ACWA Nutrients Permitting Workshop
NPDES: National Pollutant Discharge Elimination System Program

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Outline

- Basics:
  - Framework
  - Administration
  - Types of Permits

- Technology-based Effluent Limitations

- [TMDLs and] Water Quality-based Effluent Limitations
  - Relationship between WQS and WQBELS
  - Four Basic Steps to Developing WQBELS
  - Considerations and Finalizing the Permit

- Other Permit Components
Bridging Water Quality Goals and Actions needed for Restoration

- Water Quality Data and Goals
  - Standards and Criteria
  - Ambient Monitoring Data
  - Discharge Monitoring Data

- 303(d) Program
  - Nonpoint Sources
  - Point Source Permits
  - Restoration Activities
  - Resource Management

- Implementation

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NPDES Framework within CWA

**GOAL**
Zero Discharge of Pollutants

- Technology Standards
- Technology-based Effluent Limitations

**GOAL(s)**
“Fishable and Swimmable” Waters
No Toxics in Toxic Amounts

- Water Quality Standards
- Water Quality-based Effluent Limitations

CWA §402: NPDES
NPDES Permit Types: Individual and General

Individual permit application  →  Individual permit

General Permit  ←  NOIs
Typical NPDES Permit Components

- Cover Page
- Effluent Limitations
  - Technology-based
  - Water Quality-based
- Monitoring and Reporting
- Special Conditions
  - Additional Monitoring/Special Studies
  - Best Management Practices
  - Compliance Schedules
- Standard Conditions
- Typical Conditions
  - Secondary
  - Equivalent to Secondary
- Other Conditions
  - Pretreatment
  - Municipal Sewage Sludge
  - CSOs
Tech-based Standards to Tech-based Effluent Limitations

- **Purpose:** to set a national floor
  - Done by industrial sector and subsector
  - Based on off-the-shelf technology
  - Account for economic achievability
  - Do not designate or require specific technology
- Like TMDL WLAs, tech. standards are not self-implementing
  - E.g., X lbs of pollutant per Y amount of production
[TMDLs and] Water Quality-based Effluent Limitations

Step 1
Identify the Applicable Water Quality Standards

Step 2
Characterize the Effluent and the Receiving Water

Step 3
Determine Need for Pollutant-specific WQBELs

Step 4
Calculate Pollutant-specific WQBELs

Cover Page
- ELGs
- Case by Case

Effluent Limitations
- Technology-based
- Water Quality-based

Monitoring & Reporting
- Secondary

Special Conditions
- Special Studies
- Best Mgmt. Practices
- Compliance Schedules

Standard Conditions
- Pretreatment
- Sludge
- CSOs

Technology-based
- Secondary

Water Quality-based

Compliance Schedules

Best Mgmt. Practices

Special Studies

Pretreatment

Sludge

CSOs

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Step 2 – Characterize the Effluent and the Receiving Water

- Identify Pollutants of Concern
- Select an Approach to Model Effluent and Receiving Water Interaction
- Identify Critical Conditions for Effluent and Receiving Water Modeling
- Establish Appropriate Dilution Allowance or Mixing Zone for Each Pollutant of Concern
Step 3 – Determining the Need for WQBELs

- For modeling under **critical conditions**, the permit writer projects:
  - a single expected **receiving water concentration**
  - to compare to each applicable **water quality criterion**
- If expected concentration > criterion then we have “reasonable potential” and need a WQBEL
Step 4 - Develop Pollutant-Specific WQBELs

Determine Wasteload Allocations (WLAs) from applicable WQ criteria

Account for WLA duration and frequency

Calculate WQBELs
WQBEL Derivation

Water Quality Criteria
- Apply in the receiving water and could include:
  - magnitude
  - duration
  - frequency

Effluent Limitations
- Apply “end-of-pipe” and include:
  - magnitude
  - averaging period

122.44(d)(1)(vii): WQBELs to ensure that:
- (A) the level of water quality achieved by limits is derived from and complies with all applicable WQS
- (B) effluent limits developed to protect a narrative WQC, numeric WQC, 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 [TMDLs]

- 122.45(d)(1): max daily and avg. monthly
- 122.45(d)(2): avg. weekly and avg. monthly
- 122.45(e): non-continuous dischargers – max rate, freq., total mass
Final Effluent Limits and Other Considerations

- Compare:
  - 1) TBELs or other existing limitations with
  - 2) WQBELs based on individual facility WLAs and/or TMDL WLAs

- The most stringent limitations for each parameter are the new, calculated final effluent limitations

- Final effluent limitations in the permit must meet WQS anti-degradation policies and anti-backsliding requirements.
Environmental Concerns and Permitting Considerations

CAFOs

- manure storage and transportation
- land application of manure – nutrient loading
- Not always assigned a WLA in TMDLs

Stormwater

- Developing stormwater permit provisions is seldom straightforward
- BMP-based approaches need to be supported by robust analysis demonstrating how WLAs will be attained
- How a TMDL categorizes different stormwater sources will influence difficulty of WQBEL development
Monitoring Requirements

- Frequency based on type of the discharge and duration of limits (no < than 1/yr)

- Monitoring requirements provide information on the facility’s performance, efficiency

- Create compliance records
  - Longer averaging period?
  - Consider interim monitoring such as monthly where the limit is seasonal or annual
Special Conditions and Standard Conditions

- **Special Conditions**
  - Additional monitoring (e.g., ambient)
  - BMPs used to implement WLAs
  - Compliance schedules

- **Standard Conditions**
  - Applicable to all permits (122.41)
  - Applicable to specific categories of dischargers (122.42)
The administrative process of developing and issuing a permit involves:

- documenting all permit decisions
- coordinating EPA and state, territorial, or tribal review of the draft permit
- providing public notice, conducting hearings (if appropriate), and responding to comments
- defending the permit and modifying after issuance (if required)
For Additional Information:

- National Pollutant Discharge Elimination Program (NPDES):
  - [https://www.epa.gov/npdes](https://www.epa.gov/npdes)

- NPDES Permit Writers’ Course:
  - [https://www.epa.gov/npdes/npdes-training](https://www.epa.gov/npdes/npdes-training)
    - Week-long courses held 4-5 times a year
    - Check website for scheduled courses

- Web training: “Recorded Webinars and Training” tab
  - [TMDLS and NPDES:](https://www.epa.gov/npdes/npdes-training#tmdl)

- Compendium of MS4 WQBEL permitting examples
  - [https://www.epa.gov/sites/production/files/2017-06/documents/part3-sw_compendium_wqbels_508.pdf](https://www.epa.gov/sites/production/files/2017-06/documents/part3-sw_compendium_wqbels_508.pdf)