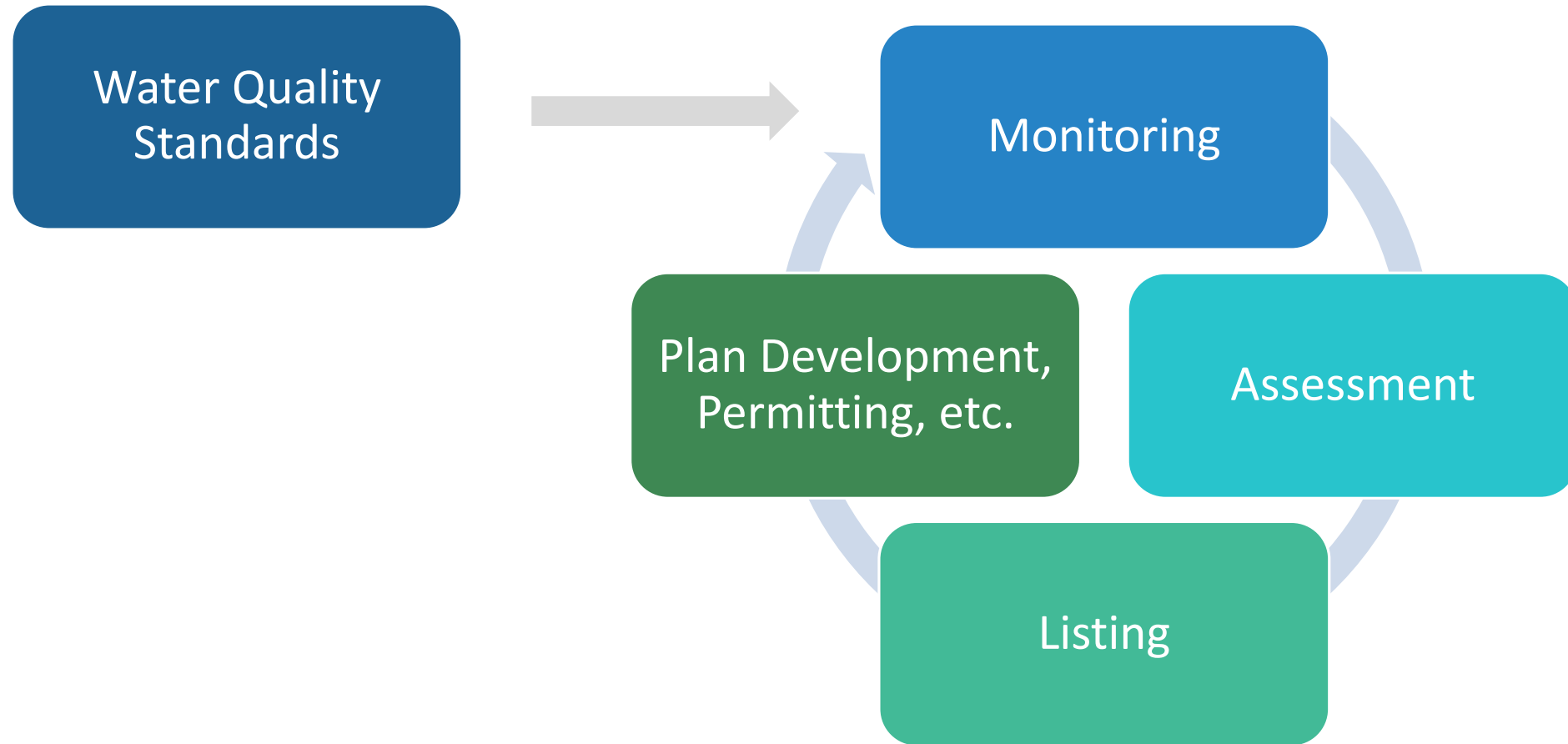


Implementation

WATER QUALITY STANDARDS

Introduction

Implementation of Water Quality Standards



Monitoring & Assessment



Introduction to Monitoring and Assessment

- Water quality monitoring is a crucial aspect to protecting water resources.
- State, Tribal and Federal agencies have primary responsibility to monitor lakes, streams, rivers and other types of water bodies to assist them in managing water quality.
- Water resource managers use data to determine: where pollution problems exist, where to focus pollution control energies or where progress is being made to improve water quality.

Waters Monitored & Assessed by Designated Uses

Aquatic Life and Wildlife



Public Water Supply



Recreation



Industrial Supply



Shellfishing



Agriculture Supply



Information Used for Assessments

Benthic macroinvertebrate community

Fish community

Ambient physical / chemical data

Indicator bacteria

Plankton / Periphyton / Chlorophyll

Aquatic toxicity

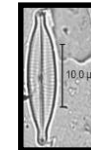
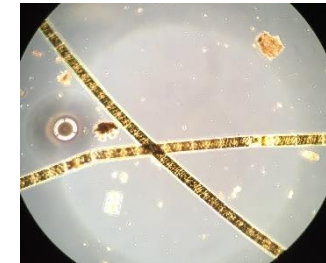
Sediment chemistry/toxicity

Beach closures/ Shellfish bed closures

Tissue contaminants

Effluent analysis

Knowledge of a pollution source (*e.g.*, CSO)





Sources of Information

State Monitoring Program: ambient physical, chemical & biological monitoring



Other State Programs: fisheries & aquatic plant surveys, remediation/enforcement issues

USGS: physical, chemical, bacteria data & flow data from fixed sites on rivers



Other state, federal & municipal agencies (e.g., Dept. of Ag./Aquaculture, CT Ag. Experiment Station)

Utilities, consultants, academia

Volunteer Monitoring

Permittee self-monitoring



How Are Monitoring Data Used?

-
- Assess extent of our Nation's waters meeting CWA goals: 305(b)
 - Identify impaired waters: 303(d)
 - Set protection and restoration priorities
 - Identify emerging problems
 - Support Reasonable Potential Analysis for NPDES permits
 - Develop and implement TMDLs and watershed plans
 - Develop models to understand ecosystem processes and predict problems and solutions
 - Identify high quality waters for protection and as reference
 - Determine the effectiveness of water pollution controls and actions
 - Determine change in water quality conditions over time



**Understanding
Our Water
Resources**

Types of Monitoring Designs

•We can't monitor everywhere, so we must monitor "smart."
Types of monitoring designs include:

- Statistically-valid surveys
- Targeted monitoring
- Fixed Site Network
- Rotating basin

•EPA recommends that States/Tribes integrate a variety of designs to best meet the range of monitoring objectives and multiple decision needs

National Aquatic Resource Surveys: A Partnership among EPA, States and Tribes



Coastal



Streams and Rivers



Wetlands



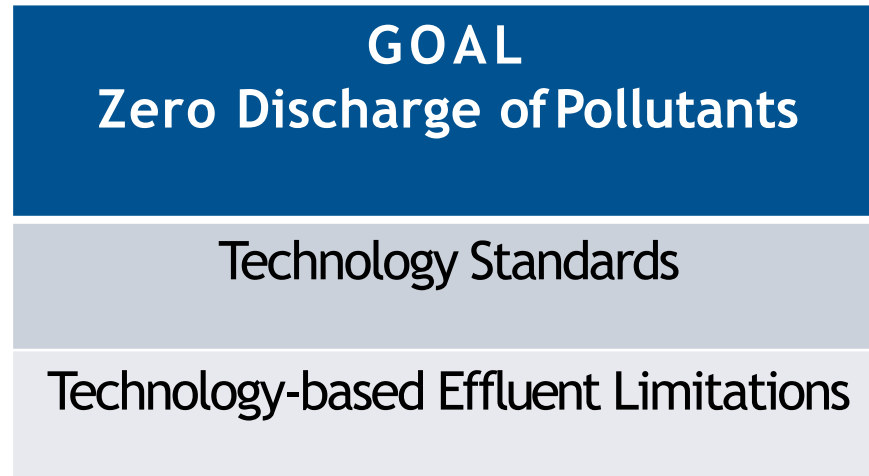
Lakes

1. Assess biological and recreational condition and changes over time of the nation's waters using indicators of condition and stress
2. Rank stressors based on the relative associations between indicators of condition and indicators of stress
3. Build/enhance state and tribal monitoring and assessment capacity

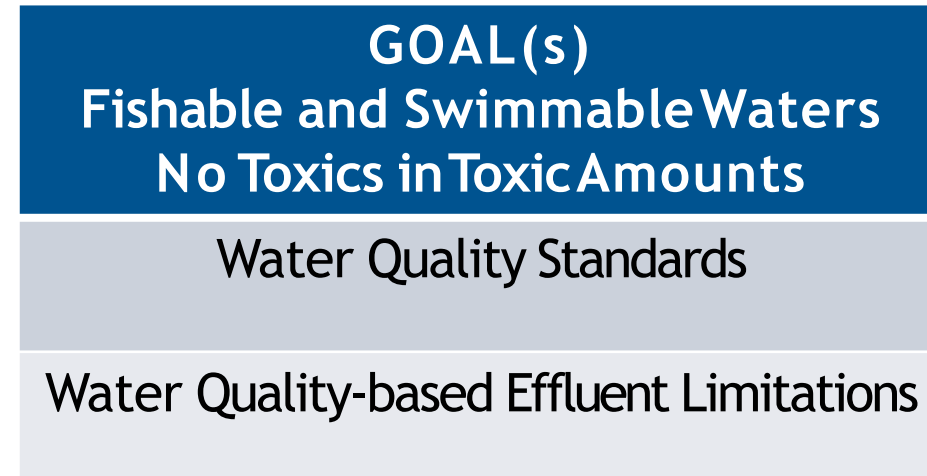
NPDES Permitting

Framework of NPDES within CWA

“Facility”



“Waterbody”



NPDES Permitting

All point sources discharging pollutant into Waters of the United States must obtain a permit

- CWA 301(A)
- 40 cfr 122.1(B)

Typical Permit Components

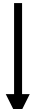
- Effluent Limits
 - Technology
 - Water Quality
- Monitoring
- Reporting
- Standard Conditions
- Special Conditions

Technology-based Effluent Limitations

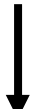
- Purpose: to set a national floor by industry sector and subsector
 - Are not based on water quality
 - National in scope
 - Done by industrial sector and subsector
 - Account for economic achievability
 - Based on affordable off-the-shelf technology
 - Do not designate or require specific technology

Water Quality Standards to Permits

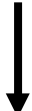
Step 1 - Identify the Applicable Water Quality Standards



Step 2 - Characterize the Effluent and the Receiving Water



Step 3 - Determine the Need for Chemical-specific WQBELs



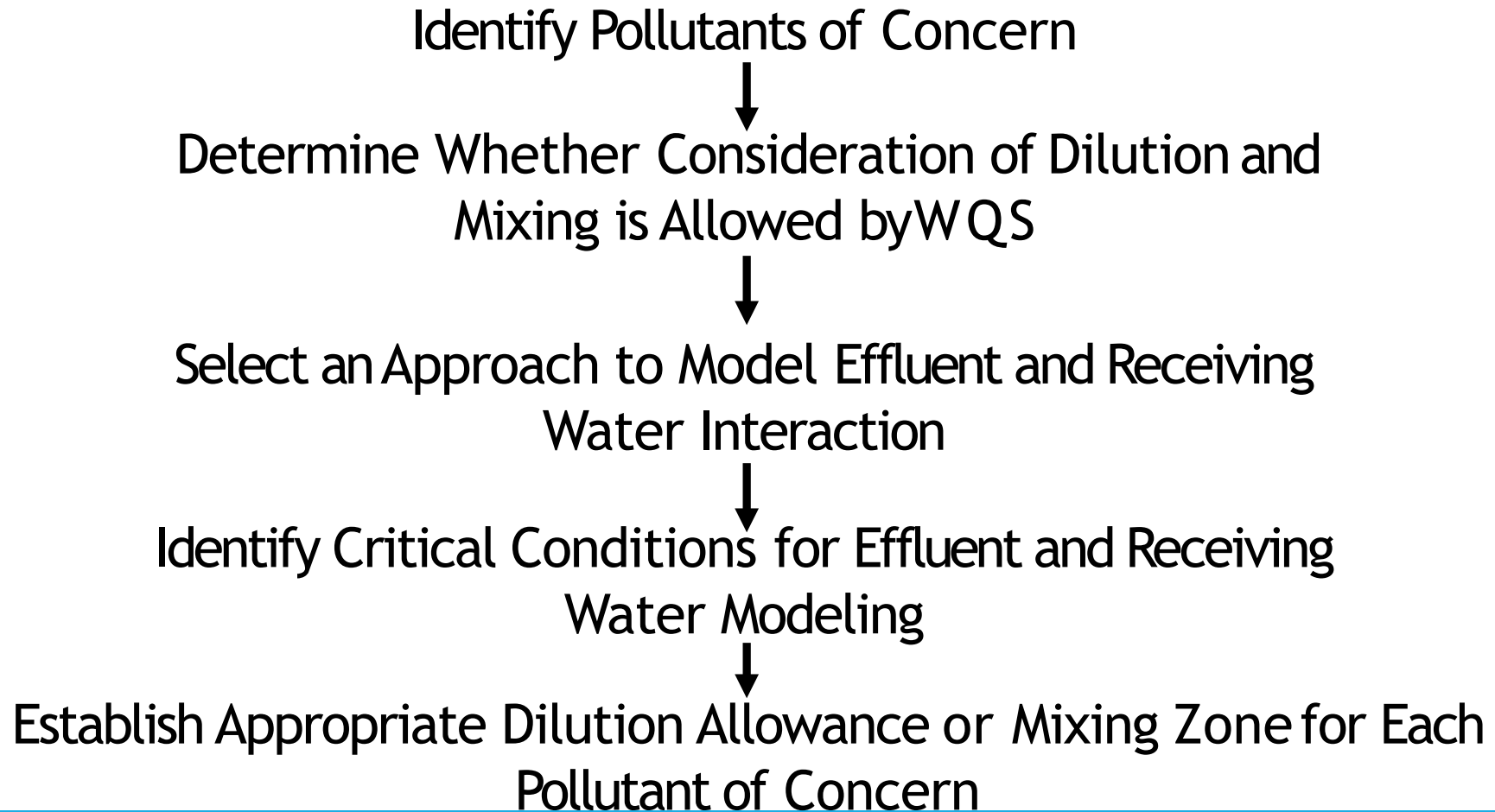
Step 4 - Calculate Chemical-specific WQBELs

Step 1 - Identify Applicable W Q S

Permit writer's task:

- Identify the specific receiving water segment
- Determine all numeric and narrative water quality criteria applicable to the receiving water segment
- Follow any implementation policies associated with applicable standards and criteria

Step 2 – Characterize the Effluent and the Receiving Water



Step 3 - Determining the Need for WQBELs

- **Answer:** Limitations must be established in permits to control all pollutants or pollutant parameters that are or may be discharged at a level that will *cause*, have the ***reasonable potential to cause***, or *contribute* to an excursion above *any state water quality standard, including State narrative criteria* for water quality [40 CFR 122.44(d)(1)(i)].

Answer the Question: “Is There Reasonable Potential?”

- If the projected receiving water concentration *exceeds* the applicable water quality criterion, then there is *reasonable potential* and the permit writer must establish WQBELs
- If the projected receiving water concentration is *equal to or less than* the applicable water quality criterion, then there is *no reasonable potential* and we have not demonstrated a need to establish WQBELs

Step 4 - Develop Chemical-Specific WQBELs

Determine Wasteload Allocations (WLAs)
from applicable W Q criteria



Account for WLA duration and frequency



Determine effluent quality needed to meet all WLAs



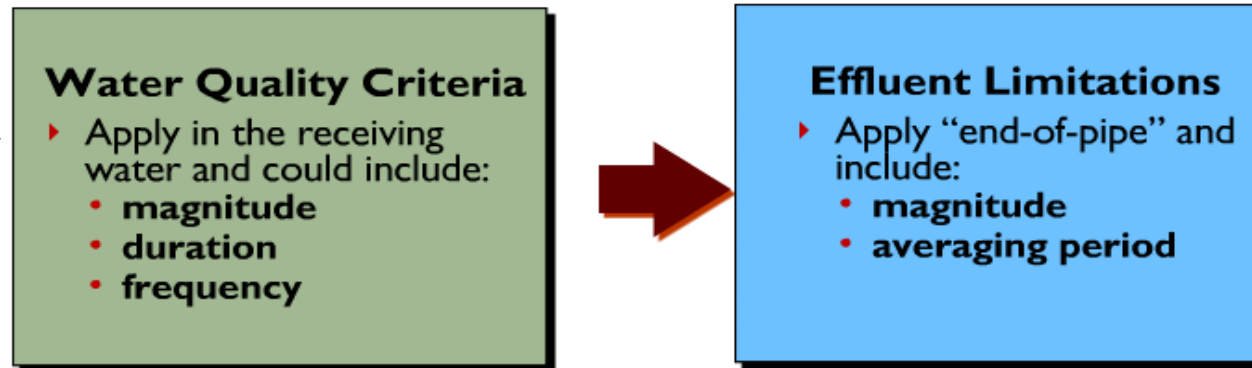
Calculate Maximum Daily and Average Monthly WQBELs

Determine Wasteload Allocation(s)



- WLA can be provided by a TMDL or can be calculated for a single discharger

WQBEL Derivation



- **EPA's TSD**
 - establishes procedures for calculating maximum daily limits (MDLs) and average monthly limits (AMLs) from WLAs derived from acute and chronic aquatic life criteria and human health criteria
- **State-specific procedures**
 - must result in limits that ensure compliance with applicable WQS, are consistent with the assumptions of any WLA from an EPA-approved TMDL, and are consistent with federal requirements for limit expression (e.g., averaging periods, total recoverable metals)

Relationship Between WQS and Permit Limit

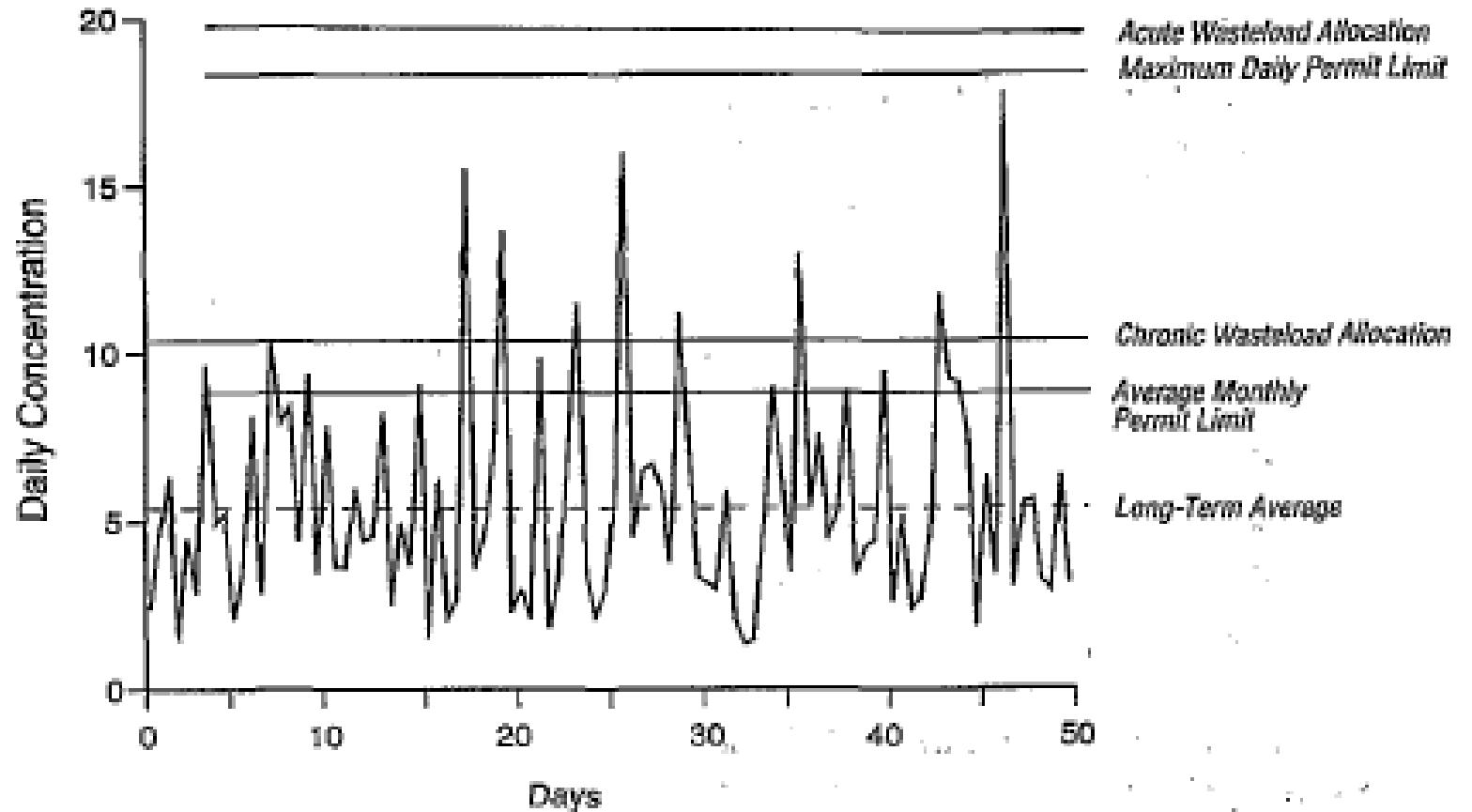


Figure 5-3. Relationship Between Daily Concentrations, Long-Term Average, Wasteload Allocations, and Permit Limits

401 WQC

401 Certification: Overview

- Clean Water Act (CWA) §401 says:
 - No federal permit or license can be issued that may result in a discharge to waters of the United States
- Unless
 - The state or authorized tribe certifies that the discharge is consistent with standards and other water quality goals, or waives
- No 401 cert or waiver means no federal permit or license

Who Has 401 Cert Authority?

- All states where the discharge originates have 401 cert authority
 - Direct grant from CWA, not from EPA
- Indian tribes authorized to administer the WQS program or have “treatment as state” (TAS) status can receive 401 cert authority if they request
 - No separate application needed
 - Need to identify tribal organization that will administer the 401 cert
 - EPA Regional office certifies on behalf of tribes not yet authorized

What Actions Trigger 401 Cert?

- CWA permits
 - §402 NPDES permits
 - §404 dredge/fill permits
- 401 cert not limited to CWA Actions
 - Rivers and Harbors Act
 - Federal Power Act
 - Atomic Energy Act
- Any others?
- Look for federal permit / license authorizing discharge into water of the US

Basic 401 Certification Process

- Applicant applies to state or tribe for a cert
 - where the discharge originates
- State or tribe reviews
 - Public notice required
 - Public hearing possible
- Applicant provides application with 401 cert to federal permit / licensing agency
- Federal permit / licensing agency notifies EPA

Evaluating a 401 Cert Request

- States/Tribes should consider
 - All potential water quality impacts,
 - both direct and indirect,
 - » For the life of the project
- Decision can be based on:
 - Data from applicant
 - Any other available and reliable data

What Must Be Determined?

- Before issuing a cert, the state/tribe agency should conclude that the permitted or licensed activity will be consistent with:
 - Effluent limitations for conventional and non-conventional pollutants
 - Water quality standards
 - New source performance standards
 - Toxic pollutant limitations, PLUS
 - Any other appropriate tribal/state requirements

What Can a State/Tribe Do Under 401 Cert?

- **Grant**: indicates activity consistent with standards and other provisions
- Effect of granting:
 - federal agency can proceed and evaluate whether a permit / license should be issued, and with what conditions

What Can a State/Tribe Do Under 401 Cert?

- **Grant With Conditions**: indicates activity consistent only if listed conditions are met
 - Scope of potential conditions can be quite broad
- Effect of granting with conditions:
 - Every 401 condition must become a term of the permit or license, if issued. Federal agency can't pick and choose.
 - If applicant dislikes conditions, needs to take issue to "appropriate forum of state law" – federal agency can't do anything about the conditions.

What Can a State/Tribe Do Under 401 Cert?

- **Deny**: indicates activity is not consistent with water quality standards and other goals
 - Implication is that no conditions would be adequate to ensure goals met if permit / license issued
- Effect of denying:
 - Federal agency can't issue permit or license

What Can a State/Tribe Do Under 401 Cert?

-
- **Waive**: state/tribal agency decides to not act on 401 application request
 - Waiver can be by passage of time, or explicit
 - CWA provides “any reasonable period not to exceed one year”
 - Watch out for federal permit/license agencies with shorter timeframes
 - Effect of waiving: 401 cert not required for federal agency to issue permit/license

What About Neighboring Jurisdictions?

- EPA receives notice of the 401 cert from the federal permitting / licensing agency
- If EPA determines may be effect on neighboring state/tribe, EPA notifies potentially affected state/tribe
- State/tribe submits objections (if any)
- Tribe/state can request public hearing
- EPA submits evaluation and recommendations at the hearing
 - Federal licensing or permitting agency must address issues raised; need not do exactly what neighboring jurisdictions suggest
 - Distinguish this from conditions in a 401 cert, where the federal agency must incorporate those conditions into the permit or license if issues

401 Cert: Example of Conditions

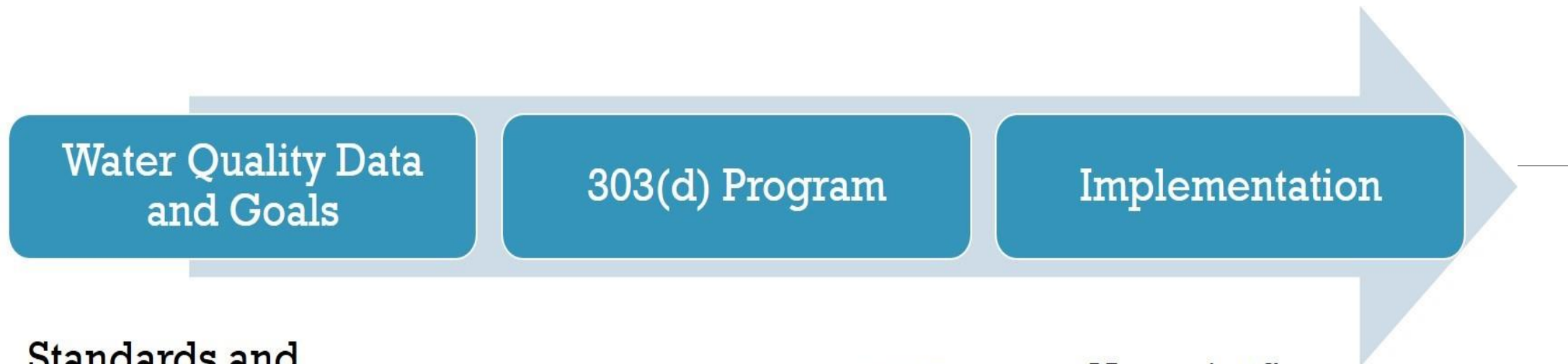
- Application for golf course and subdivision
- Conditions on the 401 cert included:
 - Stormwater runoff controls
 - Fish stocking
 - Vegetated buffer areas
 - Biological control of weeds and pests
 - Best management plans

401 Cert: Example of Conditions

cont.

-
- Application for new hydropower dam
 - 401 cert denied because:
 - Wetlands destroyed or damaged
 - Loss of habitat
 - Threatened or endangered species impacted
 - Specific water quality standards violations likely
 - Applicant underestimated area impacted

Total Maximum Daily Loads & Listing



Standards and Criteria



Ambient Monitoring Data



Discharge Monitoring Data



Nonpoint Sources



Point Source Permits



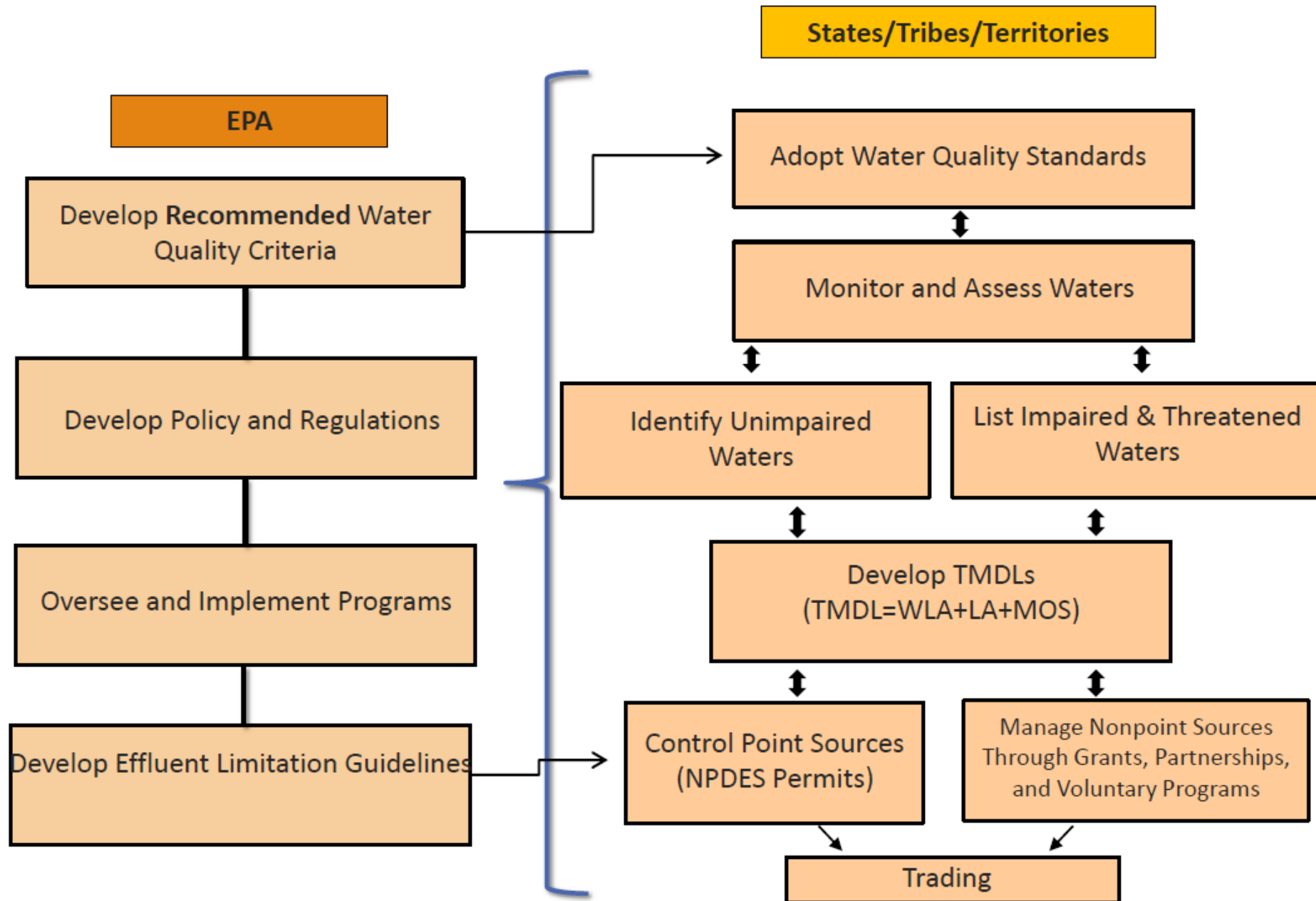
Restoration Activities



Resource Management



CWA Framework



What is the 303(d) List?

States, territories and authorized tribes required to develop lists of impaired waters and threatened waters

Impaired waters are water quality-limited segments that require TMDLs to be developed as technology-based requires and other required controls are not stringent enough to meet the water quality standards set by states

For each water on the list:

- Identify the pollutant causing the impairment and designated use not being support
- Assign a priority for development of TMDLs

Placing Waters on the 303(d) List



Monitoring

- Collect & evaluate monitoring data to determine condition of the waterbody
- Assemble all readily available data & information

Assessment

- Use assessment methodologies & procedures, consistent with their WQS, to determine whether waters are impaired

Listing

- Develop a list of those impaired waters every two years with public participation & submit to EPA

Responsibilities for 303(d) List Development

States, authorized tribes and territories:

- **Identify waters** not meeting WQS based on “all existing and readily available information”
- **Establish priorities** for TMDL development
- **Develop schedule** of TMDLs to be developed within 2 years
- **Request and Respond** to public comments on the draft 303(d) list
- **Submit** the final 303(d) list to EPA on April 1st of each even year for review and action

EPA has 30 days to take action on the 303(d) list

How is the 303(d) List Submitted to EPA?

303(d) list* (impaired/threatened waters)

305(b) report (overall health of waters)

+ **314 report** (health of lakes/reservoirs)

= Integrated Report (IR)

The 303(d) list and 305(b) report are both due April 1 of every even-numbered year. EPA has recommended an Integrated Report since the 2002 reporting cycle

*Requires EPA approval

What happens to Waters on the 303(d) List?

For waters identified on the 303(d) list:

- TMDLs are established for all pollutants preventing or expected to prevent attainment of WQS
- TMDLs are established at levels necessary to attain and maintain the **applicable narrative and numerical WQS**

Applicable Regulations: 40 CFR 130.7

What is a TMDL?

Maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant

Determines a pollutant reduction target and allocates load reductions necessary to the source(s) of the pollutant

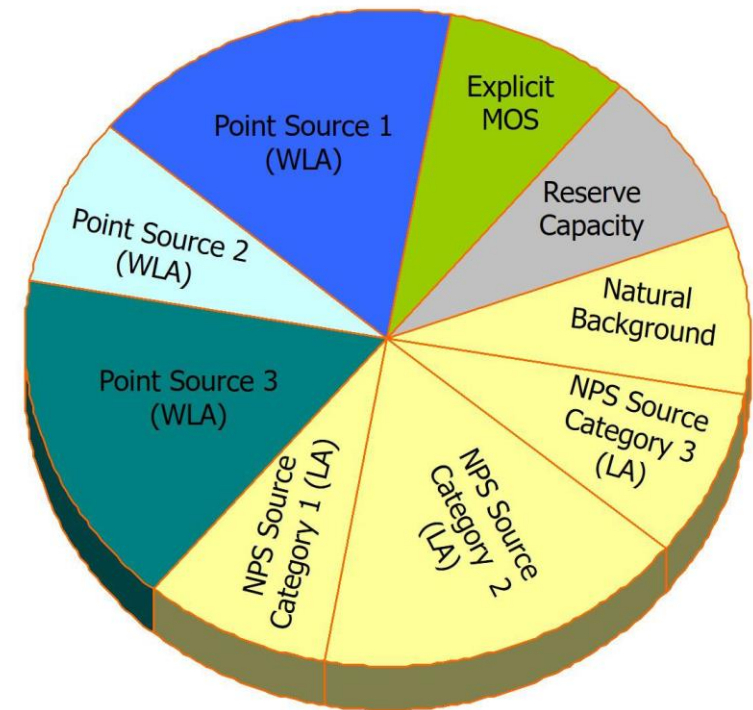
$$\text{TMDL} = \Sigma \text{WLA} + \Sigma \text{LA} + \text{MOS} + \text{FG}$$

Load Allocations

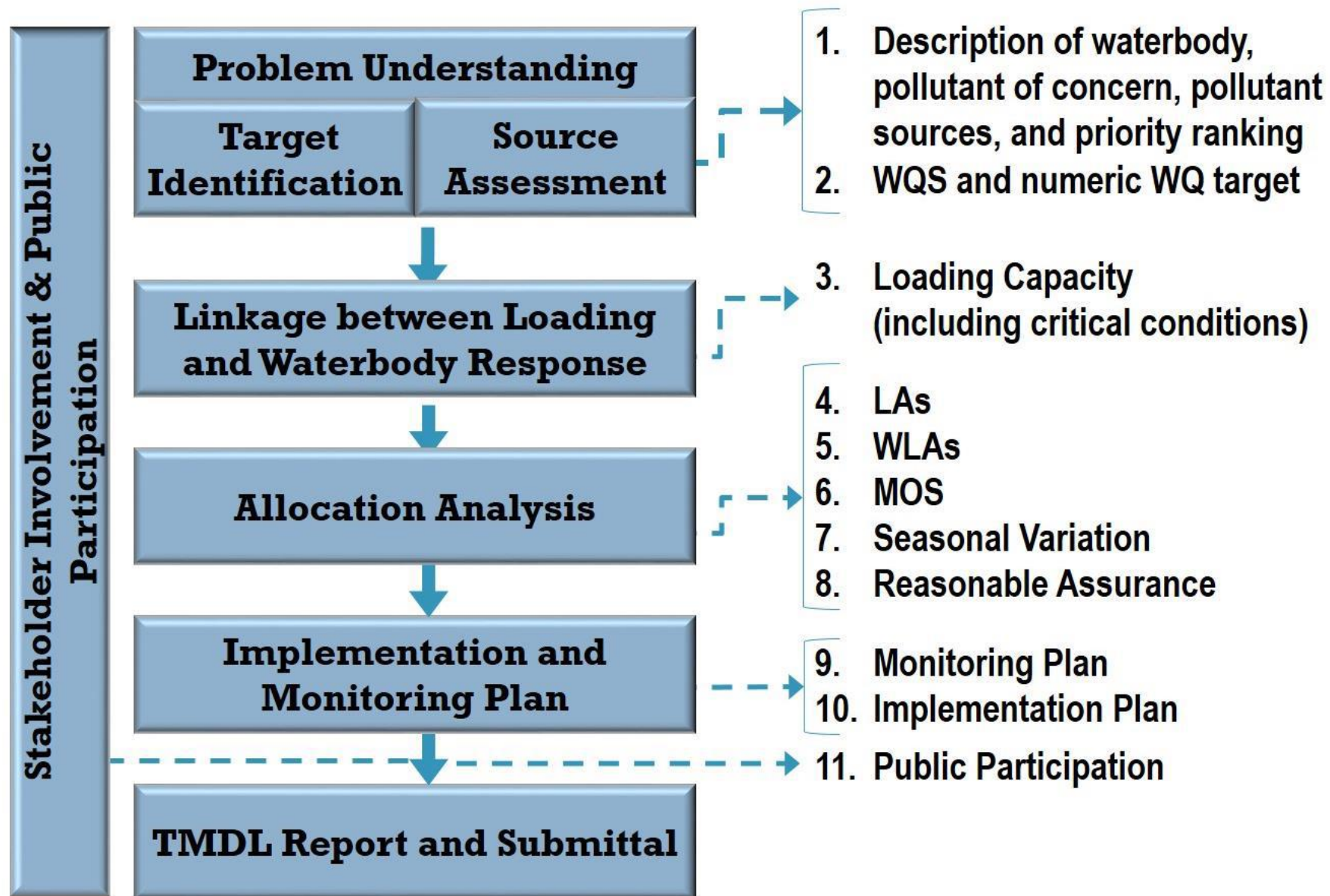
TMDLs are expressed as

- Mass (e.g. pounds per day)
- Energy (e.g. heat in temperature TMDLs)
- Or “other appropriate measure” (CFR 130.7)

Emphasis on TMDLs expressed as daily loads



Elements in a TMDL Submittal



TMDL Development Responsibilities

States, authorized tribes and territories:

- **Develop** draft TMDLs
- **Request and respond** to public comments on their draft TMDL
- **Submit** the final TMDL* to EPA for review and action

EPA has 30 days to approve or disapprove the TMDL

- If EPA disapproves a TMDL, EPA has 30 days to develop a TMDL for the state, tribe or territory

*Even if third parties assist in the development of the TMDL or its supporting analysis, such TMDLs must still be submitted to EPA by the state(s)

Public Participation in TMDL Development

Public/stakeholder roles in the TMDL process can include:

- Providing data and information to the states
- Reviewing and commenting on impaired waters list
- Reviewing and commenting on draft TMDLs
- Assisting in the development of TMDLs

What happens after a TMDL is Done?

Point Sources:

Permit limits consistent with WLA are enforceable under CWA through National Pollutant Discharge Elimination System (NPDES)

Issued by EPA or states with delegated authority

Nonpoint Sources:

No federal regulatory enforcement program

Primarily implemented through state/tribal/local NPS management programs (few w/ regulatory enforcement)

TMDLs are not self-implementing under 303(d)

Section 303d Vision

- A renewed approach to focusing existing programs to achieve WQ goals
- Works within existing regulatory frameworks

