TMDL Implementation in Stormwater Permits

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Presentation Roadmap

- Overview of the CWA requirements
- Overview of TMDL's
- Overview of the NPDES stormwater permitting process
- Basics of TMDL and stormwater permit integration
- What's different about TMDLs for stormwater sources?
- What's different about stormwater permits to implement TMDLs?

Clean Water Act Reporting Requirements

Water Quality Monitoring Report

Required by Section 305(b)

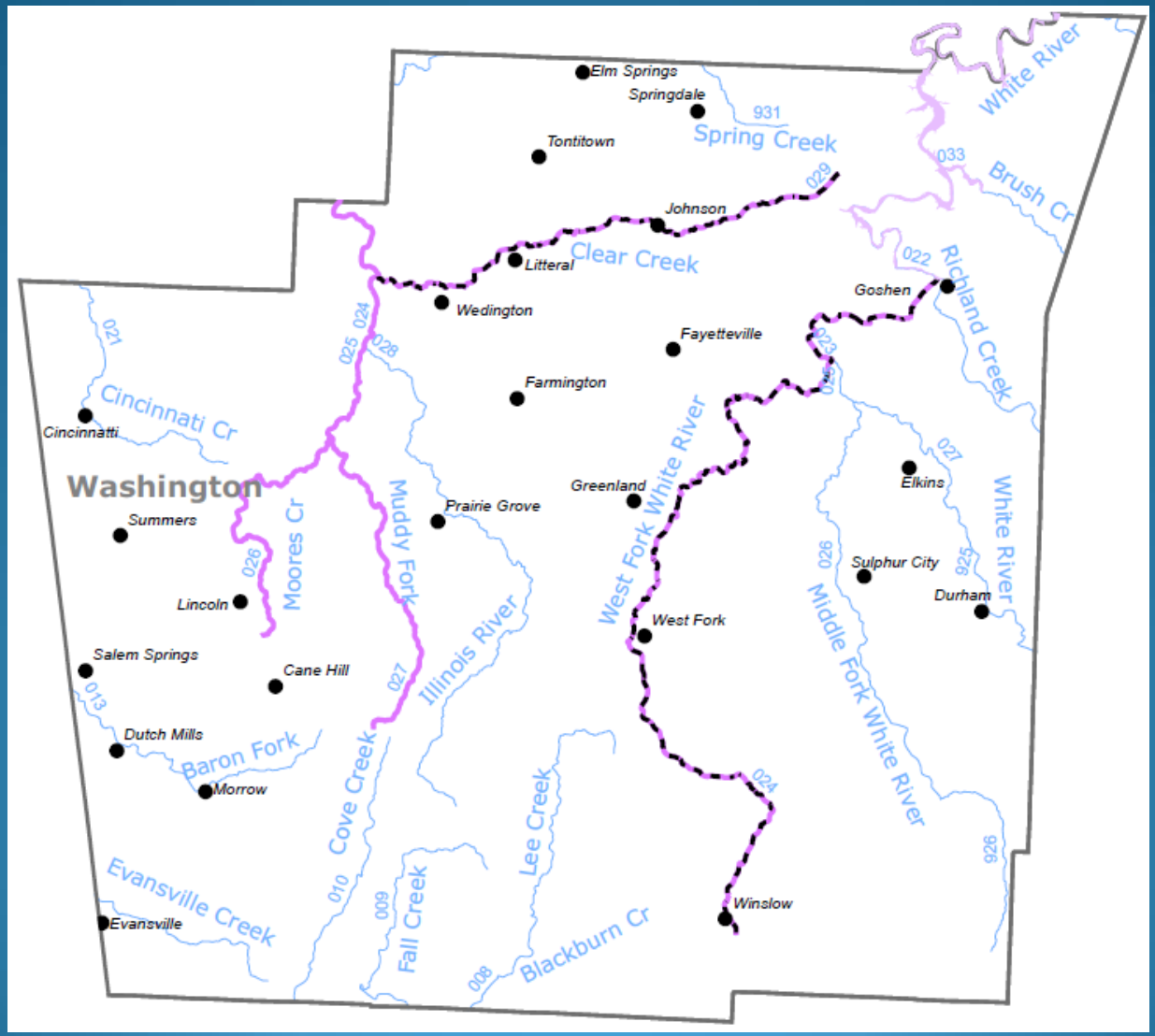
- Assessment of Rivers and Streams
- Assessment of Lakes and Reservoirs
- Assessment of Ground Waters
- Report on the water quality condition
- List of waterbodies not meeting water quality standards or designated uses (303(d) List)

What is the 303(d) List?

- List of waterbodies currently not
  - Supporting designated uses ***or***
  - Attaining water quality standards
- ADEQ must submit a 303(d) list every 2 years
- For listed waters, ADEQ must, with EPA concurrence, develop water quality improvement strategies to reduce the input of the specific pollutant(s) that are restricting the waterbody use(s) in order to restore and protect the use(s).

  TMDLs, Watershed Restoration Plans, NPDES Permit Limits, additional monitoring

Draft 2014 Impaired Waters List



New Listings for 2014

104 Pollutant Pairs

- Minerals - Cl, SO_4, TDS (38)
- Turbidity (22)
- Dissolved Oxygen (19)
- Metals - Cu, Se (12)
- Temperature (8)
- Pathogens (4)
- pH (1)

What is a TMDL?

- A TMDL is a scientific model that:
  - determines the maximum amount (or load)of a particular pollutant that a water body can receive and attain and maintain its standards
  - Allocates the allowable load to point and nonpoint sources of pollution in the watershed
- A TMDL is also a document submitted to the EPA. It identifies the pollutant of concern and its sources, and allocates the allowable load.

TMDL=WLA +LA+ MOS

Total Maximum Daily Load	Waste Load Allocation	Load Allocation	Margin of Safety

Allocations

- Waste load Allocation (WLA)
  - WLAs are the contributions from point sources
  - Point sources are much easier to identify since they have a discharge point or direct outlet to the stream
  - Point sources have some type of monitoring or information and are therefore easier to assign loadings

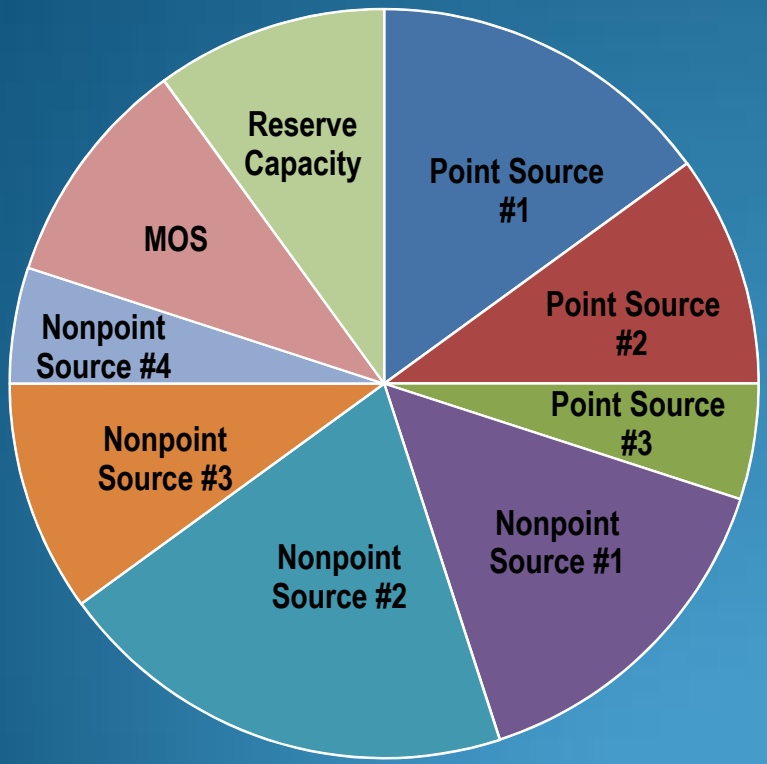
Allocations

- Load Allocation (LA)
  - LAs are the pollutant contributions from nonpoint sources, which are not directly regulated
  - "Diffuse" pollution, generated from large areas with no particular point of pollutant origin, but rather from many individual places
  - Pollution that cannot be traced to a regulated direct outlet or discharge point

Allocations

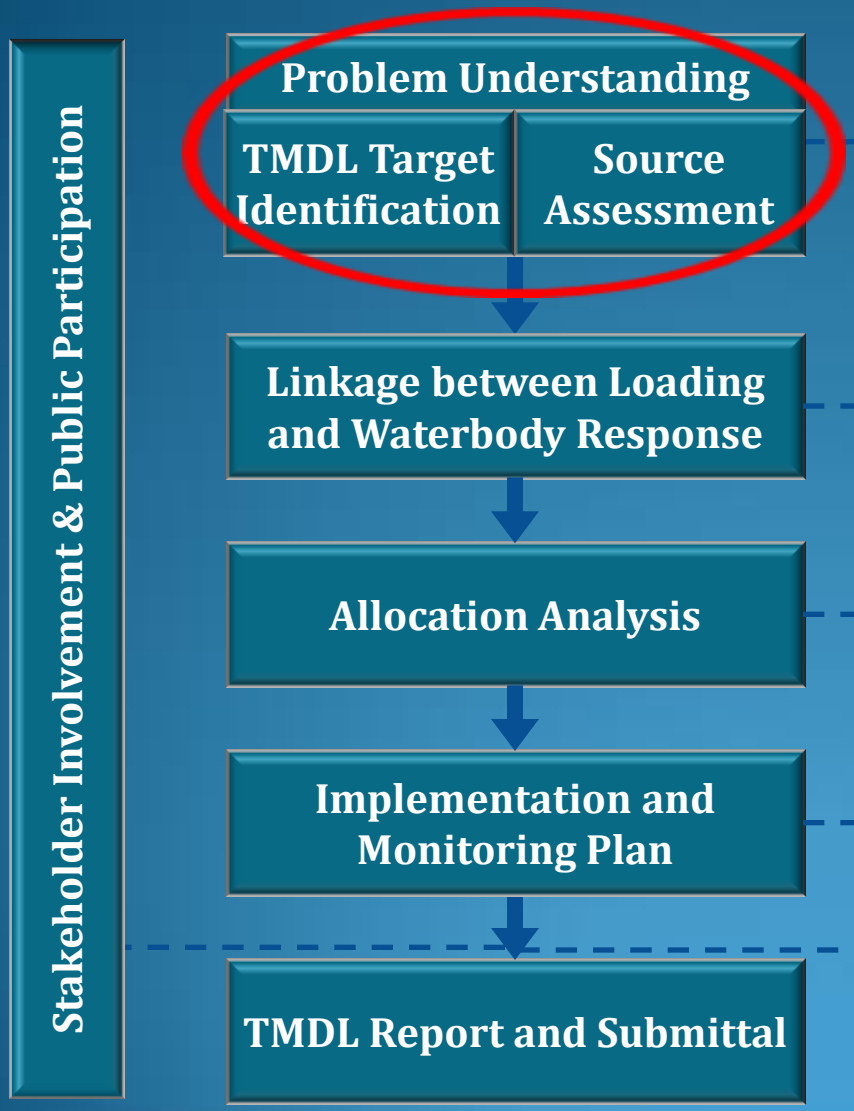
- Margin of Safety (MOS)
  - MOS may be either implicit or explicit
  - Implicit
    - Incorporated into the TMDL through conservative assumptions in the analysis
  - Explicit
    - Expressed in the TMDL as loadings set aside for the MOS

Overview of Total Maximum Daily Loads (TMDLs)



- Wasteload allocations (WLAs) set loading cap for point sources
- Load allocations (LAs) set loading cap for nonpoint sources
- Reserve capacity sets aside allocation for future development
- Margin of Safety (MOS) allocation accounts for uncertainty

TMDL Process



EPA Recommended Elements in a TMDL Submittal

1. Description of waterbody, pollutant of concern, pollutant sources, and priority ranking
2. Water Quality Standards and numeric WQ target*
3. Loading Capacity- Linking WQ and Pollutant Sources* (including critical conditions*)
4. Load Allocations (LAs)*
5. Wasteload Allocations (WLAs)*
6. Margin of Safety (MOS)*
7. Seasonal Variation*
8. Reasonable Assurances+
9. Monitoring Plan+
10. Implementation Plan+
11. Public Participation*

** Required by regulation (40 CFR 130.7)*
+ Recommended through guidance

From *Guidelines for Reviewing TMDLs under Existing Regulations issued in 1992* (May 20, 2002): http://www.epa.gov/owow/tmdl/guidance/final52002.html

Impairment Characterization

- Waters impaired by stormwater sources often listed for:
  - Biological impairment
  - Habitat alteration
- Focus on multiple pollutants and combined effects
- Look at indicators of stormwater impacts
  - Flow patterns
  - Degraded biology/habitat
  - Imperviousness

Establishing Water Quality Targets

- Water quality targets include…
  - Indicator
  - Associated target value

- Water quality targets for TMDLs with SW sources
  - Consider multiple stressors due to changes in flow and increased pollutant loads
  - Could lead to use of a surrogate target, such as impervious cover, that represents combined SW effects

Stormwater Source Assessment

- Challenging boundary issues
- Snapshot in time
  - Construction sites ephemeral in nature
  - Industrial source no-exposure status could change
- Less familiar point source databases
  - eNOI
  - state-specific stormwater database
- Data generated by sources varies by type and permit requirement

40 CFR 122.44(d)(1)(vii)

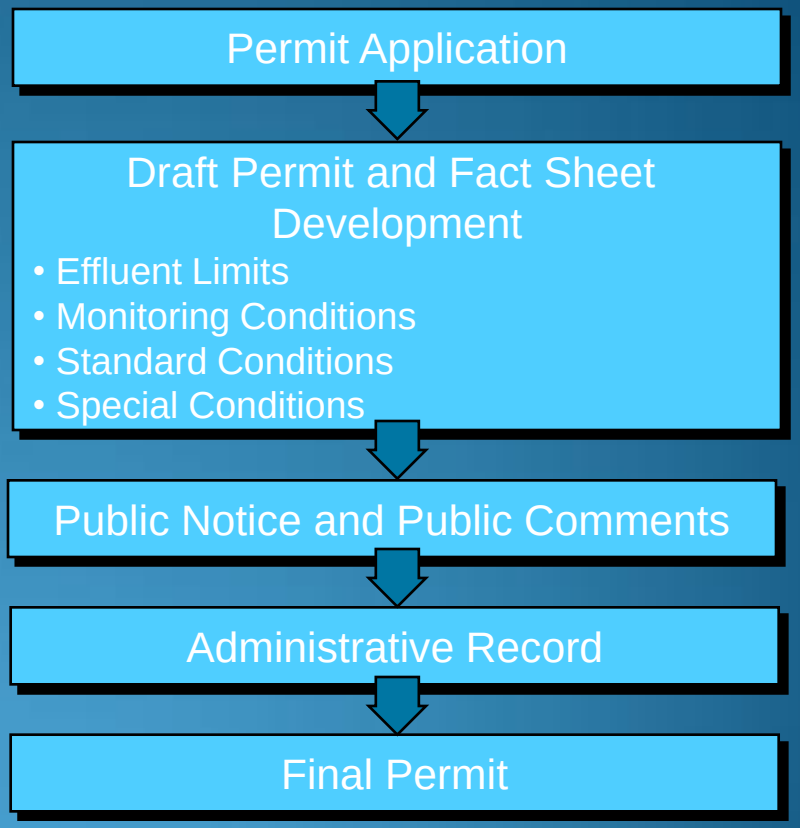
(vii) When developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that:

(A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from and complies with all applicable water quality standards; and

(B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are **consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7.**

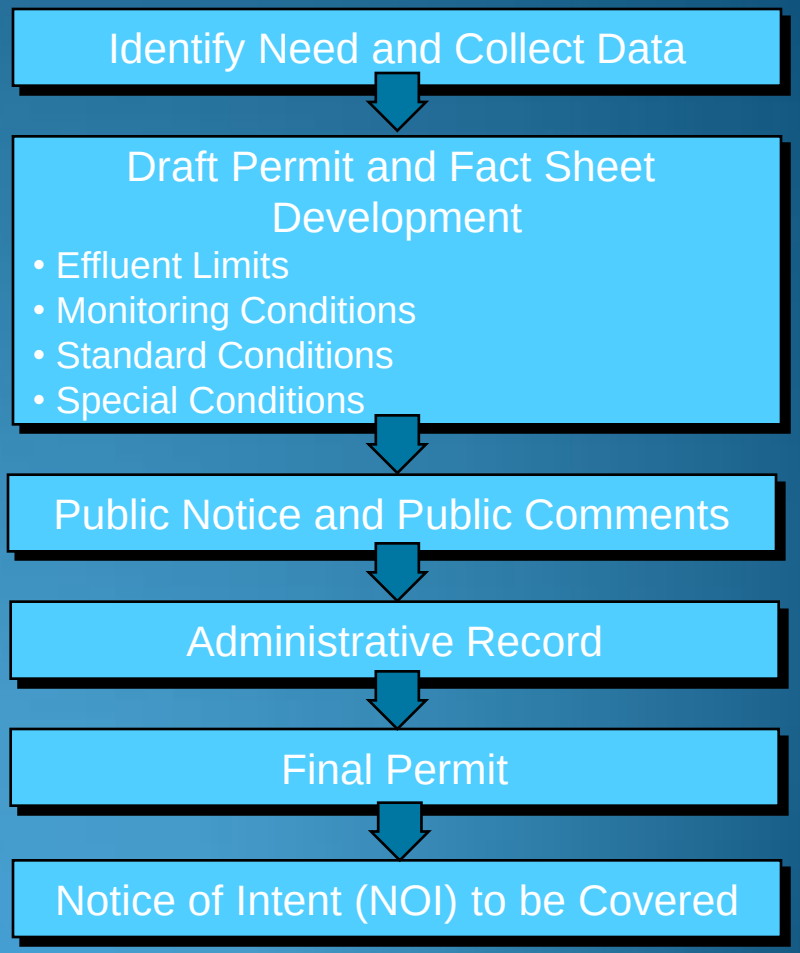
Types of NPDES Permits

- Individual Permit
  - 1 application submitted → 1 permit issued
  - Appropriate where discharger needs site-specific permit conditions



Types of NPDES Permits

- General Permit
  - 1 permit issued → many applications submitted
  - Appropriate where multiple dischargers require relatively uniform permit conditions



Brief Overview of Regulated Stormwater Sources

- Three primary types of sources (40 CFR 122.26(a) and 122.26(b))
  - Municipal separate storm sewer systems (MS4s)
  - Construction
  - Industrial
- Other sources as designated by the permitting authority
- Two types of NPDES stormwater permits
  - Individual
  - General

Overview of Regulated SW Sources: Construction

- Phase I: disturb 5 acres or more
- Phase II: disturb between one and 5 acres
- Permit types
  - Construction General Permit (CGP)
  - Individual permits are an option under certain conditions
    - Discharge to impaired waters
    - Reasonable potential to cause or contribute to water quality standard exceedance
- Currently 2,008 Construction Permits in AR

Overview of Regulated Stormwater Sources: MS4s

- Not just municipalities
- Phase I MS4s
  - Based on population served (100,000+)
  - Individual permit with detailed application process
- Phase II MS4s
  - Small regulated MS4s within the boundaries of an 'urbanized area' or designated by permit authority
  - Two permit types
    - MS4 general permit with 6 minimum control measures
    - Individual permit under special circumstances

Type and Number of Small MS4 with Coverage Under GP

- 44 Municipalities
- 7 Counties
- 4 Universities
- 1 Hospital
- 1 Air Force Base
- 1 Highway Department

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Overview of Regulated SW Sources: Industrial Activity

- Eleven categories of industrial activity
- Covered under multi-sector general permit (MSGP), although individual permits are an option under certain conditions
- Able to certify to a condition of no exposure in lieu of permit coverage
- Currently 1,134 IGP in Arkansas

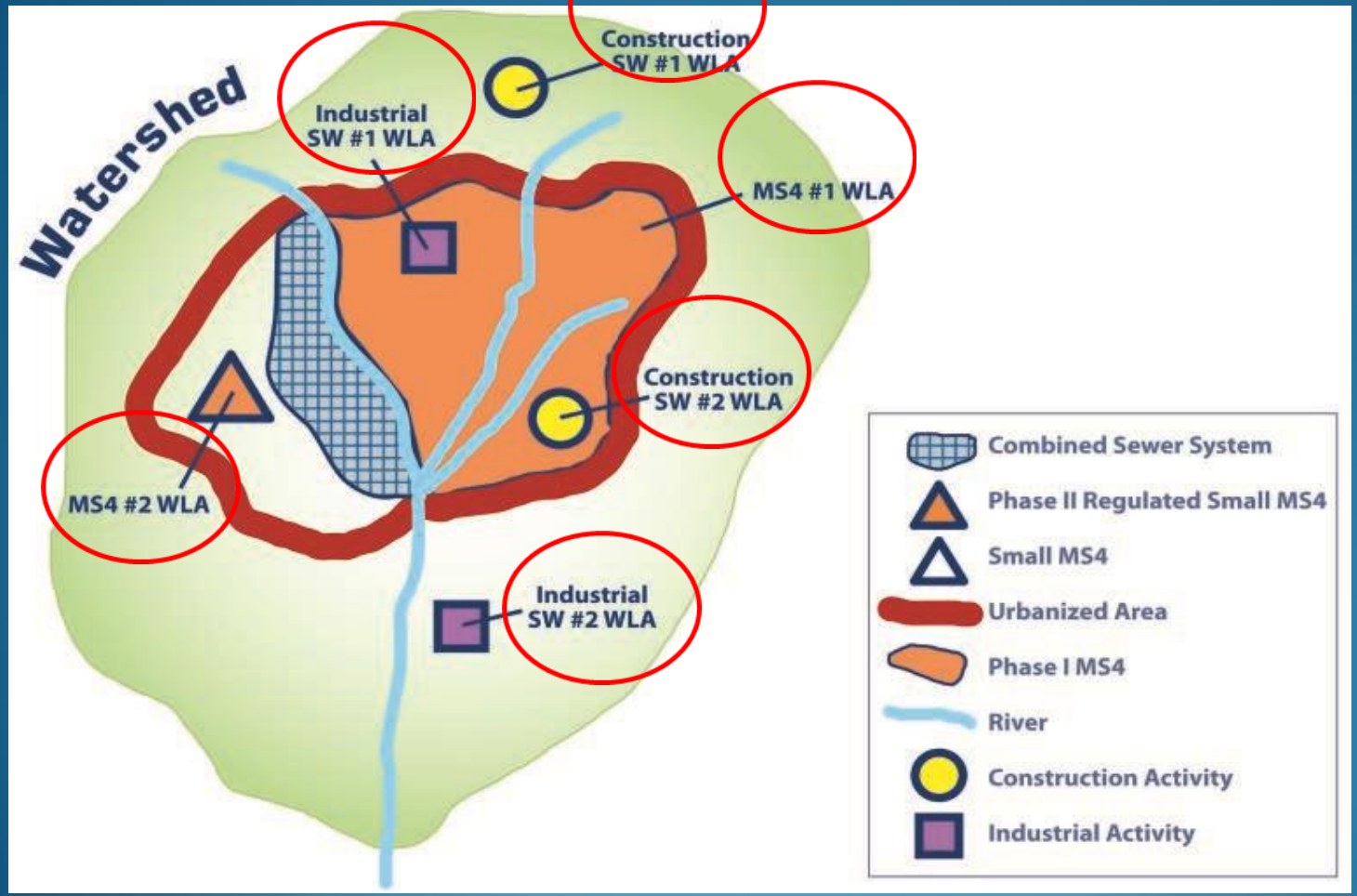
Basics of TMDL & Stormwater Permit Integration

- WLAs for regulated stormwater sources
  - Needed to promote effective implementation
  - As specific for each regulated stormwater source as possible
- NPDES stormwater permits must be consistent with assumptions and requirements of WLAs
- TMDL and permit writers should work together throughout the process

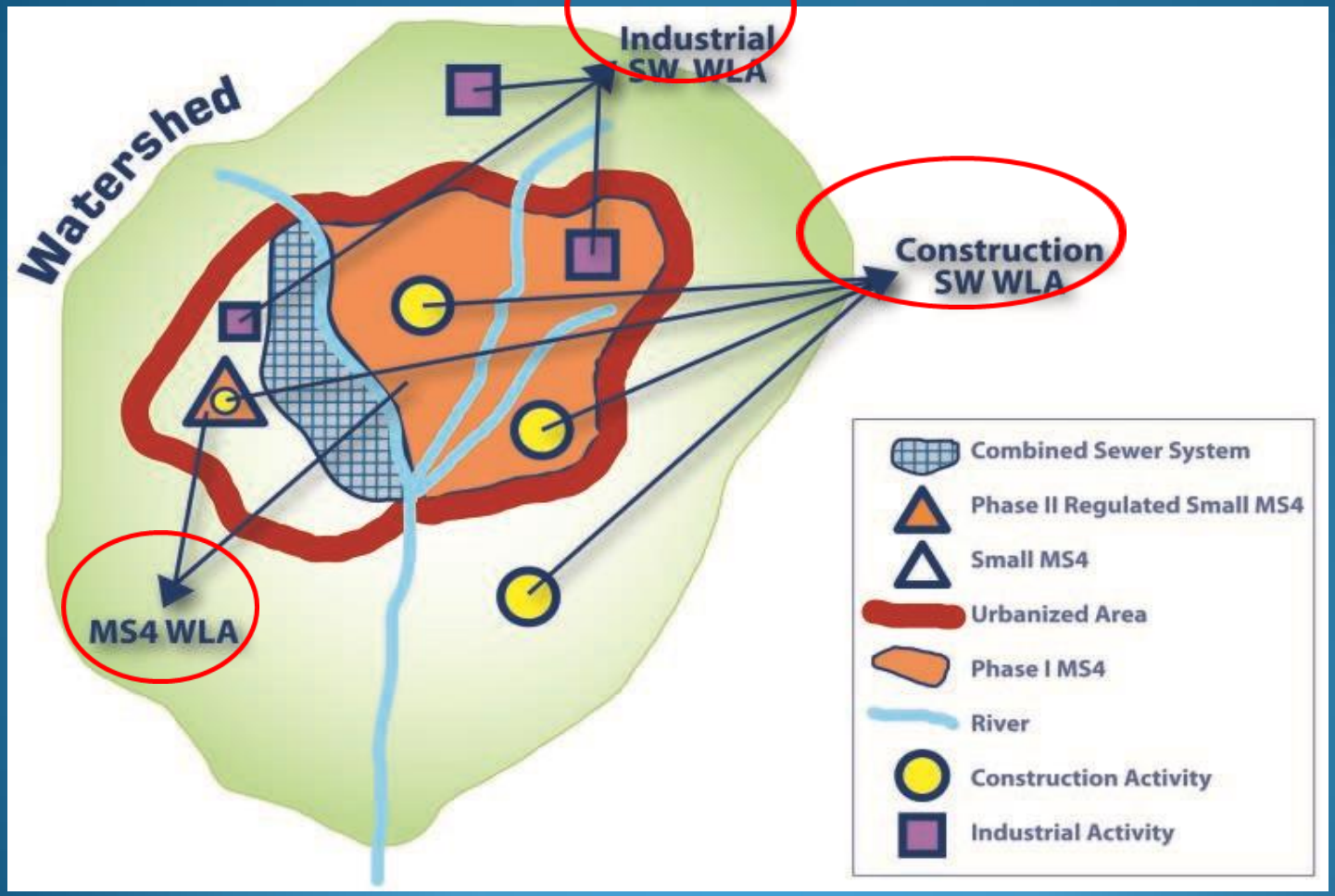
Options for Categorizing and Expressing WLAs

- Individual by each regulated stormwater source
- Categorical by each type of stormwater source
- Aggregated for all stormwater sources

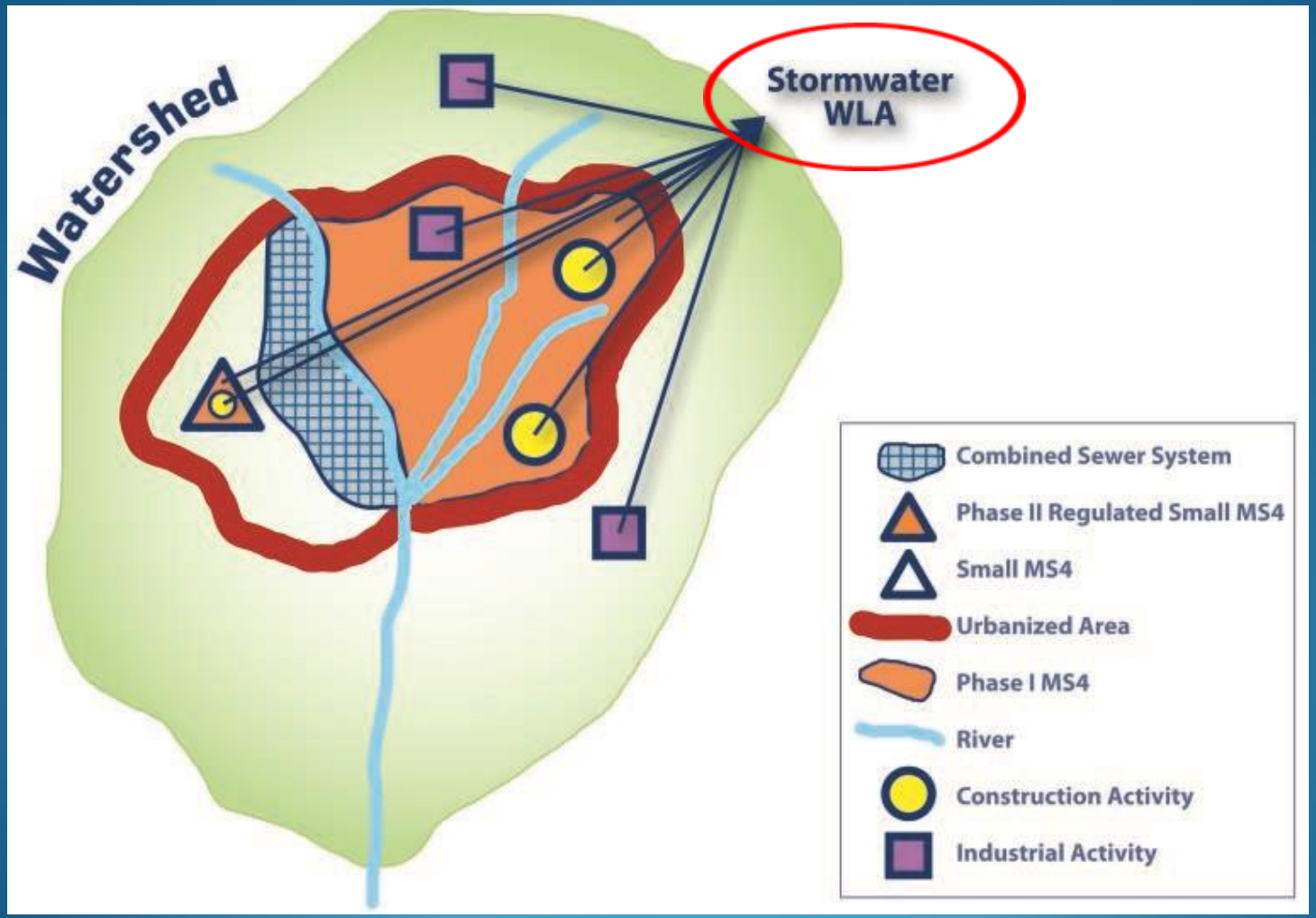
Individual WLAs by Source: *Overview*



Categorical WLAs by Source Type: *Overview*



Single Aggregated WLA for All Stormwater Sources: *Overview*



Effluent Limits in Stormwater Permits

- Numeric limits
  - Pollutant loads and concentrations
  - Numeric parameters acting as surrogates for pollutants (i.e., impervious cover or flow)

- Narrative BMP limits
  - Selected to meet the WLA
  - Possibly includes requirement to monitor BMP performance against benchmarks

Options for Numeric Effluent Limits in Stormwater Permits

- Develop water quality-based effluent limitations (WQBELs)
- Incorporate WLA as numeric effluent limit (e.g., bacteria concentration or sediment percent reduction)

Options for Narrative Effluent Limits in Stormwater Permits

- Require implementation of BMPs in the permit
  - Based on documented pollutant removal effectiveness
  - Consider numeric performance benchmarks
- Incorporate specific BMPs identified in the TMDL or implementation plan
- Hybrid approach: meet narrative limits or be subject to numeric limits

Implementation

- TMDL Implementation Plans
  - Provide a 20-year timeline for meeting the WLAs
  - Specify what must be included in NPDES permits
  - Require implementation of BMPs designed to achieve WLA
  - Specify requirements for permit reissuance
    - based on an updated effectiveness of BMPs
    - include technically feasible and cost-efficient controls to attain WLAs
- TMDL requirements in permit are directly linked to the Implementation Plans for each of the impairment pollutants

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Potomac Drains (WV) Sediment TMDL Construction WLAs

- Identified 176 regulated construction sources at outset of TMDL
- Updated information during process with new active and pending permits
- Assigns individual WLAs to 297 regulated construction sources
- Includes future growth allowance

Town Branch (AR) Total Phosphorous TMDL – MS4 Allocation

- EPA completed 2010;
  - "…..encourages the collection of additional data (both biological and instream water quality) to assess the waterbody's biological health. The result ……could be used to inform future decisions…..to revise the TMDL upwards or downwards prior to implementation"
- NPDES WLA = 3.34 lbs/day and .1 mg/L of TP
- MS4 WLA = 2.65 lbs/day and .1 mg/L of TP

Town Branch (AR) Total Phosphrous TMDL – MS4 Allocation

- Water quality, diurnal DO, habitat, macroinvertebrate and fish assemblages analyzed over 2 years
- ADEQ analysis determined aquatic life designated use is being met.

- NPDES WLA = 16.7 lbs/day and .5 mg/L TP annual average

- MS4 WLA = 13.3 lbs/day and no average concentration

Questions?

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