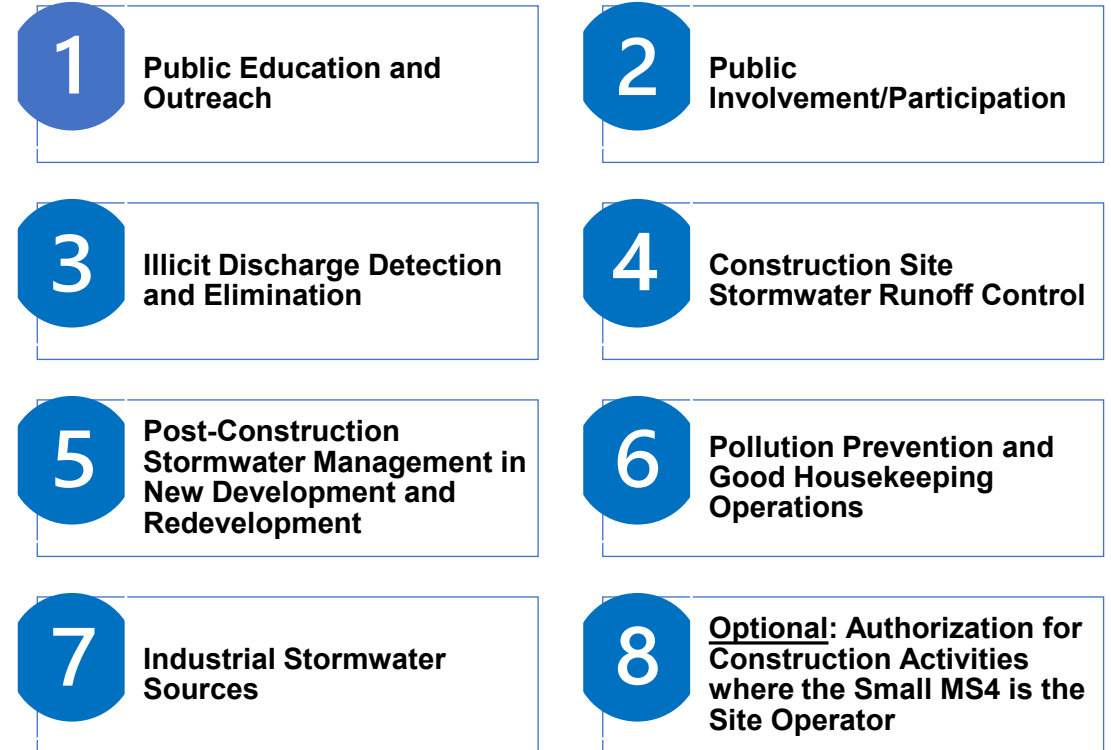
- 100,000 or more*
- Additional Requirements in MCMs 3, 4, 5, and 6
- Required to implement MCM 7

** MS4's population in Urban Area based on most recent Decennial Census*

- Waiver options available for certain Level 1 MS4s

Overview of TXR040000 Requirements for Phase II MS4s:

- Develop and implement a Stormwater Management Program (SWMP) that includes:
 - Seven minimum control measures (MCMs), with an optional eighth MCM
 - A schedule for implementation expressed as months and years over the five-year general permit term,
 - Full implementation at the end of the five-year general permit term, and
 - Additional requirements for discharges into impaired waterbodies (as applicable)
- Submit annual reports
 - Due March 31 of the following year



Legal Authority

- MS4s are required to develop ordinances or other regulatory mechanisms to implement and enforce the SWMP within their jurisdiction
- Non-traditional MS4s can use:

Types of Regulatory Mechanisms
• Codes and Statutes – Water, Health & Safety, Transportation, Utility
• Standards and Policies
• Specific contract language
• Service Agreements
• Right of Way and other permits
• Interlocal Agreement with adjacent traditional MS4

Guidance to address environmental crimes: Texas Illegal Dumping Resource Center

<http://www.tidrc.com/>

Discharges to Impaired Waterbodies

- SWMPs and Annual Reports must address impaired waterbody requirements
- **Impaired:** Identified as not meeting Texas Surface Water Quality Standards on the latest **TCEQ & EPA-approved Texas Integrated Report Index of Water Quality Impairment**
 - Impaired with and without Total Maximum Daily Loads (TMDLs)
- MS4s must annually evaluate status of receiving waterbodies
 - Include findings in annual reports



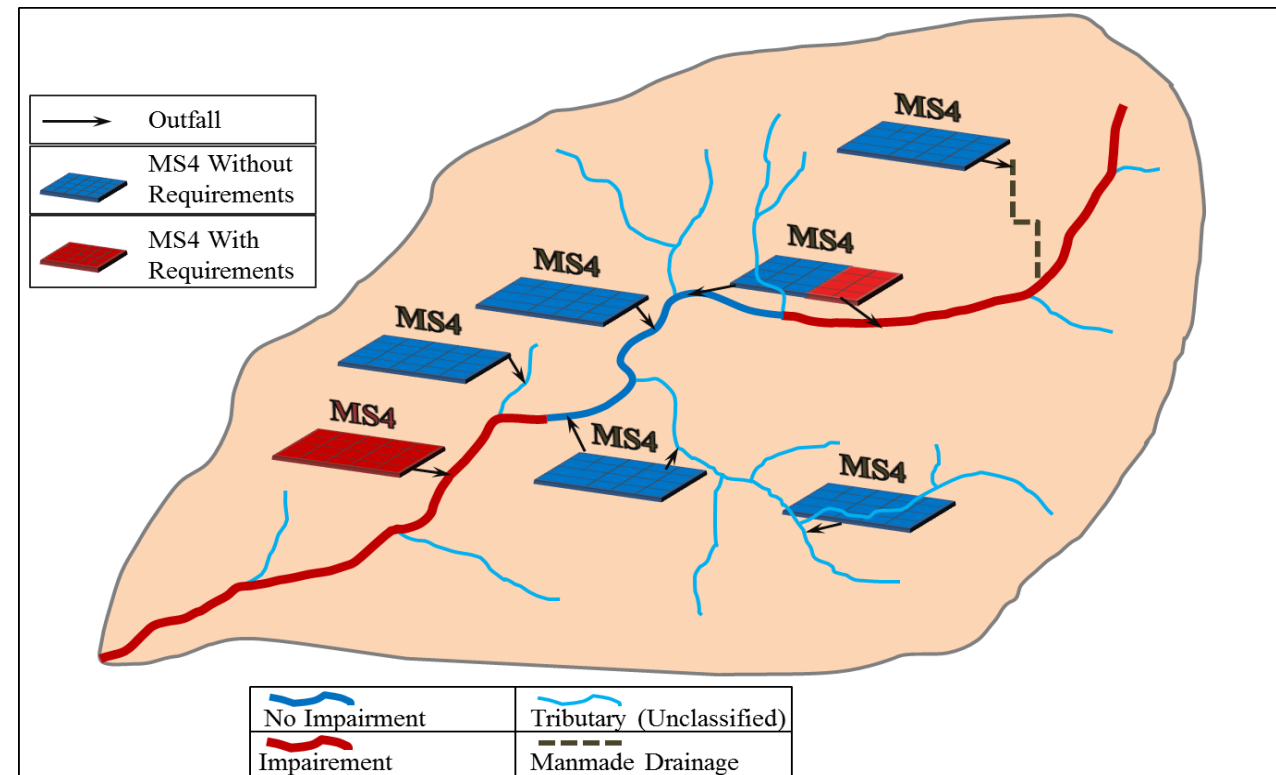
Source: – https://commons.wikimedia.org/wiki/File:Guadalupe_river_Hunt_TX.jpg

Additional requirements for:
Category 5 - CWA 303(d) for stream segment, no TMDL

Category 4 - Not on CWA 303(d), with watershed TMDL

Direct Discharges to Impaired Waterbodies Without a TMDL

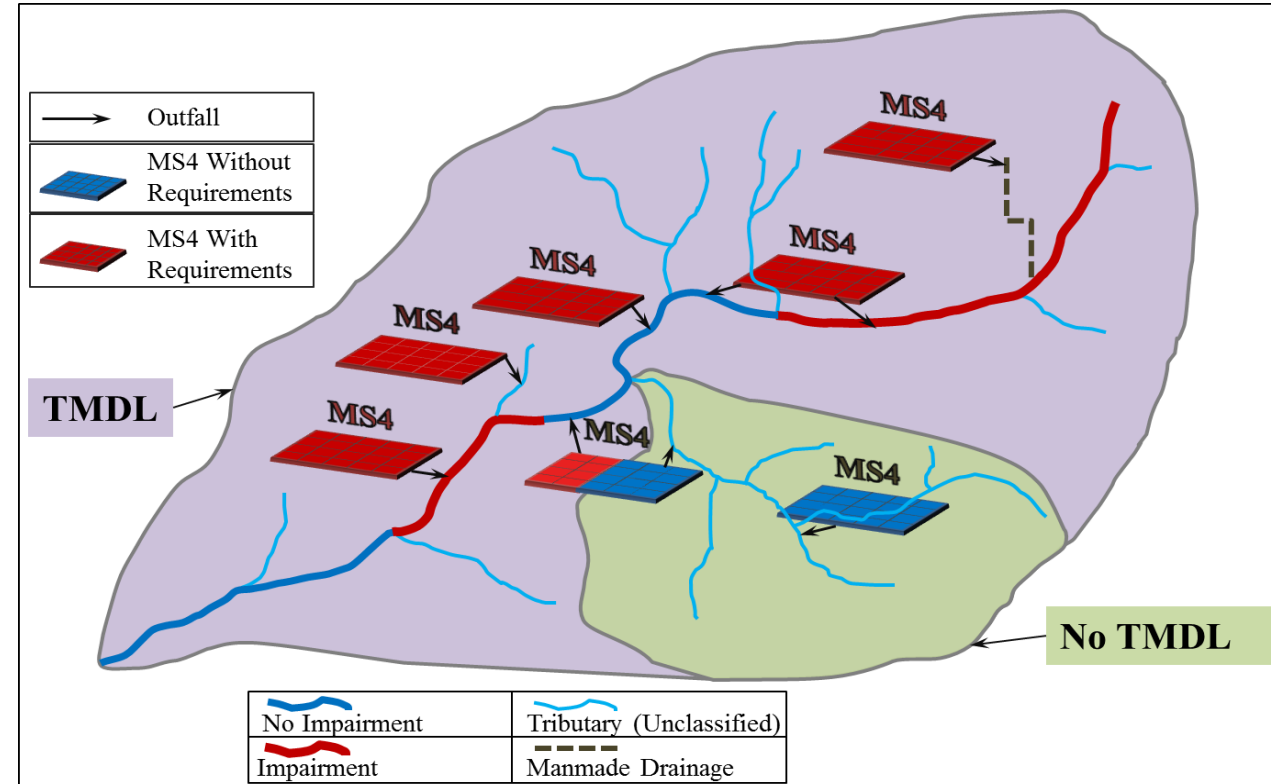
- Discharges **directly** into Impaired Water Bodies **without** an Approved TMDL
 - Determine if MS4 is source of the Pollutant of Concern (POC)
 - Describe focused BMPs in SWMP
 - Each BMP to include a measurable goal
- If POC is bacteria
 - Identify potential sources and implement BMPs
- Report progress in annual report



Determining requirements for **direct** discharges into Impaired Water Bodies **without** an Approved TMDL

Discharges to Impaired Waterbodies With a TMDL

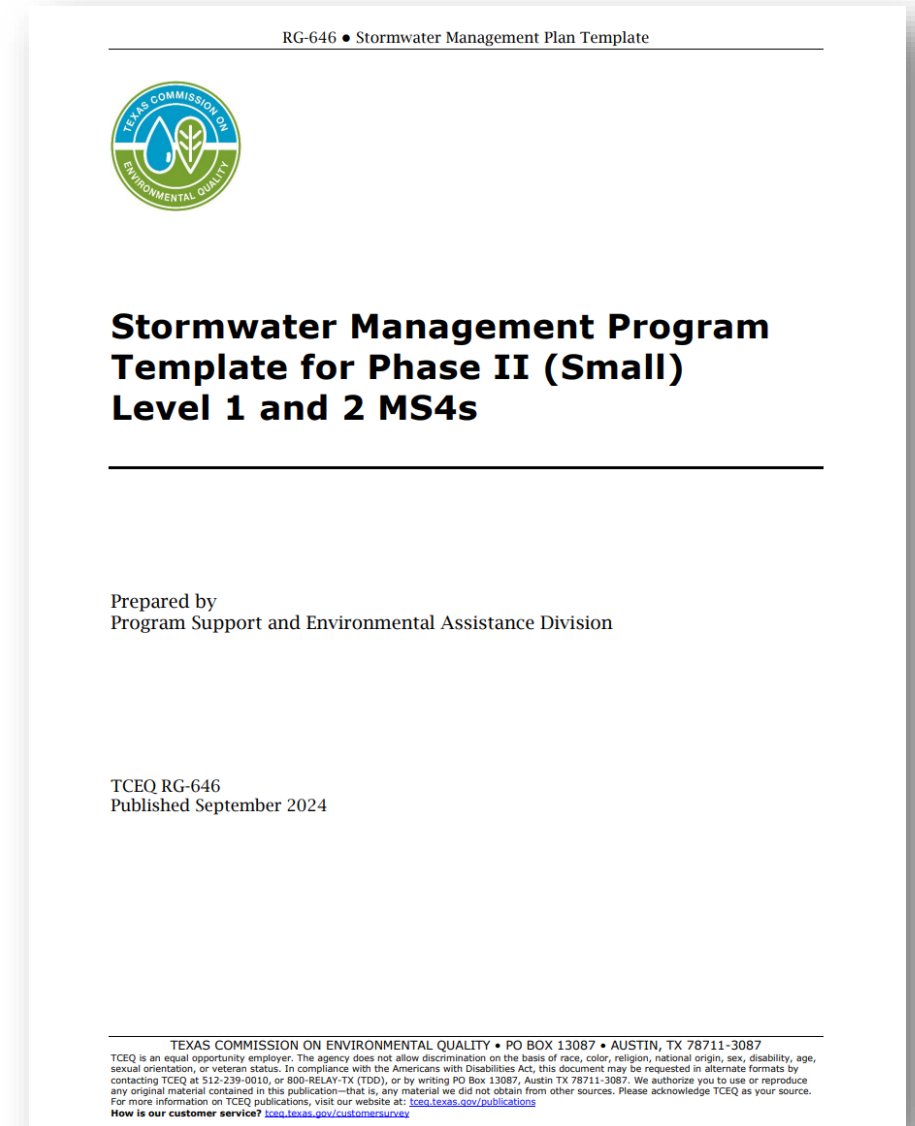
- Discharges into Impaired Water Bodies **with** an Approved TMDL
 - Determine if MS4 is source of the POC
 - Identify a Benchmark = TMDL's Waste Load Allocation
 - Implement targeted controls (BMPs) with measurable goals
 - If POC is bacteria refer to TMDL Implementation Plan (I-Plan) or use alternative BMPs
- Assess progress towards benchmark
 - If no progress, select alternative BMPs



Determining requirements for **direct or indirect** discharges into Impaired Water Bodies **with** an Approved TMDL

What is a SWMP?

- A Stormwater Management Program (SWMP) is a comprehensive program created to manage the quality of discharges from the small MS4 and meet the requirements of the Phase II MS4 General Permit.
- The SWMP contains 7 Minimum Control Measures (MCMs), and explains how the MS4 plans to achieve these control measures to the Maximum Extent Practicable (MEP) by identifying and implementing Best Management Practices (BMPs) for each.
 - 7th MCM is only required for Level 4 small MS4s
 - 8th MCM is optional for any small MS4
- Under the 2024 General Permit, the SWMP:
 - required to be drafted and implemented
 - not required to be submitted to the TCEQ along with the Notice of Intent (NOI) application.



SWMP – An MS4's Permit

- MS4s are required to reduce the discharge of pollutants from its MS4 to:
 - the MEP and
 - meet water quality requirements of the Clean Water Act.
- The MEP standard is an iterative process meant to continually adapt to current conditions and BMP effectiveness while striving to attain water quality standards.

Sharing SWMP Responsibilities: Coalitions

- Multiple MS4s that share efforts in meeting one or all SWMP requirements
- Shared SWMPs must include
 - the names and authorization numbers (TXR04####) of each coalition member, and
 - clear descriptions of each members' responsibilities for specific MCMs or other SWMP elements.



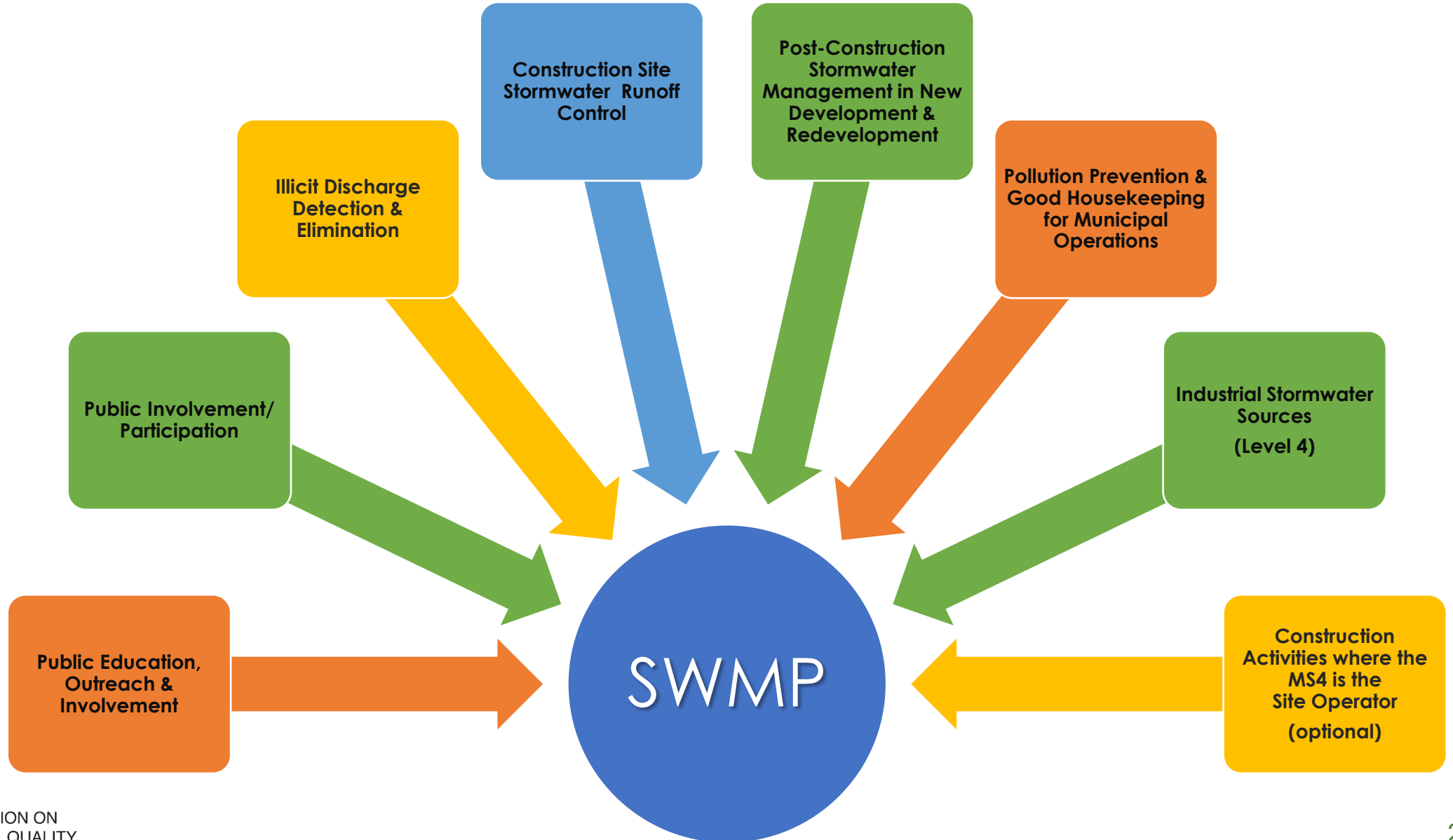
Tenney, Fred, and Kevin Hilbert. 2009. *Large Letter Postcards: The Definitive Guide 1930s to 1950s*. Atglen, Pennsylvania: Schiffer Publishing, Ltd. 176 p.

What are MCMs?

- Each **Minimum Control Measure (MCM)** has **Best Management Practices (BMPs)**, which each have their own **Measurable Goal (MG)** to specify the “***clear, specific, and measurable***”: activities, goals, and deadlines that must be implemented by small MS4s in their SWMPs based on their MS4 level.

**For full requirements of each MCM, reference Part IV, Section D1-8 in the 2024 TXR040000 Phase II MS4 General Permit*

MS4's SWMP



MCM 1: Public Education and Outreach

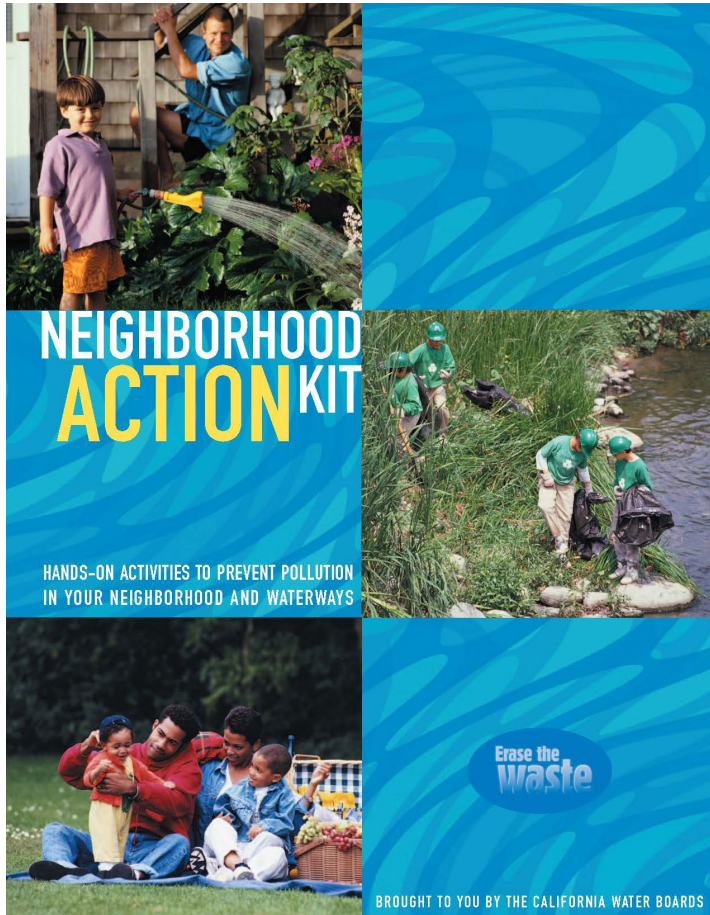
❖ What is required?



Source: EPA's Stormwater Phase II Final Rule Fact Sheet Series (<https://www.epa.gov/npdes/stormwater-phase-ii-final-rule-fact-sheet-series>)

- Over the permit term, small MS4 operators shall implement a minimum number of public education and outreach BMPs, as follows:
 - Level 1: three BMPs
 - Levels 2a and 2b: four BMPs
 - Levels 3 and 4: five BMPs.
- Examples of BMPs:
 - Educate public employees, businesses, and the general public
 - Distribute educational material
 - Social media posts/campaigns
 - Post SWMP on website (if MS4 has one)
 - Post annual report on website (if MS4 has one)

MCM 2: Public Involvement/Participation



Source: EPA's NPS Outreach Toolbox
(<https://cfpub.epa.gov/npstbx/index.cfm>)

- ❖ Previously a part of MCM 1, now with separate requirements for fulfillment.
- ❖ What is required?
 - Over the permit term, small MS4 operators shall implement a minimum number of public involvement/participation activities and measurable goals, as follows:
 - Level 1 small MS4: two BMPs
 - Levels 2a and 2b small MS4: three BMPs
 - Levels 3 and 4 small MS4: four BMPs.
 - Examples of BMPs:
 - Stream/Lake Clean-Up Events
 - Volunteer Water Quality Monitoring Groups
 - Public Meetings

MCM 3: Illicit Discharge Detection and Elimination (IDDE)



Source: EPA's NPS Outreach Toolbox
(<https://cfpub.epa.gov/npstbx/index.cfm>)

❖ What is required?

- All permittees shall develop, implement, and enforce a program to investigate, detect, and eliminate illicit discharges into the small MS4. The program must include a plan to detect and address non-stormwater discharges, including illegal dumping to the small MS4.
 - MS4 Mapping
 - Education and Training
 - Public Reporting of Illicit Discharges and Spills
 - All permittees shall develop and maintain onsite procedures for responding to illicit discharges, illegal dumping, and spills.
 - Source Investigation and Elimination
 - Inspections
- Additional requirements for Levels 3 and 4 Phase II MS4s



MCM 4: Construction Site Stormwater Runoff Control

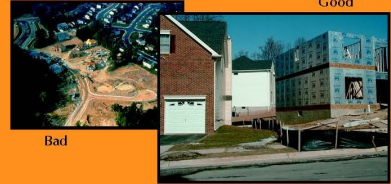
Protecting Water Quality ... at Construction Sites It's Everyone's Responsibility

Silt Fencing

- ◆ Inspect and maintain silt fences after each rainstorm.
- ◆ Make sure the bottom of the silt fence is buried in the ground.
- ◆ Securely attach the material to the stakes.
- ◆ Don't place silt fences in the middle of a waterway or use them as a check dam.
- ◆ Make sure that stormwater is not flowing around the silt fence.



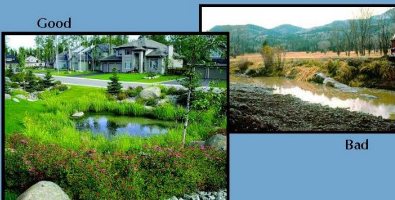
Construction Phasing



- ◆ Sequence construction activity so that the soil is not exposed for long periods of time.
- ◆ Install sediment controls before site grading begins.
- ◆ Schedule site stabilization, such as landscaping, to begin as soon as the site has been graded to its final contour.

Vegetative Buffers

- ◆ Protect and install vegetative buffers along waterbodies to slow and filter stormwater runoff.
- ◆ Maintain buffers periodically to ensure their effectiveness.



❖ What is required?

- All permittees shall develop, implement, and enforce a program requiring operators of small and large construction activities to select, install, implement, and maintain stormwater control measures that prevent illicit discharges to the MEP.
- Construction plan review/site inspections and enforcement
 - Required BMPs for all Phase II MS4s
 - Additional requirement for Level 3 and 4 Phase II MS4s to maintain construction site inventory

Source: EPA's NPS Outreach Toolbox
(<https://cfpub.epa.gov/npstbx/index.cfm>)

MCM 5: Post-construction Stormwater Management in New Development and Redevelopment

❖ What is required?

- Develop, implement, and enforce a program to the extent allowable under law to control SW discharges from new and redeveloped sites.
- Develop and use an ordinance or other regulatory mechanism
 - Required BMPs for all Phase II MS4s
 - Additional requirements for Level 4 Phase II MS4s



Source: EPA's Stormwater Phase II Final Rule Fact Sheet Series (<https://www.epa.gov/npdes/stormwater-phase-ii-final-rule-fact-sheet-series>)

MCM 6: Pollution Prevention and Good Housekeeping for Municipal Operations



❖ What is required?

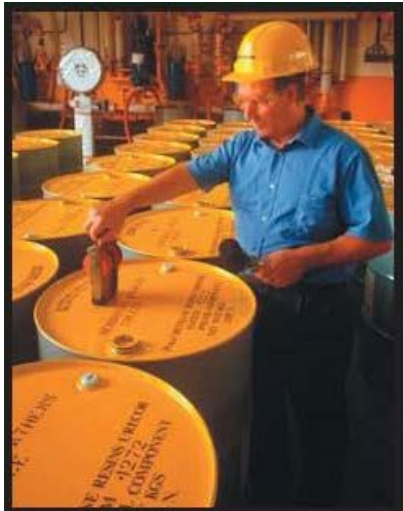
- All permittees shall develop and implement an operation and maintenance program (O&M), including an employee training component
 - Permittee-owned Facilities and Control Inventory
 - Training and Education
 - Disposal of Waste Material
 - Contractor Requirements and Oversight
 - Municipal Operation and Maintenance Activities
 - Structural Control Maintenance
- Additional requirements for Levels 3 and 4 Phase II MS4s
- More additional requirements for Level 4 Phase II MS4s

Source: EPA's Stormwater Phase II Final Rule Fact Sheet Series (<https://www.epa.gov/npdes/stormwater-phase-ii-final-rule-fact-sheet-series>)



TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

MCM 7: Industrial Stormwater Sources



❖ What is required?

- No requirements for this MCM **unless** you are a **Level 4** Phase II MS4.
- Permittees who operate Level 4 small MS4s shall **identify and control** pollutants in stormwater discharges to the small MS4 from the permittee's industrial sites
 - This includes landfills, municipal/hazardous waste facilities, and any other industrial or commercial discharge the permittee determines are contributing a substantial pollutant loading to the small MS4.
- Development and implementation of SOPs for inspections of industrial sites

Source: EPA's
Stormwater Phase II Final
Rule Fact Sheet Series
(<https://www.epa.gov/npd/es/stormwater-phase-ii-final-rule-fact-sheet-series>)



MCM 8 (optional): Authorization for Construction Activities Where the MS4 is the Site Operator

❖ What is required?

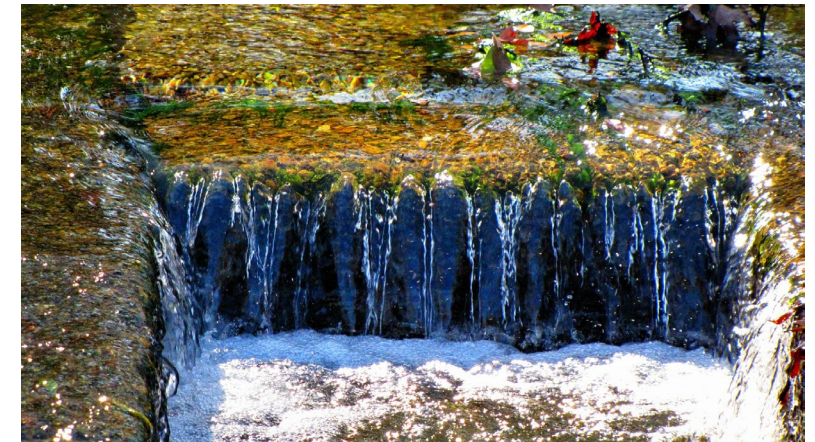


Source: Environmental Protection Agency
https://19january2021snapshot.epa.gov/dera/reducing-diesel-emissions-construction-and-agriculture_.html

- Nothing is required. This MCM is optional for all Phase II MS4 operators and provides an alternative to the MS4 operator seeking coverage under TPDES CGP, TXR150000, for each construction activity.
- When developing this measure, the permittee is required to meet all requirements of, and be consistent with:
 - Applicable effluent limitation guidelines for the Construction and Development industry
 - TPDES CGP TXR150000 (2023 Construction General Permit)
 - Part IV.D.4 and Part VII of the 2024 Phase II MS4 General Permit.
- Includes narrative descriptions of how construction activities will be conducted, the area that the MCM will address, how the permittee will supervise contractor activities, and how a SWP3 will be developed for each site. Records of municipal construction activities are also required

What are BMPs?

- **Best Management Practices:** Schedules of activities, prohibitions of practices, maintenance procedures, structural controls, local ordinances, and other management practices to prevent or reduce the discharge of pollutants.
 - BMPs also include treatment requirements, operating procedures, and practices to control runoff, spills or leaks, waste disposal, or drainage from raw material storage areas.
 - Different BMPs are required to be implemented within each MCM.



Source: TCEQ Public Domain Image Archive (Internal)

What are Measurable Goals?

- “Measurable Goals” are **clear, specific, and measurable** indications of how a permittee will successfully implement the various BMPs for each MCM outlined in their SWMP.
- Measurable Goals should include
 - The **activity**, or BMP, to be completed
 - A **quantifiable** target to measure progress
 - A **schedule** or **date** of completion

Table 6: Required IDDE BMPs

Activity/BMP	Measurable Goals
Maintain a current and accurate MS4 map as described in Part IV.D.3.(c)(1).	Review and update, as necessary, at least one time annually to include features which have been added, removed, or changed.



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- This is what BMPs/MGs look like in the permit. Ensure that your own Measurable Goals are clear, specific, and measurable with a schedule or date of completion.

Measurable Goals

- Measurable Goals
 - Tracking implementation over time
 - Measuring progress in implementing BMPs
 - Tracking total number of BMPs implemented
 - Tracking program effectiveness in reducing pollutants to the Maximum Extent Practicable (MEP)
 - Tracking environmental improvement

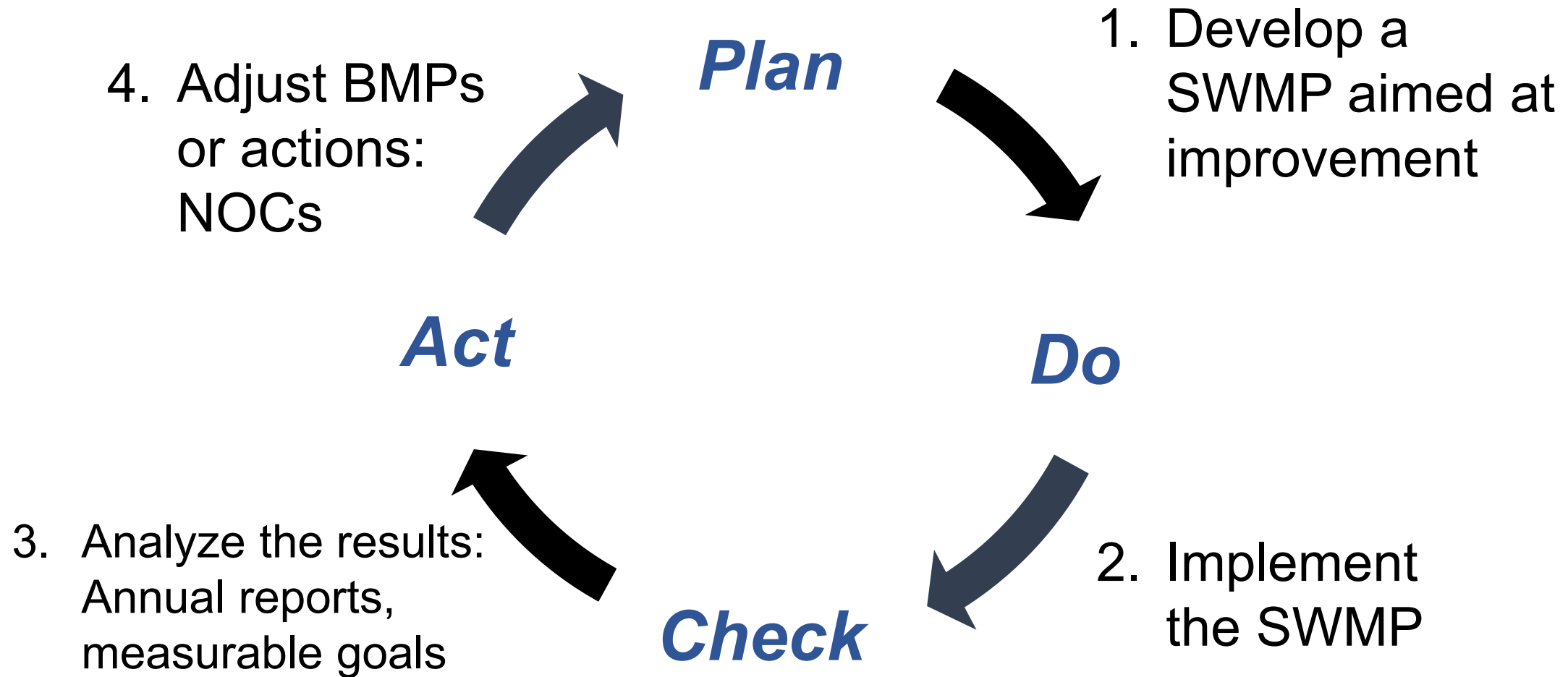


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A Successful SWMP

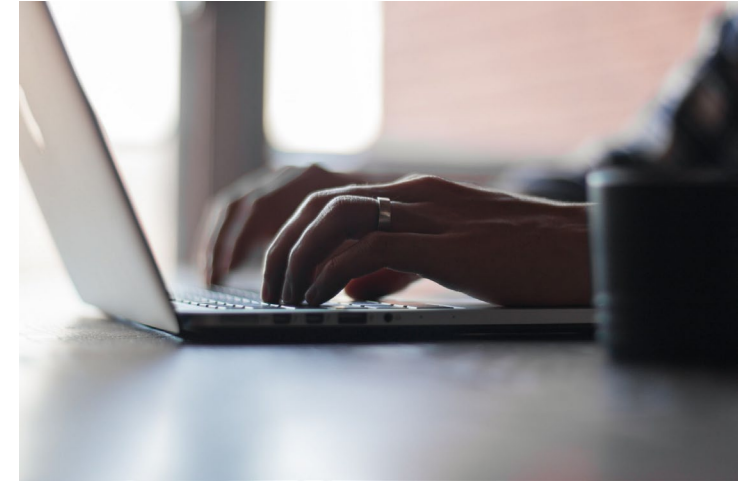
- To ensure success for your MS4 SWMP
 - Obtain ongoing commitment and management leadership
 - All way to the top!
 - Maintain communication across departments
 - Assign accountability and responsibility
 - Continuous improvement

Management Programs and Continuous Improvements



What is an annual report?

- A concise report of progress made towards implementing MCMs within SWMP, required to be updated and submitted annually for each reporting year of the permit.
 - For the 2024 MS4 General Permit, all MS4s will be required to submit annual reports on a Calendar Year schedule (January 1st-December 31st).
 - All annual reports are required to be submitted electronically through NeT-MS4 unless an electronic reporting waiver is requested and obtained.
- Information required on each annual report includes:
 - Information on BMPs and progress towards achieving measurable goals to the MEP, information on impaired waterbody monitoring and management, and other topics relevant to the SWMP and annual progress made.
- Annual reports must be submitted to the TCEQ within 90 days of the end of each Calendar Year (i.e., March 31st)



Source: TCEQ Public Domain Image Archive (Internal)

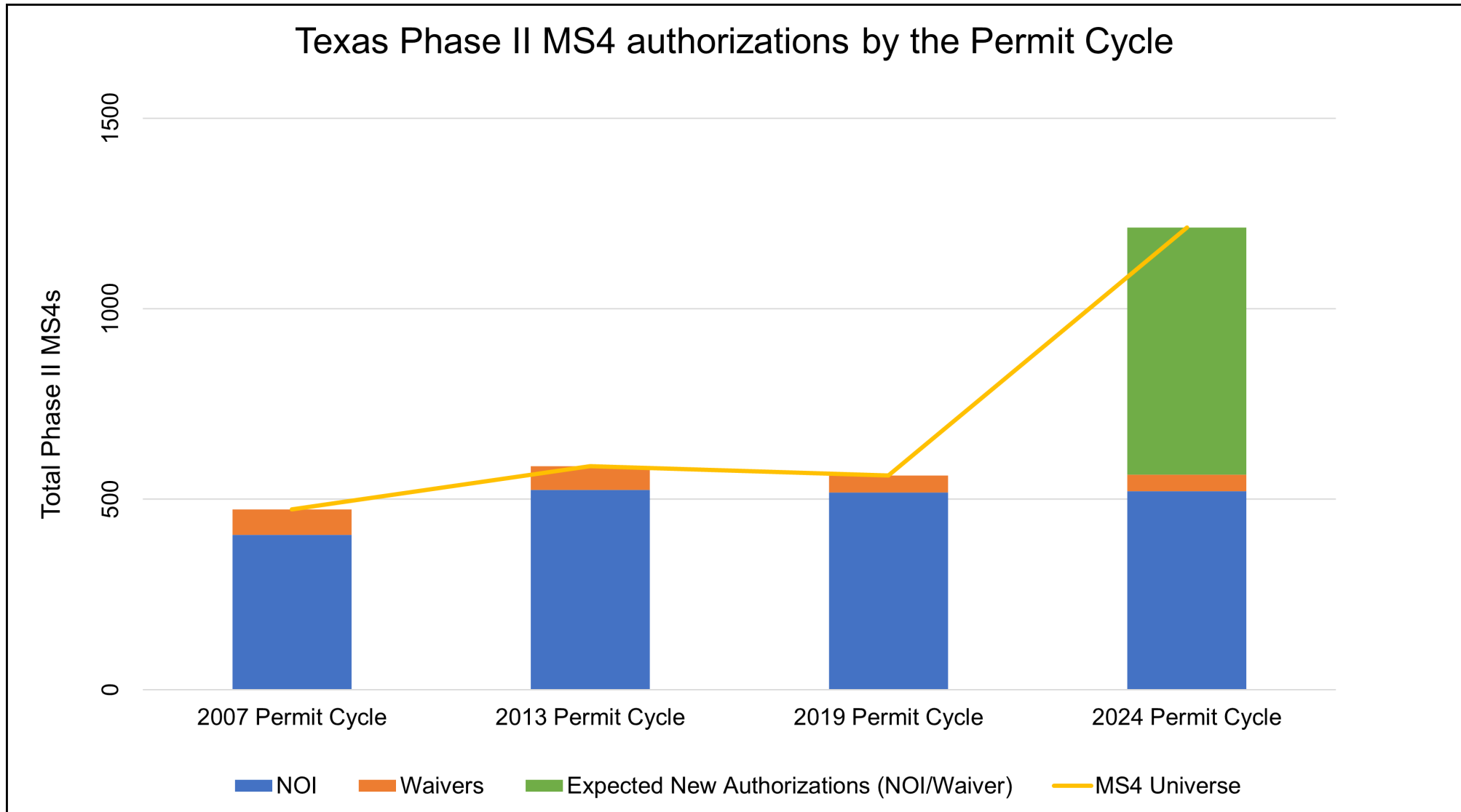
Annual Reports

- The report must include:
 - The status of compliance with permit terms and conditions
 - Results of information collected and analyzed, including monitoring data, if any
 - A summary of activity the MS4 plans to undertake during the next reporting cycle
 - Any changes made to the stormwater management program during the reporting period

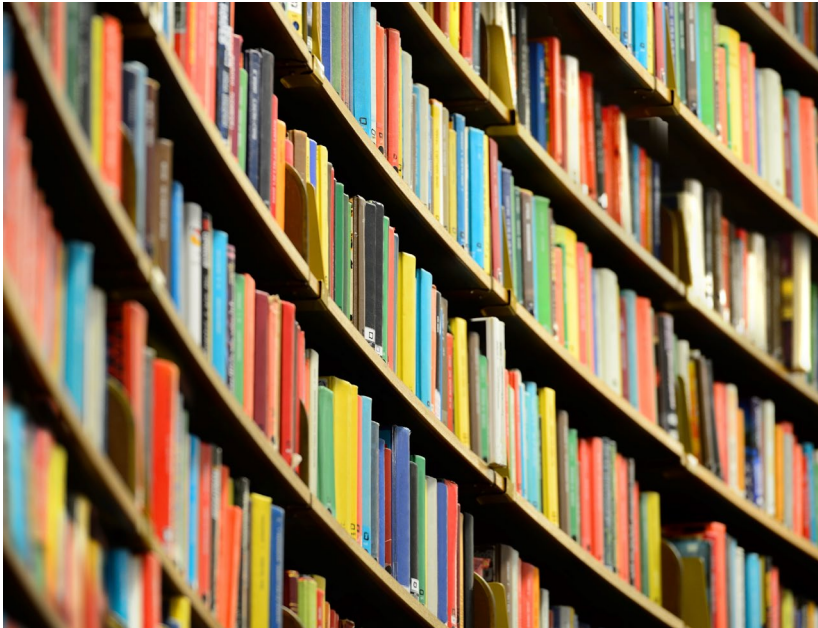
Annual Reports

- The report must include:
 - Quantify activities conducted
 - Report accomplishments and show progress
 - Note if the MS4 is relying on another entity to satisfy some of the permit requirements
 - If a coalition with a shared SWMP, each submits an annual report
 - Need to be certified and signed per federal and state regulations by the authorized signatory or delegated authorized signatory

Phase II MS4 Universe Growth




Resources



- Shape files of the urban areas across the nation for mapping purposes
 - <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html>
- Interactive web map with the 2020 urban areas - TIGERweb
 - <https://tigerweb.geo.census.gov/tigerweb/>
- Final *NPDES Small MS4 Urbanized Area Clarification Rule*
 - <https://www.govinfo.gov/content/pkg/FR-2023-06-12/pdf/2023-12494.pdf>
- 2020 Census and Urban Areas, new TCEQ webpage:
 - <https://www.tceq.texas.gov/permitting/stormwater/ms4/urbanareas>
- Urban Area Factsheet prepared by EPA
 - <https://www.epa.gov/system/files/documents/2023-09/EPA-Stormwater-Phase-II-Final-Rule-Factsheet-2.2-Urban-Area.pdf>


Stormwater Team Contacts

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Questions?