WATER QUALITY MANAGEMENT

The Clean Water Act
Restoring National Water Quality

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THE CLEAN WATER ACT

- BACKGROUND
- Federal Water Pollution Control Act
- Initial Promulgation…….. 1948
- EPA 1970 and the November 1972 Amendment

- NATIONAL WATER GOALS
- Discharge of **pollutants** into navigable waters be eliminated by 1985
- Water quality that provides for the protection and propagation of fish, aquatic life and wildlife by July 1983
- The discharge of toxic pollutants in **toxic amounts** be prohibited

THE CLEAN WATER ACT

- The 1972 Amendment
- The most comprehensive of all the Amendments, radically changing the federal government involvement and oversight of water pollution control. For the first time an Amendment included provisions for a federal permitting program:
- **The National Pollutant Discharge Elimination System**

- The Amendment Required:
- (a) An NPDES permit is required for any point source discharge to surface
- waters of the U. S.
- (b) Wastewater must comply with the Best Technology Economically
- Available [BAT]
- (c) NPDES effluent limitations must be based on the more stringent
- of technology or Water Quality Standards

WATER QUALITY STANDARDS

- WQS [40 CFR 131] …Three Components
- (1) Existing and Designated Uses
- (2) Numeric/Narrative Stream Criteria
- (3) Antidegradation Requirements

- WQS are the primary water quality management function of the States, [Section 303(c) of the CWA] with EPA providing scientific/technical support, review and approval of State Standards and only promulgating standards where States fail to satisfy certain minimum requirements.

WATER QUALITY STANDARDS

- WQS Minimum Requirements
- (1) Criteria consistent with the uses to be protected
- (2) Use designations consistent with the CWA provisions
- (3) Sound technical & scientific methods and analysis used to support
- WQS tri-annual review and revisions
- (4) Antidegradation Policy
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- Antidegradation Policy
- (a) Ensures that existing water quality will always be maintained
- (b) Ensures that high quality waters cannot be lowered unless
- significant socio-economic reasons are provided and cannot be
- lowered below that necessary to maintain existing uses.
- (c) Ensures that surface water quality of exceptional national value is
- maintained.

THE NPDES PROGRAM

- Authorized under Section 402 of the CWA, the NPDES permitting program requires that all facilities that discharge **pollutants** from a **point source** into **surface waters** of the U. S., are required to first obtain a permit. The program, in effect since 1972, has proven to be the cornerstone of the water quality management program and is seen, by most environmentalists and regulators as the primary reason for the improvements in national water quality.

- An NPDES Permit typically includes:
- (1) Effluent Limitations
- (2) Monitoring & Reporting requirements
- (3) Standard & Special Conditions
- (4) A compliance schedule
- (5) Pre-treatment Provisions

WATER QUALITY PLANNING & MANAGEMENT

- Sections 106, 205(j), 205(g), 208, 303 and 305 of the CWA along with 40 CFR PART 130 covers the requirements for the rather comprehensive Water Quality Management Plan [WQM] and Continuing Planning Process [CPP] meant to ensure a process and program for achieving the goals of the federal CWA.

- The State WQM Plans are made-up of:
- (1) Water Quality Standards
- (2) 305(b) bi-annual reporting on water quality assessments
- (3) The 303(d) listing of surface waters that are violating WQS
- (4) The TMDL processing and implementation assessment
- (5) The iterative CPP that identifies critical water bodies, develops
- TMDL plans and control measures for compliance with WQS

TMDL

- **Total Maximum Daily Load (TMDL) is the amount of a pollutant loading that a surface waterbody can assimilate and still meet/maintain water quality standards.**
- **The TMDL process is a planning tool meant to develop and prioritize pollutant reduction goals that will improve impaired surface waters in meeting water quality standards.**

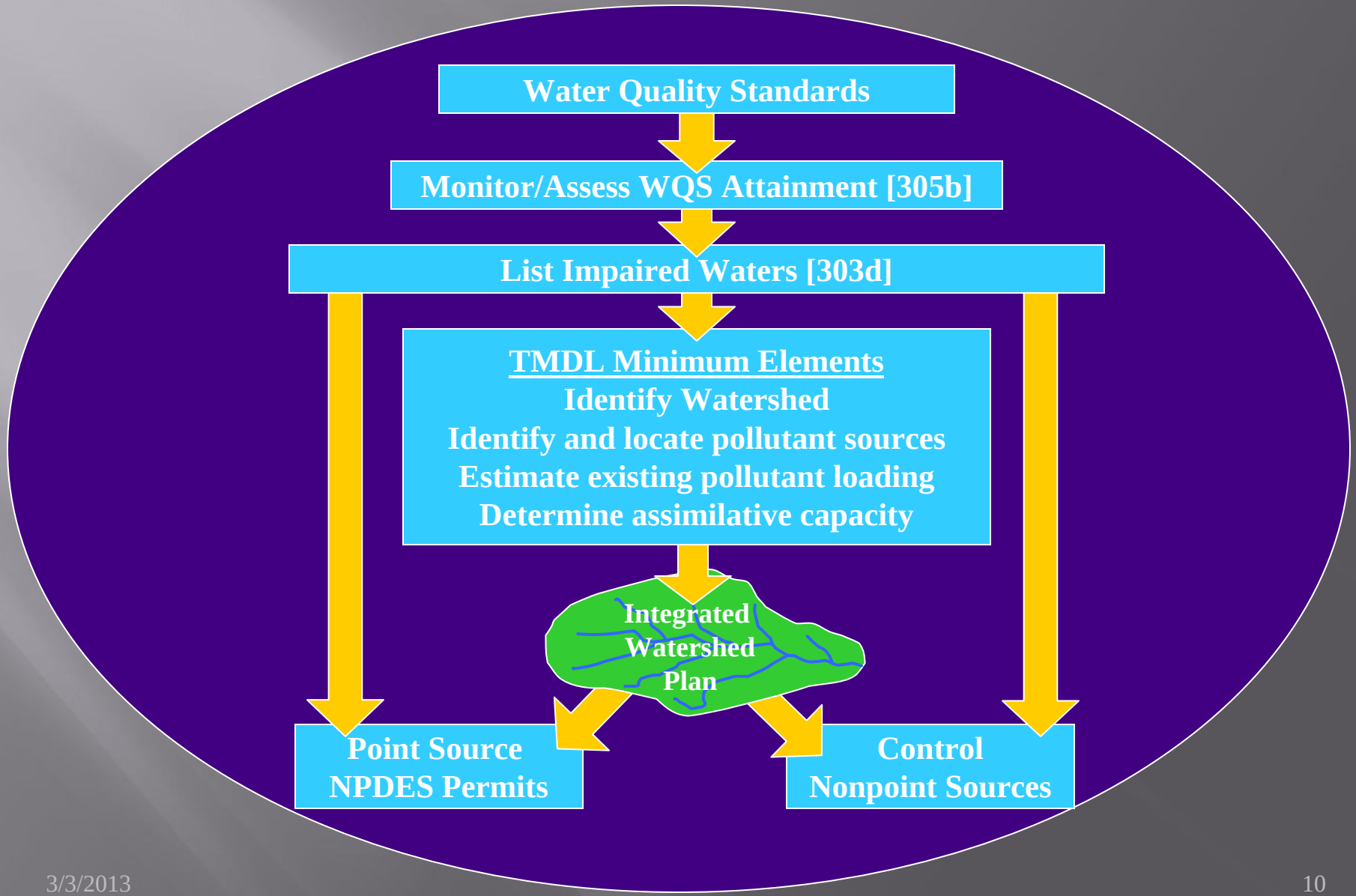
TMDL

TMDLs consists of three distinct parts:

- Point Source Wasteload Allocations [WLA]
- Non-Point Source Load Allocations [LA]
- Margin of Safety [MOS]

TMDL = WLA + LA + MOS

Clean Water Act Framework



Legal Background

Section 303(d) of the Federal Clean Water Act

- **States must identify, based on 305(b) bi-annual assessments, list and prioritize all waters where technology-based treatment requirements will not attain and /or maintain applicable water quality standards.**
- **Total Maximum Daily Loads (TMDLs) must be established for these waters to ensure attainment of water quality standards.**

Watershed Planning Management Cycle

- A stream/watershed assessment [305(b)]
- Stream segments that are impaired are placed on the 303(d) list.
- TMDLs are completed to address the impaired stream segments
- An implementation plan is developed
- Remedial activities are implemented
- The watershed is re-evaluated

The TMDL Process has three Steps:

1. Identify impaired or threatened waters (303(d) List) & Pollutants
2. Develop the total allowable load necessary to attain and maintain the applicable water quality standards (the TMDL)
3. Identify the measures necessary to achieve the allocations and implement these measures (implementation plan) then re-evaluate success

OR…

303d List—›TMDL—›Implementation Plan —›Assess

Typical Causes of Impairment Pennsylvania

- Siltation – 8.7%
- Metals – 6.2%
- pH – 3.3%
- Nutrients – 3.1%
- Organic Enrichment/Low Dissolved Oxygen – 1.6%
- Water/Flow Variability –1.5%
- Other Habitat Alterations – 1.1%

TMDL Development

- Evaluate watershed land use and all potential sources of the pollutant causing the impairment
- Develop applicable WQS goals
- Use water quality and land use models to calculate total allowable load (WLAs and LAs)
- Consider impacts of background pollution, critical, and seasonal environmental conditions
- Include a Margin of Safety (MOS), with growth
- Demonstrate that the proposed TMDL can reasonably be met for approval by EPA
- Provide for public participation/input