

Monitoring and Assessment Under the Clean Water Act (CWA)

A Watershed Academy Webcast



Wednesday, April 7, 2010
1:00pm – 3:00pm Eastern

Ellen Tarquinio, *Environmental Protection Specialist*, EPA's Monitoring Branch

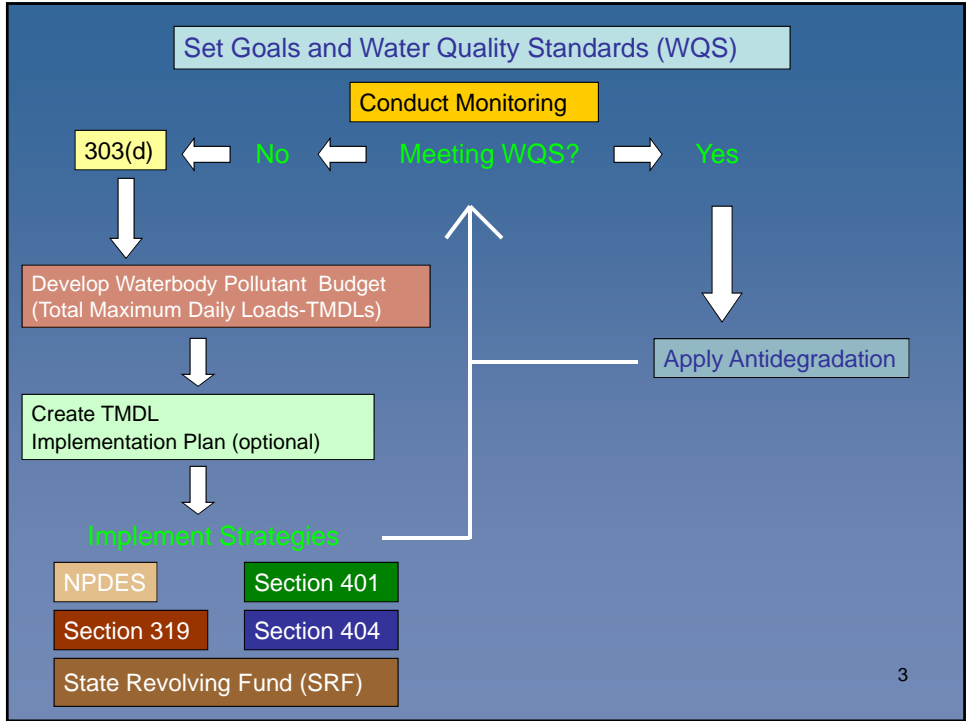
William (Bill) Painter, *Environmental Scientist*, EPA's Watershed Branch

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What Does This Cover?

- Monitoring under the Clean Water Act
 - States & Tribes have prime responsibility
 - Monitoring assumed throughout ('106(e))
- Monitoring objectives & elements
 - What should be monitored
 - Tools for monitoring & assessment
- Reporting on water quality



Clean Water Act/Monitoring & Assessment

- States/Tribes/Territories have major role to assess & report if waters meet the fishable & swimmable goals of the CWA
 - Report on condition of all waters, esp. extent that support healthy aquatic life and recreation (Section 305(b))
 - List impaired waters that do not meet water quality standards and need a TMDL (Section 303(d))
 - Set & refine water quality standards
 - Issue and ensure compliance with NPDES permits
 - Manage NPS to meet WQS
 - States must have adequate monitoring to be eligible for grants and to carry out program activities (Section 106(e))

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Critiques of Water Monitoring Programs

- Many studies* find that EPA and States need better data to:
 - Support all management decisions
 - Develop and refine water quality standards
 - Implement measures to protect and restore waters
 - Evaluate the effectiveness of management actions
 - Make scientifically defensible assessments of the condition of all waters, similar to reports on economic indicators

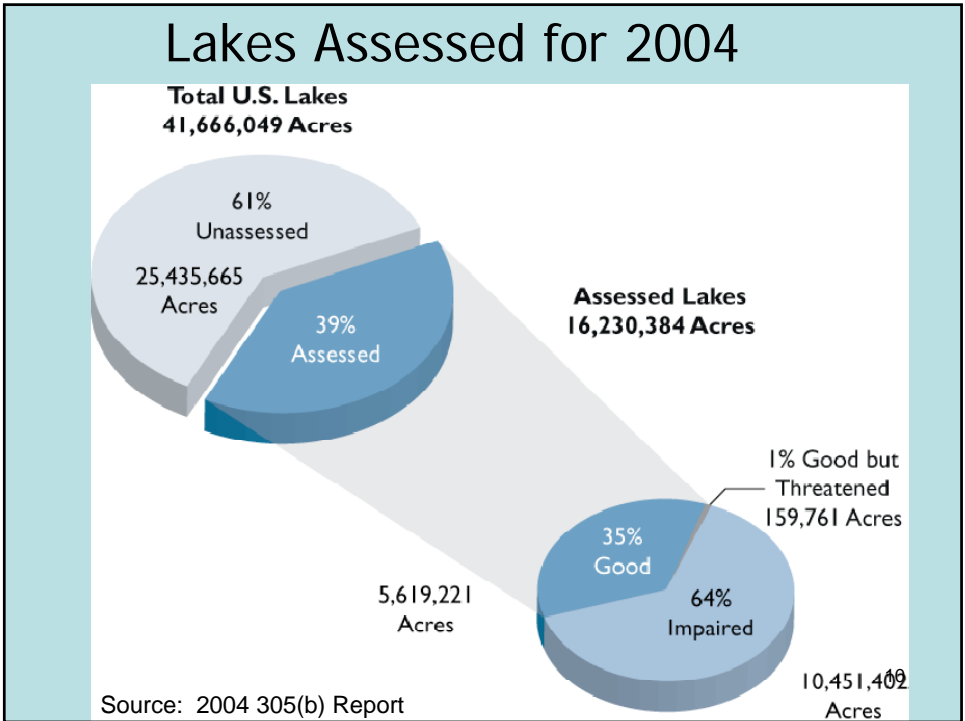
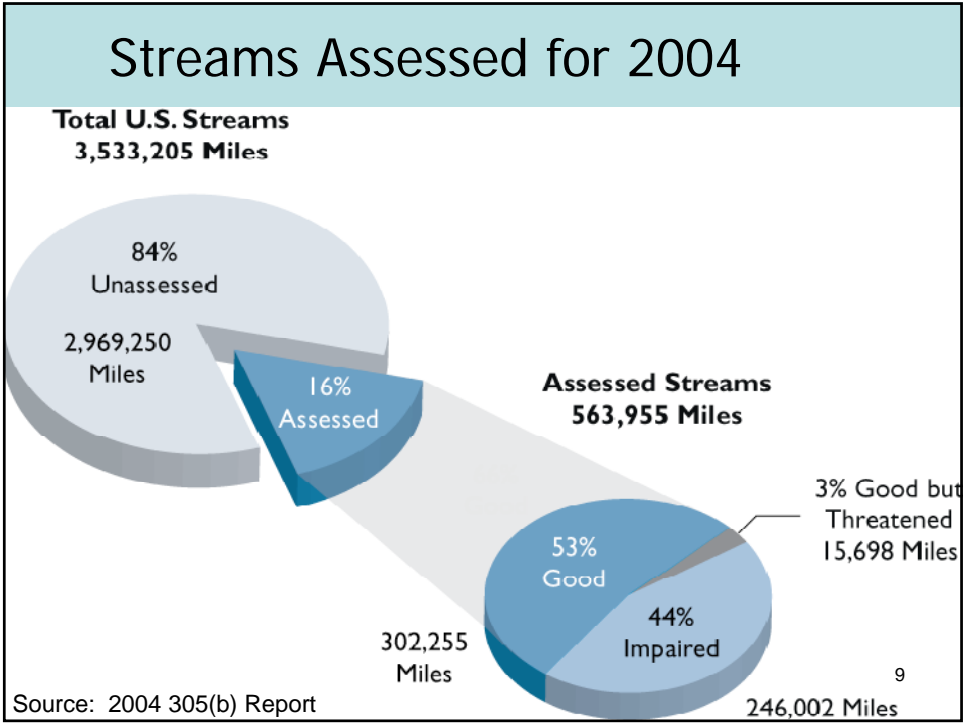
*GAO, National Research Council, National Academy of Public Administration, EPA's Report on the Environment, and others

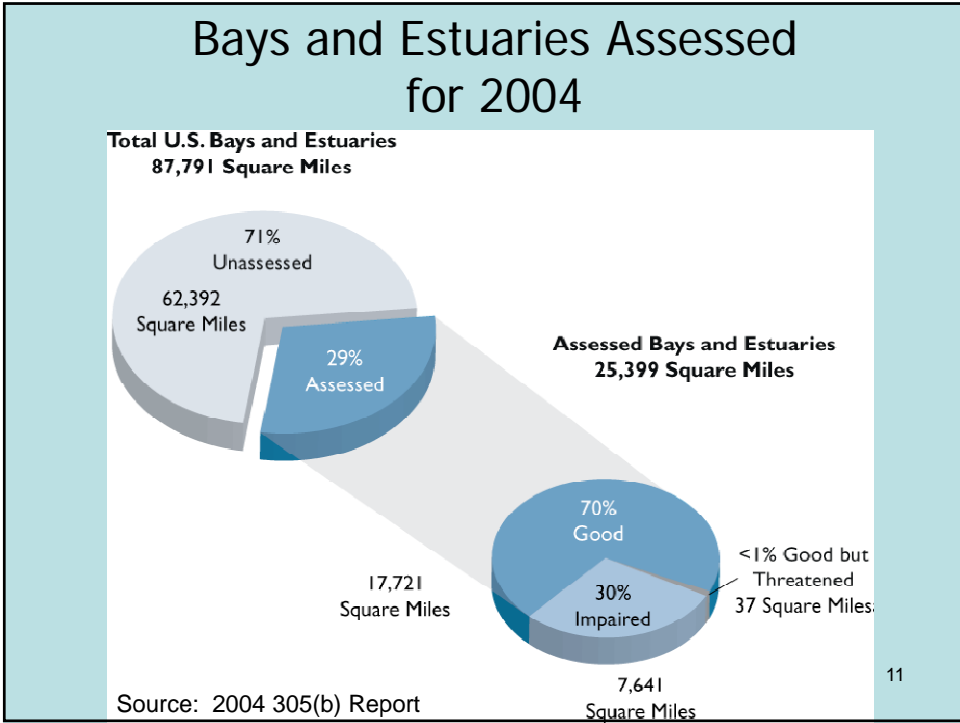
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Monitoring & Assessments Needed at Multiple Scales

- Monitoring programs should be able to answer questions at different geographic scales
 - Water conditions nationwide, statewide, and across jurisdictional boundaries
 - Water quality at sub-state, watershed and segment scales
- Limitations on use of 305(b) and 303(d) reports
 - Small portion of water resources are assessed
 - Indicators, parameters, and sampling procedures vary
 - Methods to define amount of water assessed vary

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Actions to Improve Monitoring

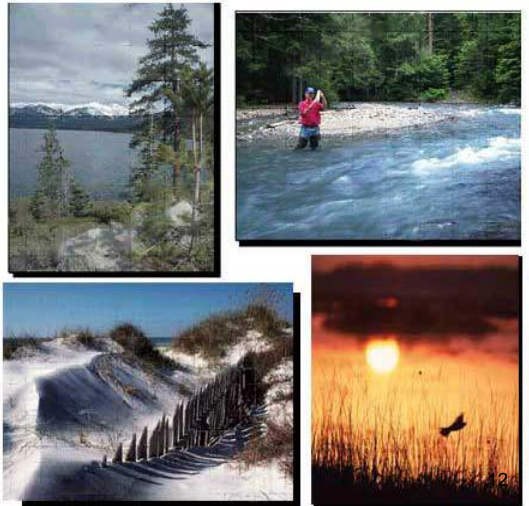
- Strengthen State, Tribal and Interstate programs

Elements of a State Water Monitoring and Assessment Program

March 2003
EPA 841-B-03-003

Final Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act

For Fiscal Years 2007 and Beyond
EPA 832-R-06-003



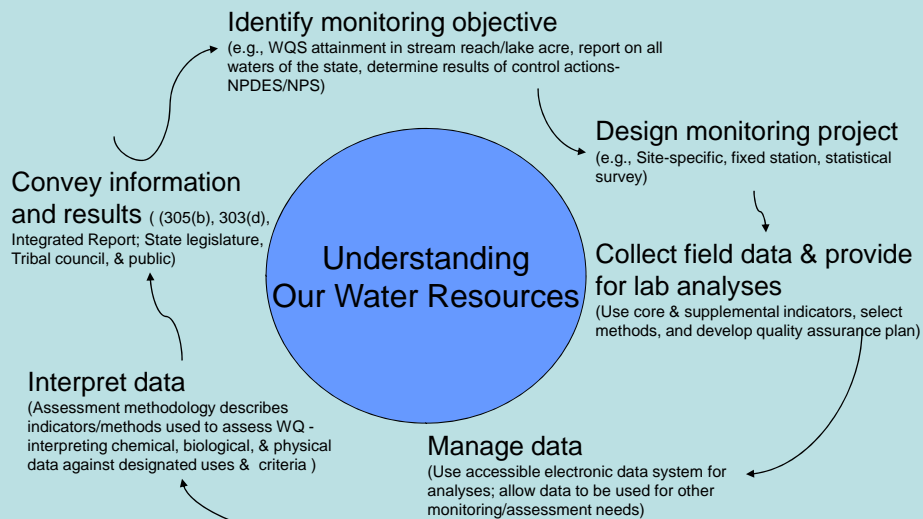
Actions to Improve Monitoring

- Collaborate to produce statistically-valid assessments of the nation's waters
- Expand accessibility to and use of data



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Critical Monitoring Elements



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Identify Monitoring Objectives

- What question(s) does your program, State or Tribe, the public or others want to answer?
- Monitoring objectives are broad
 - Are waters getting better over time?
 - Are the streams healthy?
 - Do they support Aquatic Life Uses? Recreational Uses? Drinking Water Supply?
 - Are the fish safe to eat?
 - Are protection and restoration efforts working?
- Monitoring designs vary depending upon the objectives

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Design Monitoring Project

- This is a critical step
 - The **who**, **what**, **how**, and **where** of monitoring
- Translate objectives into specific monitoring goals
 - Specify what needs to be measured (or modeled or assessed in some way).
 - Select indicators/parameters
 - For example, translating “Is it safe to swim in the stream?” to measuring pathogens, nutrients, flow, macroinvertebrates, taxa richness
- Are new data needed? Or will it need to be collected?
- Costs are a major consideration

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Approximate Costs

Field sampling costs per site

\$1000/site



\$5000/site

- Seasonal employees
- 2 person field crews
- Consumables
- Sites close-by, easy access
- Simple reporting

- Permanent Staff
- 3 to 4 person field crews
- Consumables + equipment
- Remote sites, difficult access
- Glossy reporting

Plus

Lab costs (per sample):

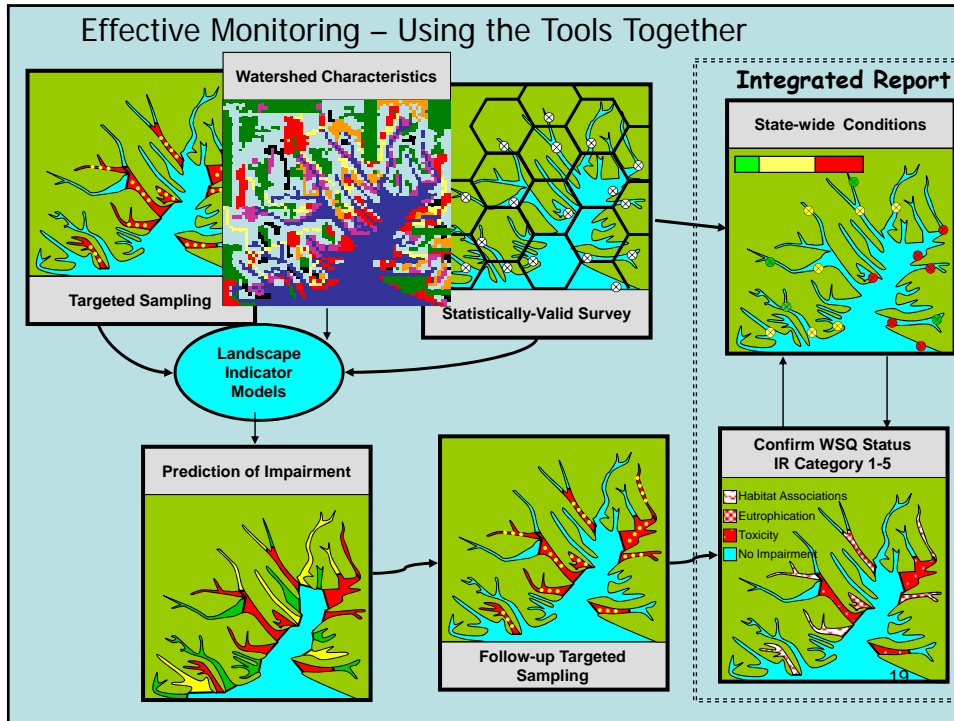
- Water (Conventionals): \$70 to \$150
- Water (Metals): \$25 to \$115
- Water (Priority pollutants): \$100 to \$200
- Water (Pathogens): \$20 to \$50
- Fish Tissue Contaminants: \$150 to \$1500
- Macroinvertebrates (identification & counting): \$150 to \$350

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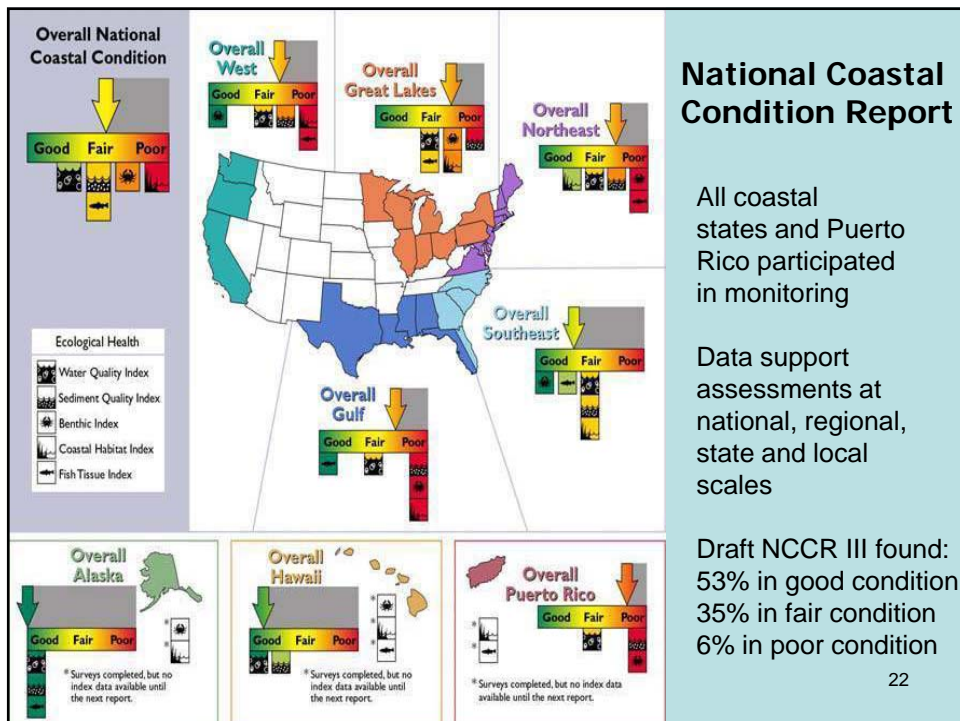
Monitoring Design— Where to collect samples

Monitoring Objectives	Scale
1) Assess a specific water quality improvement project	Stream reach, lake size or shoreline mile
2) Identify healthy and degraded streams within a watershed	Watershed scale (at what size?)
3) Determine baseline condition 4) Evaluate water quality trends	Region, State, Reservation or Nationwide

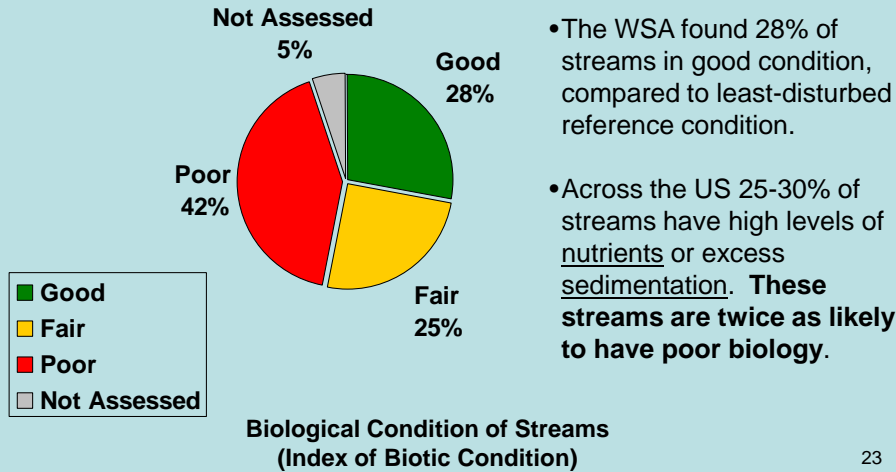
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Monitoring Design	Types of questions they can answer— Combination of tools can serve decisions at multiple scales
Statistically-valid survey	<ul style="list-style-type: none"> • Predict proportion of all waters in good or poor condition • Measure broad-scale water quality trends • Prioritize targeted monitoring
Modeling and landscape analysis	<ul style="list-style-type: none"> • Determine where water quality is likely impaired • Predict water quality trends • Prioritize targeted monitoring
Targeted monitoring	<ul style="list-style-type: none"> • Assess WQS attainment for specific segments • Measure localized water quality trends • Identify sources of pollutants to specific waters • Support development of local management measures (TMDL, NPDES permits, NPS BMPs, WQS) • Assess performance of management measures



2006 Wadeable Streams Assessment

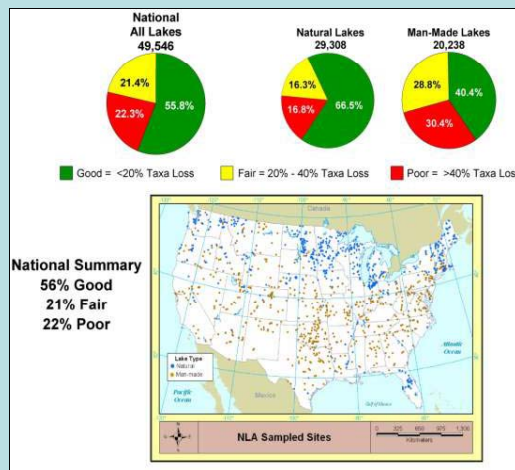


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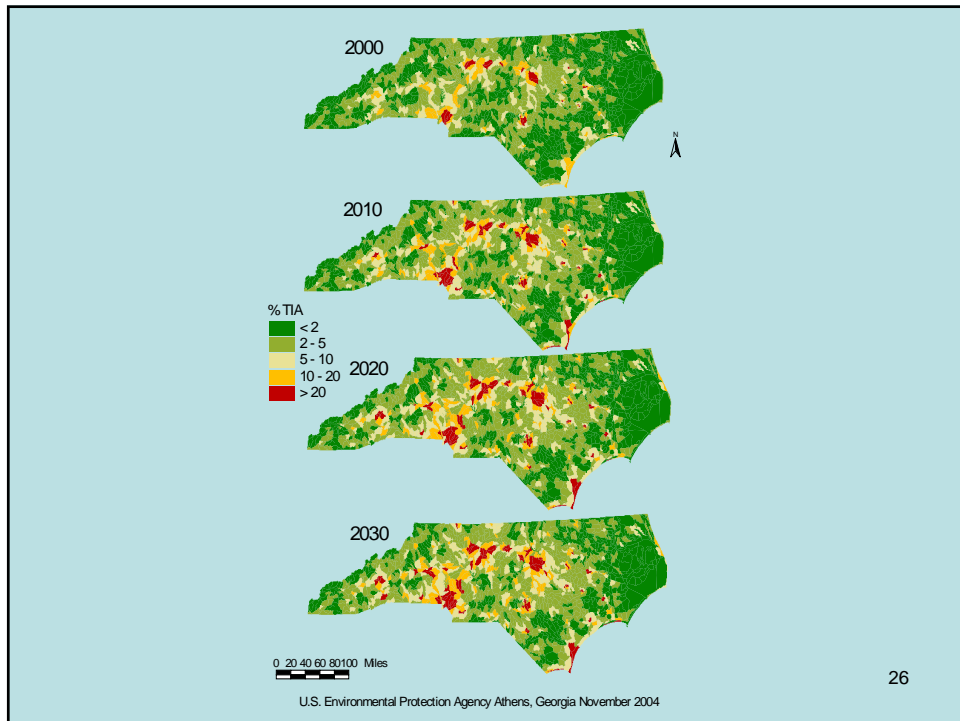
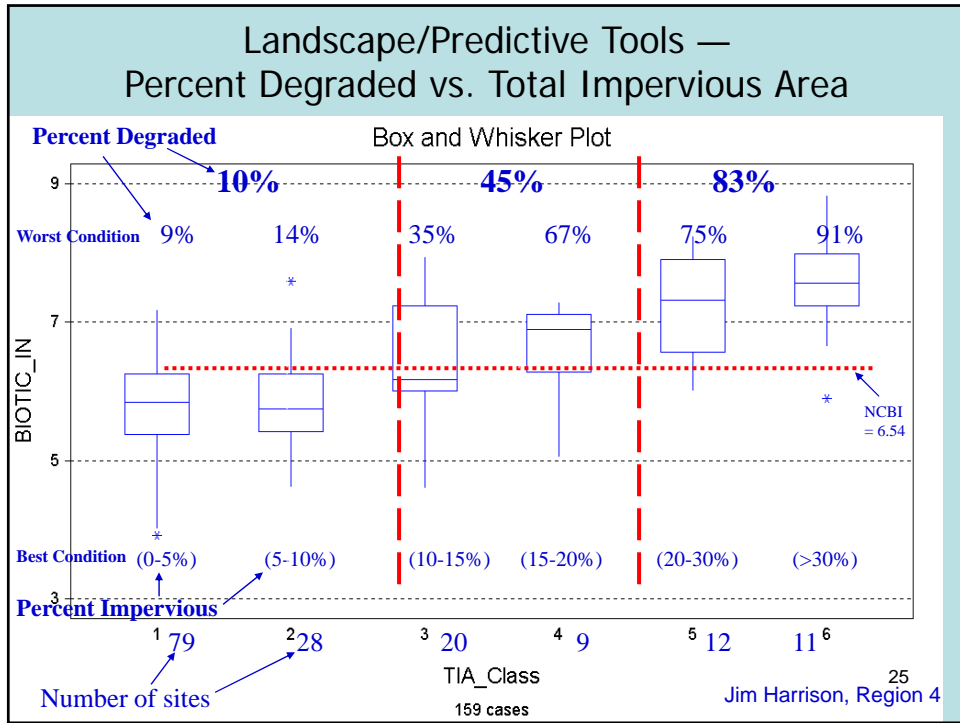
Condition of the Nation's Lakes: Biological Condition Using Taxa Loss Index

- Based on least-disturbed conditions in major ecological regions.
- Across the US, 36% of lakes have poor lakeshore habitat conditions. These lakes are three times more likely to have poor biological health.

Source:
National Lakes Assessment



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Who Monitors Water Quality?

- States, territories, tribes and interstate organizations implement monitoring programs under CWA 106
- Federal agencies monitor to support their management and research needs
- Volunteer and citizen groups monitor to understand local conditions
- Other organizations include local government, academic organizations...

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What Should be Monitored?

	Aquatic Life	Recreation	Drinking Water	Fish / Shellfish
C O R E	Biological communities Basic chemistry(e.g. DO, pH) Nutrients Flow Habitat assessment Landscape condition	Pathogen indicators (<i>E. coli</i> , enterococci) Nuisance plant growth Nutrients Chlorophyll Flow Landscape condition	Trace metals Pathogens Nitrates Salinity Sediments/TDS Flow Landscape condition	Pathogens Mercury Chlordane DDT PCBs Landscape condition
O T H E R	Ambient toxicity Sediment toxicity Other chemicals of concern in water or sediment Health of organisms	Other chemicals of concern in water or sediment Hazardous chemicals Aesthetics	Other chemicals of concern in water or sediment VOCs (in reservoirs) Hydrophylic pesticides Algae	Other chemicals of concern in water or sediment

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How? – Protocols, Field and Laboratory Methods

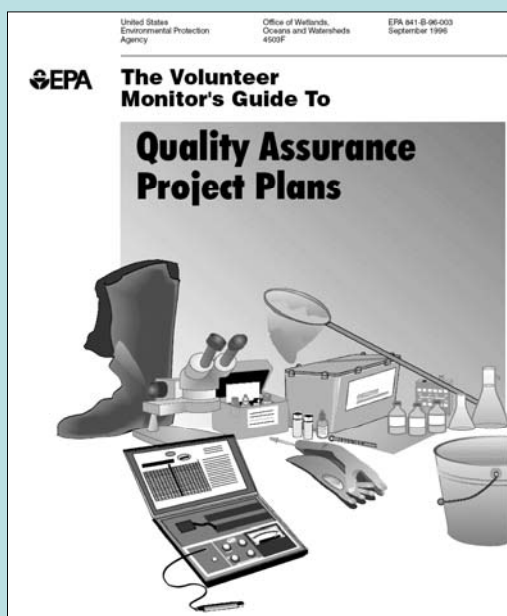
- Chemistry
 - Usually well documented field and lab methods
- Biology
 - Usually well documented, sometimes generally accepted field and lab methods (depends on the waterbody type...i.e. lakes, streams, wetlands, etc.).
- Habitat/Physical Parameters
 - Usually well documented, sometimes generally accepted field methods (depends on the waterbody type...i.e. lakes, streams, wetlands, etc. and the geographic location.)

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Before
you go out in
the field....

You need to
develop a Quality
Assurance Project
Plan (QAPP)



Managing Data

- Data should be managed for analysis and storage in electronic format and should be georeferenced
- EPA's STORET warehouse/Water Quality Exchange provides the framework for the sharing of water quality monitoring data. Allows EPA, States, and Tribes to effectively share information across jurisdictional or organizational lines.
 - Redesigned STORET to facilitate easier upload and download of water quality data
 - New webservice tools for retrieving data at the watershed scale and for small users, such as watershed groups and Tribes
 - (www.epa.gov/storet)
 - Hint – make sure that your contract Lab sends data in a STORET ready format

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Managing Data

- Monitoring Data in STORET can be used by EPA and the States to:
 - Support CWA decision making
 - Use Attainability Analyses
 - Models
 - Beach Monitoring
 - Assess condition of waters under Section 305(b)
 - Evaluate existing and available data to identify impaired waters: 303(d)
 - Implement CWA programs
 - Set protection and restoration priorities
 - Set Water Quality Criteria
 - Support Reasonable Potential Analysis for NPDES permits
 - Develop and implement TMDLs and Watershed Plans
 - Maximize value of monitoring investment

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Turning Data into An Assessment

Aquatic Life Indicators	Recreation Indicators
Dissolved Oxygen	E. coli
pH	Nutrients
Temperature	Chlorophyll
Macroinvertebrates	



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Applying Water Quality Criteria

- Narrative or numeric expressions of parameters designed to protect designated uses
 - Temperature, pH, toxics
- Biological criteria
 - Numeric or narrative expressions that describe the "desired" aquatic communities inhabiting a waterbody.



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Assessment Methodology

- Describes the hierarchy of indicators, methods, and tools used to assess water quality
 - Establishes a record and provides for consistency from one reporting period to the next
- Documents procedures
 - For collecting and reviewing all readily available and existing data and information
 - For making WQS attainment decisions for all applicable criteria
 - Address numeric criteria, narrative criteria, and designated uses
 - Define data quality and documentation needs
 - Describe analytical approaches for interpreting data and information

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Assessment Methodology

- Example assessment methodology contents:
 - Number of exceedances of magnitude, duration and frequency needed to determine impairment
 - Age of data (e.g. less than 5 years old for conventionals, habitat and biological, less than 10 years old for toxics)
 - What biological/habitat data will be used? (e.g. it must be collected with a certain protocol, during an index period and identified to genus)
 - For parameters without numeric criteria, what is “degraded” (e.g. an Benthic Index score of 48)
 - Data must have been collected under an approved QAPP

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Communicating Results

- Summarize the information
 - Few people understand the raw data
 - Provides an interpretation of the data tailored to specific audiences
 - For example, State and Tribal decision-makers, program managers, state legislators, watershed and environmental organizations, newspapers, etc.
 - Presentations and written documents are both needed
 - Maps and graphics are most effective

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305(b), 303(d), and Integrated Reports

- Integrate CWA water quality assessments & reports
- Describe assessment methodology for WQS attainment decisions
 - 303(d) asks states to describe their assessment methodology when submitting their impaired waters list
- Categorize state waters based on WQS attainment status
- Present results of probability-based design at state or watershed scale
- Establish monitoring priorities for next 2 years
- Establish TMDL development priorities for all Category 5 waters (impaired waters needing a TMDL)

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Integrated Report Categories

- 305(b) Report**
1. Attaining all designated uses
 2. Attaining some designated uses, and insufficient or no data and information to determine if remaining uses are attained
 3. Insufficient or no data and information to determine if the standard is attained
 4. Impaired or threatened for one or more designated uses but not needing a TMDL because --
 - a. TMDL has been completed
 - b. Expected to meet standards
 - c. Not impaired by a pollutant
 5. Impaired or threatened by pollutant(s) for one or more designated uses and requiring a TMDL
- 303(d) List**

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Information Sources - Monitoring and Assessment

- **General Monitoring Information**
www.epa.gov/owow/monitoring
- **Consolidated Assessment and Listing Methodology guidance**
www.epa.gov/owow/monitoring/calm.html
- **Clearinghouse on methods/procedures for monitoring for water, sediment, air and tissues**
www.nemi.gov
- **Information on Biological Assessments**
www.epa.gov/owow/monitoring/bioassess.html
- **2006 Integrated Report Guidance**
www.epa.gov/owow/tmdl/2006IRG/#documents
- **National Water Quality Reports (under Section 305b)**
www.epa.gov/305b
- **State Water Quality Assessments and Impaired Waters (305b and 303(d) Integrated Reports)**
www.epa.gov/waters/ir/
- **National Aquatic Resource Surveys (Statistical Surveys of the Nation's Rivers and Streams, Lakes, Coastal Waters, Wetlands)**
www.epa.gov/aquaticsurveys
- **National Lake Fish Tissue Study**
www.epa.gov/waterscience/fishstudy

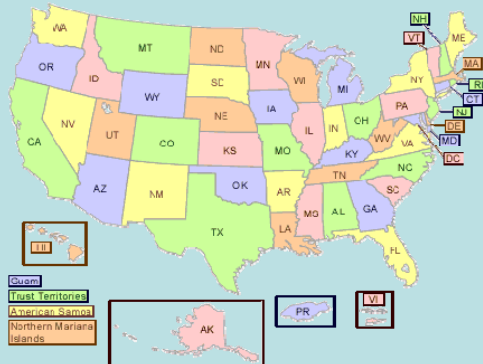
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Water Quality Assessment and Total Maximum Daily Loads Information (ATTAINS)

The Assessment Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) provides information reported by the states to EPA about the conditions in their surface waters. This information is required every two years under Clean Water Act Sections 305(b) and 303(d).

Because of differences in state assessment methods, the information in this site should not be used to compare water quality conditions between states or to determine water quality trends. Check out the Frequent Questions box on the right to learn more.

Which state reports are available? National Summary of State Information



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Questions?



Seventh National Monitoring Conference *Monitoring From the Summit to the Sea*

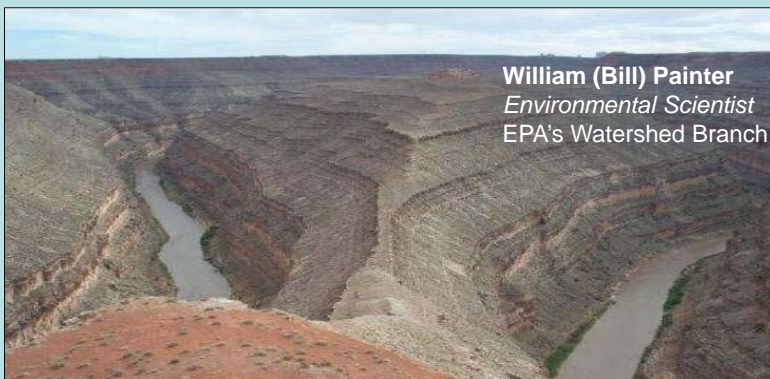
April 25-29, 2010

Denver, Colorado

<http://acwi.gov/monitoring/conference/2010>

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**WQ ASSESSMENT UNDER
CWA SEC. 303(d):
Lists of Waters Not Meeting
State Water Quality Standards**



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**WATER QUALITY CRITERIA:
REFRESHER**

- NARRATIVE WQC
 - “No toxics in amounts harmful to humans, wildlife, or aquatic life”
 - “No nuisance levels of aquatic plants”
 - “Water free from floating scum or sheen”
- NUMERIC WQC: Next *slide*

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NUMERIC WQC: FORMAT

- ***Which of following look like fully-articulated numeric WQC?***
 - 25 mg
 - 1 liter
 - 25 mg/liter
 - 24 hours
 - 1 week
 - 10% of the time
 - once in 5 years

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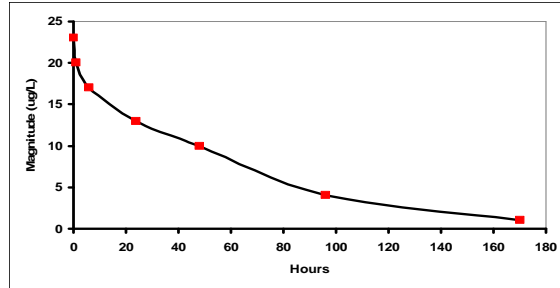
WQS: Numeric Criteria

- Concentration/Magnitude
 - 1 mg/L, 35 bacteria/100 ml, 75° F, pH 6 to 9
- Duration/Exposure Interval
 - Acute: instantaneous, 1-hour, 1-day, etc.
 - Chronic: 4-day, 7-day, 30-day, 1 year... long term average(LTA)
- Frequency/Recovery Interval
 - 1 year, 3 years, 10 years, etc.

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Intensity of Stress vs. Length of Exposure Period

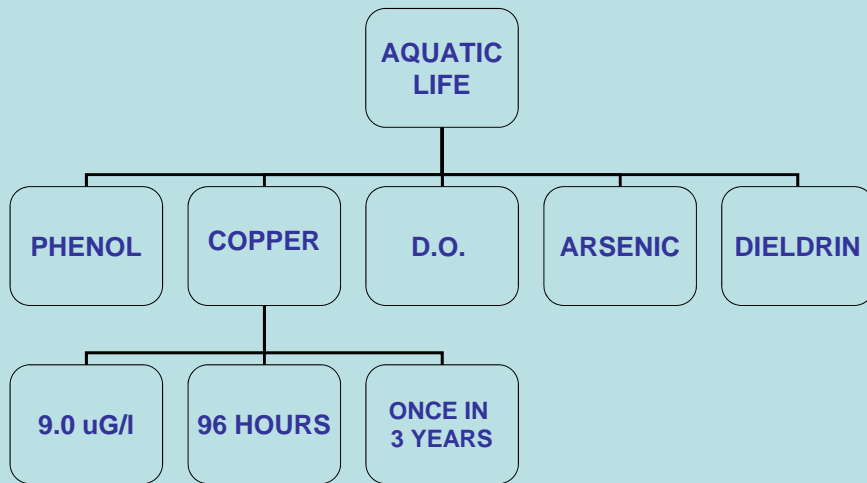
Magnitude vs. Duration
LC 50 – Ethylmethyl Nasteer



EPA acute WQC for aquatic life (aka CMC): 1 hr average
EPA chronic WQC for aquatic life (aka CCC): 96 hour average

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WQC: BIG PICTURE



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WQS: Exemptions

- Spatial/Areal
 - Mixing zones
- Temporal
 - Low streamflow
 - High streamflow
- Natural Conditions

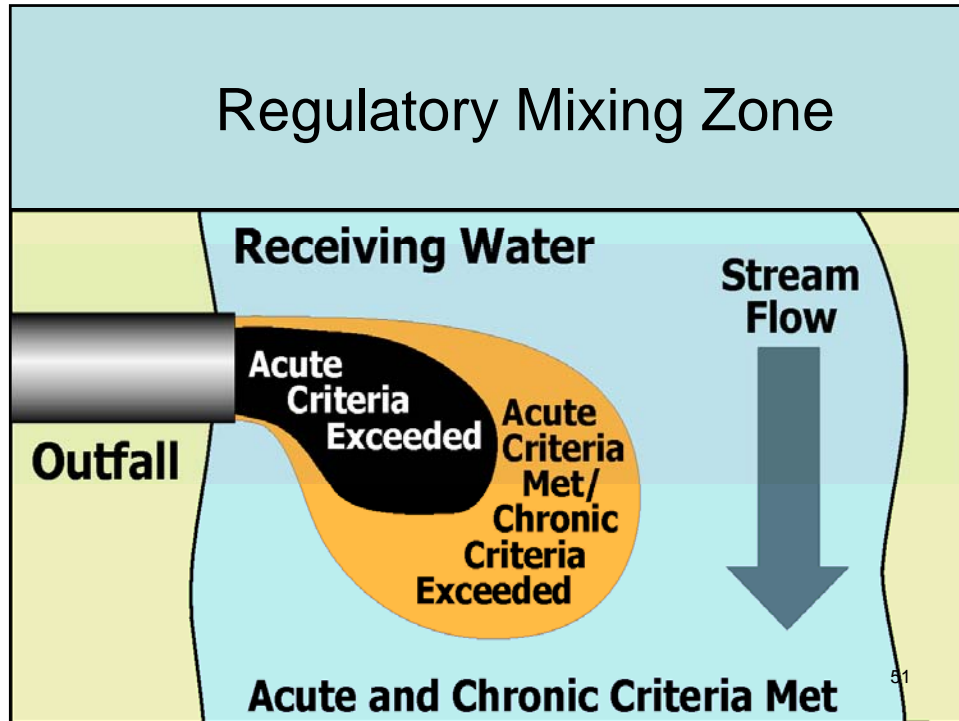


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WQS Exemptions: Spatial

- **“Mixing Zones”**
 - Limited portions of a waterbody where WQS are waived
 - Applies in outfall areas of some point sources
 - Chronic criteria waived, usually not acute
 - Size varies from site to site, but zone of passage for organisms usually required
 - EPA discourages in critical areas (bathing beaches, PWS intakes, fish habitat)

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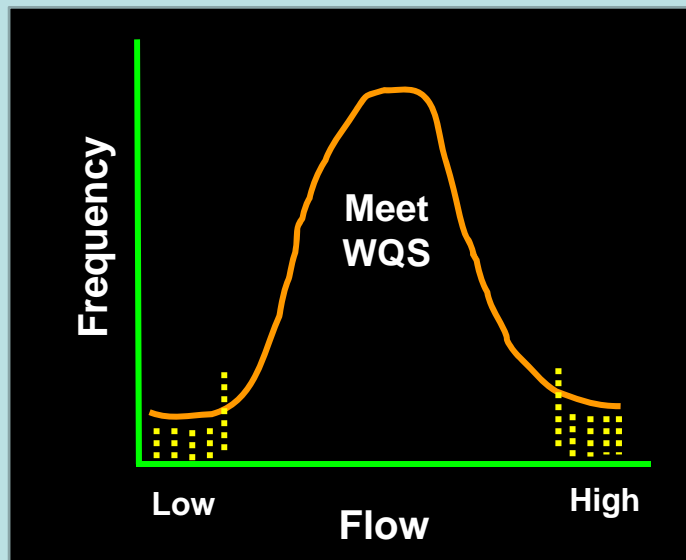
Set Goals and Water Quality Standards

WQS Exemptions: Temporal

- Design Flow Exemptions
 - Allow WQS to be exceeded during rare events
 - Extreme low flows: 7Q10, 1Q3
 - usually applied to continuous dischargers, e.g. municipal sewage plants, industrial facilities
 - Exceptional high flows
 - most relevant to storm-dependent discharges, e.g., municipal storm water

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WQS: Extreme Flow Exemptions



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WQS NOT *Directly* Enforceable

- **If WQS exceeded, “state” obligated to:**
 - 1) Put water on 303(d) list
 - 2) Develop TMDL(s)
 - 3) Write WQ-based NPDES limits
 - consistent with allocations of load in applicable TMDL(s)

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EVEN IF WQS NOT MET...

- NPDES permittees not liable, *if meeting their permit limits*
 - “*permit as a shield*”
 - Permit could need to be tightened
- **No CWA liability for nonpoint sources.**
- **Also—there’s no deadline for meeting WQS**

Hence, shouldn’t say “WQS violated”

-- “WQS exceeded” correct

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WQ Assessment vs. WQS

WQS:

Describe desired condition of a waterbody

- Designated Uses (DUs)
- Water Quality Criteria (WQC)
 - **Based on lab toxicity experiments and epidemiology**

Assessment:

Estimate actual condition of waterbody

- Based on interpretation of monitoring data and other information

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WATERBODY ASSESSMENT

- Information Collection
 - Ambient monitoring
 - Modeling
 - Source ID, land use analysis
- Data Evaluation (QA/QC)
- Data Analysis/Interpretation
 - What does it tell us about ambient water quality?
 - How do ambient conditions compare with WQC?

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ASSESSMENT UNDER SECTION 303(d)

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303(d) LISTS

- 1) Waters not meeting applicable WQS
 - “Water Quality-Limited” Waterbodies
- 2) Waters currently meeting WQS *but* expected to no longer meet WQS, by date for next 303(d) list
 - “Threatened” waters
- Biennial submission by states/tribes to EPA
 - for review and approval/disapproval

40 CFR 130.7(b)

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STEPS IN THE ASSESSMENT PROCESS

1. **Frame the assessment question**
 - Based on applicable WQC
2. **Select the data interpretation method**
 - Derived from the assessment question
3. **Collect/assemble data**
4. **Screen data, per QA/QC**
5. **Apply data interpretation method**

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Sec. 303(d):GATHERING DATA

- “Each state shall assemble...all existing and readily available water quality-related data and information...”

40 CFR 130.7(b)(5)

-- not just data collected by state water quality agency

-- solicit data and information from wide array of likely sources, including the general public

-- must solicit state-wide, not just in basins, watersheds, or other places where state WQ agency focused its monitoring efforts during this 2-year cycle

2006 Integrated Reporting Guidance, Sec. IV.C

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Types of “Existing and Readily Available Information”

Conduct Monitoring

- **Direct evidence of beneficial use impairment**
 - Fish kills
 - Poor biosurvey scores
 - Outbreaks of waterborne diseases
- **Evidence of not meeting a narrative criterion**
 - Sights, smells, etc. (e.g., algal blooms)
- **Exceedence of numeric criterion**
 - Ambient monitoring
 - Dilution calculations/predictive modeling

2006 Integrated Reporting Guidance, Sec. IV.C

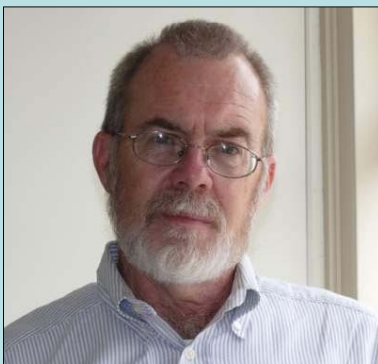
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DATA & INFO REVIEW

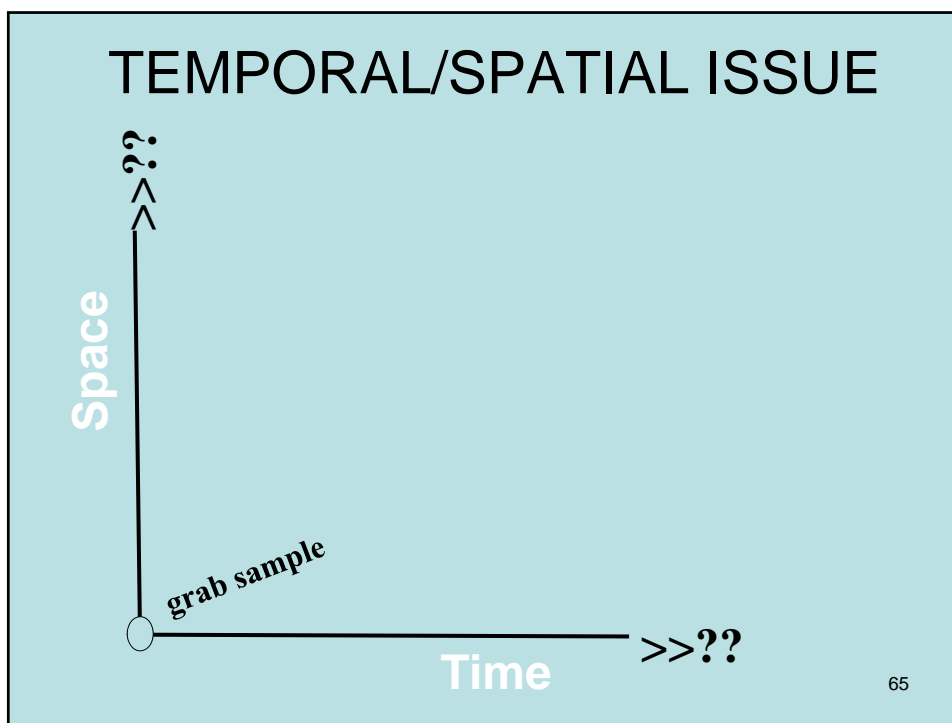
- States must **“evaluate”** all data assembled as result of solicitation
- **Evaluation = screening of data** per:
 - State’s own quality/assurance (QA/QC) protocol
 - State should publish QA/QC protocol
 - Representativeness of *relevant* waterbody conditions
 - *Not merely* long term average conditions
 - Attune to applicable WQC’s criterion-duration and criterion-frequency
 - » 2006 Integrated Reporting Guidance, Sec. IV.D

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Questions?



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More on “Representative”

- What does “representative of waterbody condition” or “representative of ambient water quality” mean:
 - Long term average (LTA) conditions alone?
 - Average Conditions within a certain season?
 - Water contact recreation season?
 - Growth season for algae?
 - Time when aquatic organisms spawn?
 - LTA plus seasonal average?
 - 30 day ave.? 7 day? 4 day? 24 hour? 1hour?
 - Instantaneous maximum/minimum?

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CUTOFFS RE: QUANTITY / AGE

- EPA discourages application of rigid minimum dataset size cutoffs
 - Especially when WQC expressed as an instantaneous, never to surpass value
 - Data quantity requirements should be realistic
 - Minimum dataset size consistent with state's own monitoring program, for example
- EPA discourages use of rigid age cutoffs
 - Discard old data only when have more recent data and/or when changes in watershed indicate current conditions better/worse than old data suggests

» 2006 Integrated Reporting Guidance, Sec. IV.C

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Key 303(d) Assessment Terminology

	Magnitude/ Concentration	Duration/ Averaging Period	Frequency/ Recovery Interval
Digression	X		
Excursion	X	X	
<u>Exceedence</u> --goes on 303(d) list	X	X	X

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WQC for pollutant “X”

WQC A	7-day average	25 mg/L
WQC B	1-day average	50 mg/L
WQC C	Instantaneous max.	100 mg/L

Frequency = zero

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Step#1: Frame the Assessment Question

WQC A: *Has the 7 day average concentration in the waterbody gone above 25 mg/L on any occasions?*

WQC B: *Has the 24 hour average concentration in the waterbody gone above 50 mg/l on any occasions?*

WQC C: *(see next slide)*

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Step #1: Frame the Assessment Question, continued

WQC C: Maximum instantaneous concentration of pollutant X of 100 mg/L not to be surpassed at any time

Assessment Question—Options:

- 1) Does concentration in waterbody surpass 100 mg/L more than 5% of time? 10% of time? 25% of time?
- 2) Is the long term average concentration in the waterbody higher than 100 mg/L?
- 3) Does concentration of X in waterbody surpass 100 mg for an instant, at any time?

Which of the above seem reasonable, given the way in which the WQC is expressed?

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Step #2: Select the Data Interpretation Method


WQC “C” Assessment Question: Does concentration of X in waterbody surpass 100 mg/L for an instant, at any time?

Data Interpretation Rule –Options:

- 1) If more than 10% of valid grab samples have concentration higher than 100 mg/L, waterbody concentration has surpassed 100 mg/L.
- 2) If one or more of valid grab samples have a concentration higher than 100 mg/L, then waterbody level has surpassed 100 mg/L.
- 3) If arithmetic average of all valid grab samples is less than 100 mg/L, then waterbody concentration has surpassed 100 mg/L.

Which seems appropriate, given the assessment question?

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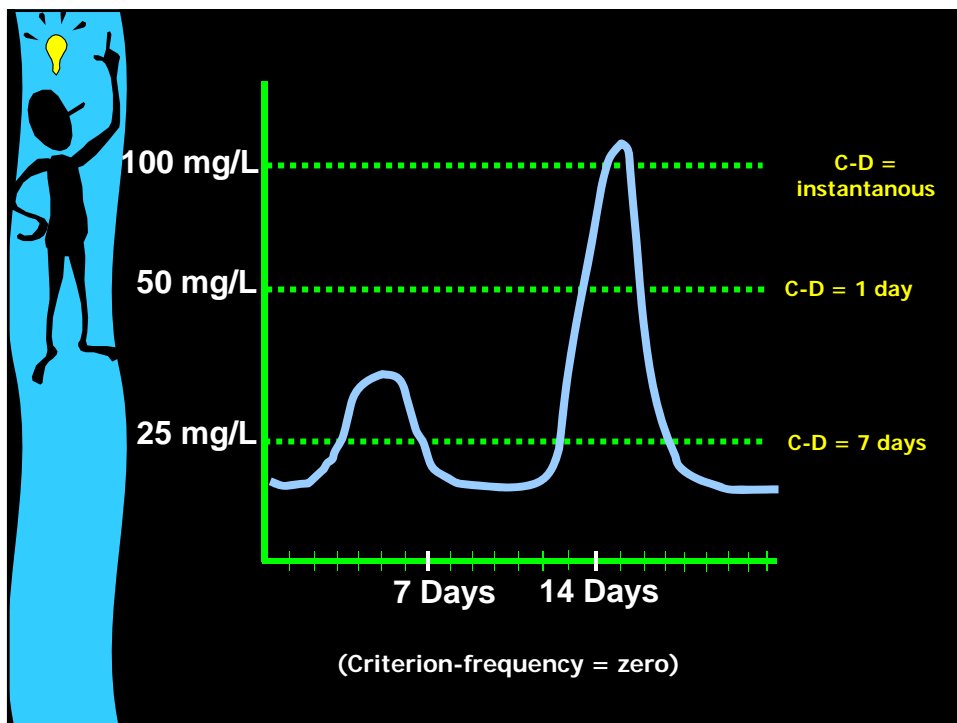


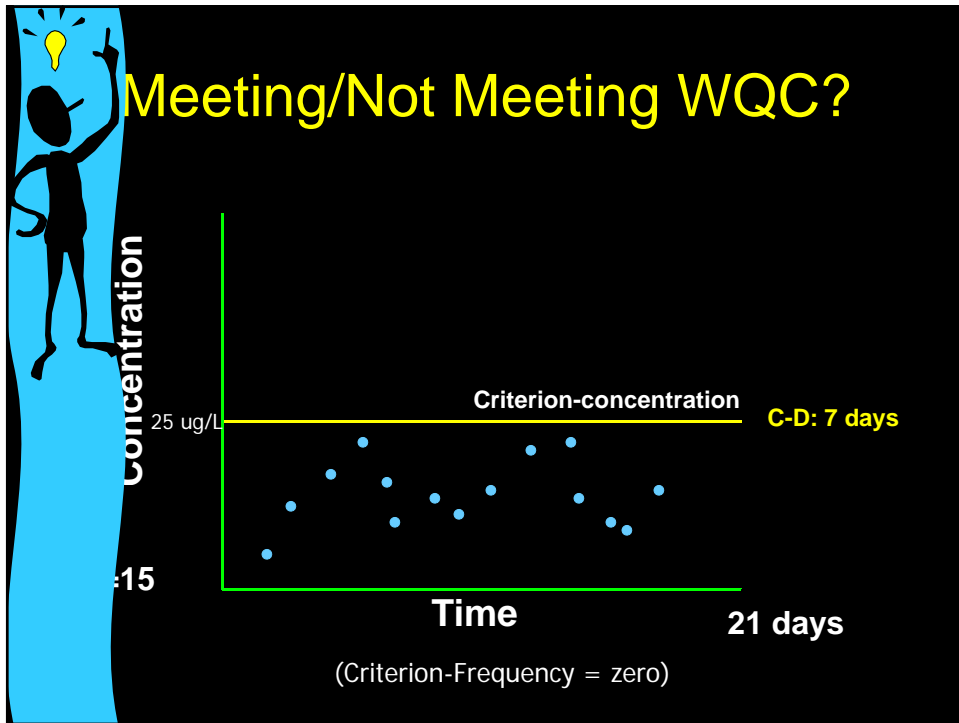
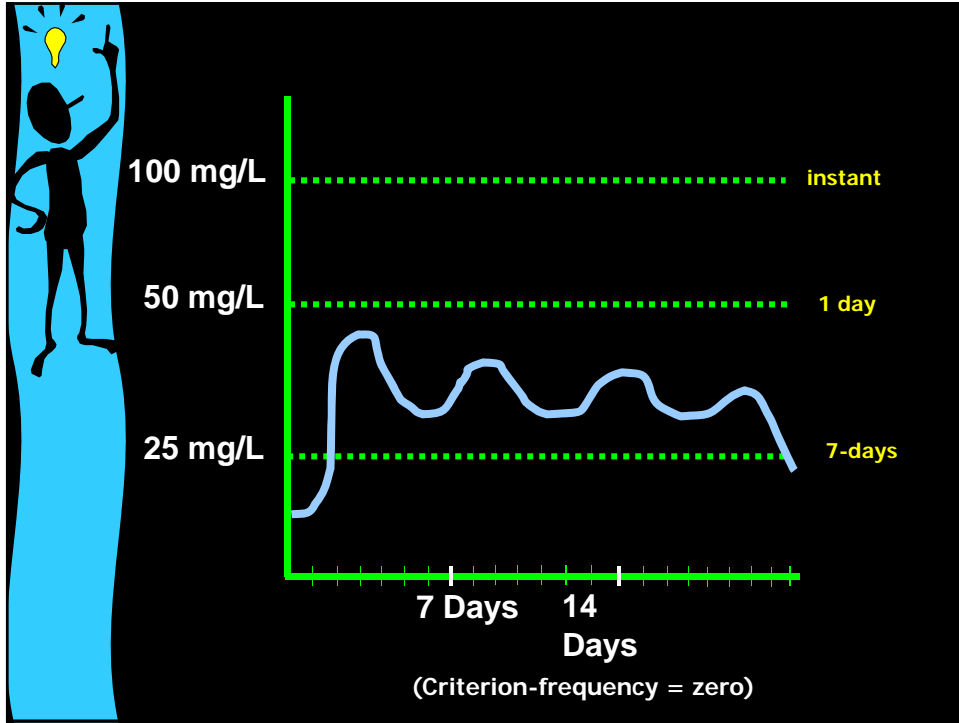
OK, let's give it a try...

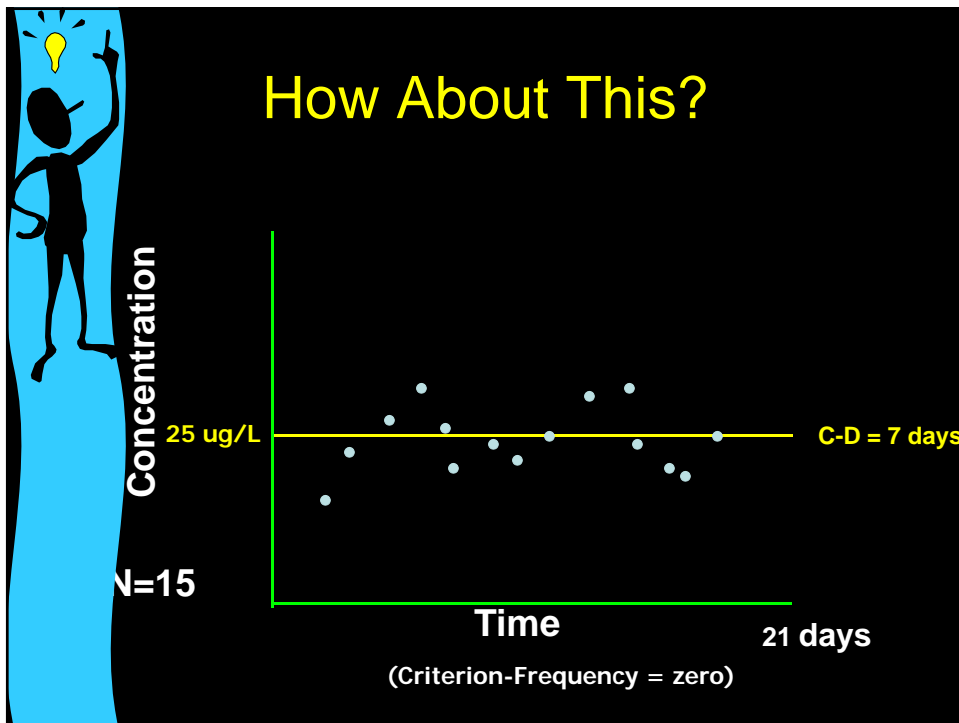
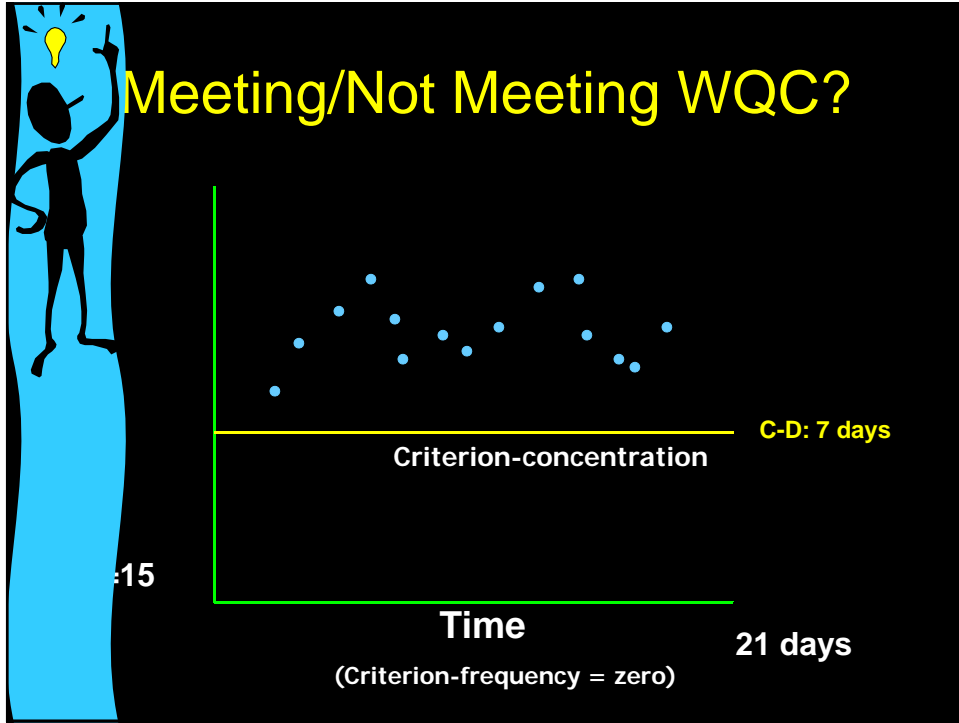
Based on the WQ information graphed in the two following slides, has there been a:

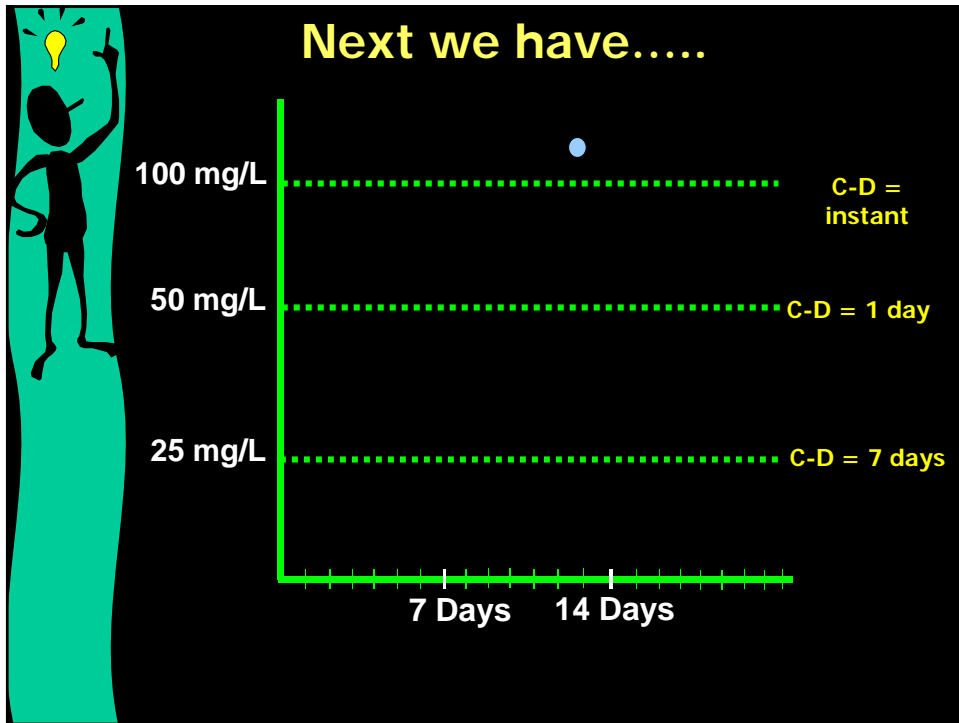
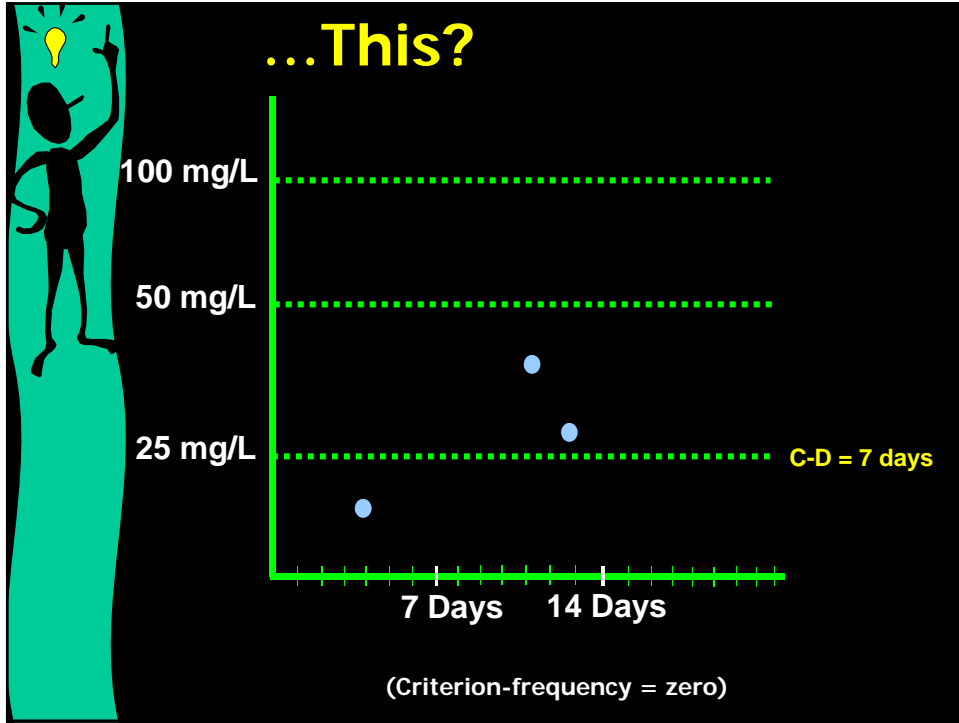
- 1) digression? ,
- 2) excursion?, and/or
- 3) exceedence?

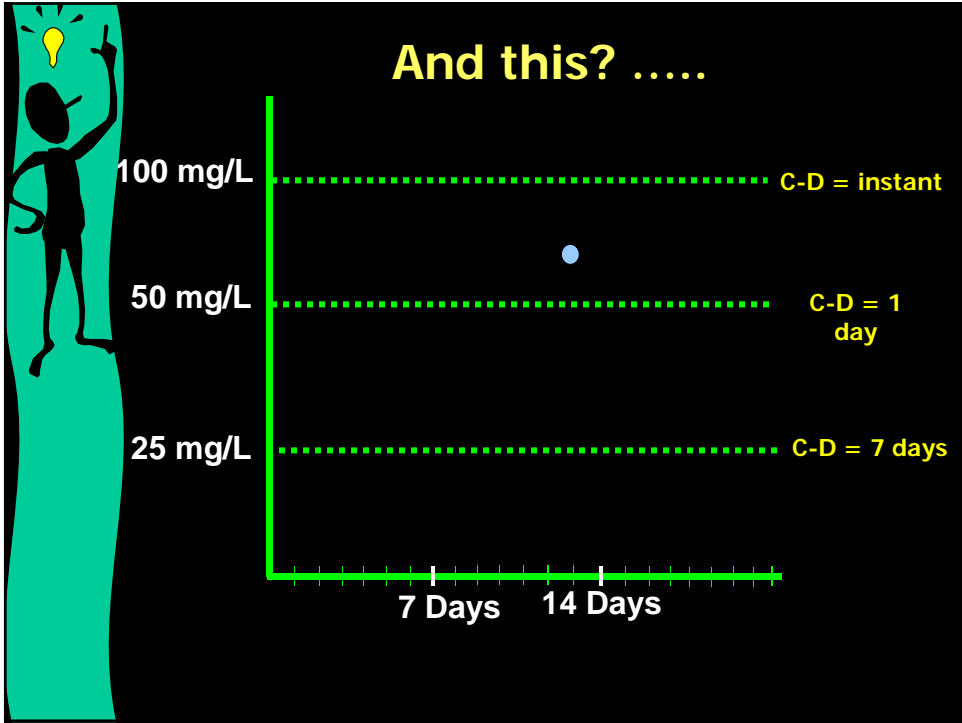
Per each of the three water quality criteria











HYPOTHESIS TESTING

Two Crucial Questions:

- 1) What's the rebuttable presumption?
- 2) What level of proof needed to reject the rebuttable presumption?

2004 Integrated Reporting Guidance, Sec. III.G
2006 Integrated Reporting Guidance, Sec. IV.G

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FORMAL STATISTICS

- Rebuttable Presumption called:
 - “Null Hypothesis (H_o)”
- Opposite of null:
 - “Alternative Hypothesis (H_a)”

2006 Integrated Reporting Guidance, Sec. IV.G.1

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303(d): PICKING THE NULL

Option A

Null = WQS being met

Alternative = WQS not being met

Option B

Null = WQS not being met

Alternative = WQS are being met

What's your preferred option – A or B?

--Does it change depending on the designated use:

--aquatic life vs. human consumption of fish vs.

drinking water supply vs. water contact recreation? ⁸⁵

Selecting Acceptable Error Rates

- Type I -- false rejection of H_0
 - Level of significance (α)
- Type II – false retention of H_0 (β)
 - Inverse of statistical power: $(1-\beta)$

What's the “right” Type I error for you, if “null” = meeting WQS?

Does DU have any effect on your answer?

What about Type II error rate?

QUESTION...

- If H_0 : WQC is met
- And, level of significance from data is less than chosen α

According to statistical theory, should you report:

- 1) meeting WQC?
- 2) not meeting WQC?
- 3) status unclear?

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Current 303(d) Lists

- 41,900 waters currently on state 303(d) lists, nationwide
 - ~40% of listed waters have >1 cause
 - Most stressors for any water = 30
- Listing of priorities for TMDL development
 - Approximately 60,000 TMDLs needed

Conduct Monitoring

http://oaspub.epa.gov/waters/national_rept.control

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303(d) Lists: Causes/Stressors

Nutrients/organic enrichment	12,000
Pathogens	10,500
Sediment/turbidity	9,400
Metals other than mercury	9,300
Mercury	9,100
Toxics: Organics	5,500
PCBs	3,100
Pesticides	1,600
Dioxins	400
Acid/Base imbalance	3,800
Heat	3,000
Salinity, total dissolved solids	1,500
Habitat alteration	1,000

(number of waters for which category mentioned in 303(d) reports)⁸⁹

Top Four Reasons for 303(d) Listing (by Waterbody Type)¹

Conduct Monitoring

LAKES	ESTUARIES	STREAMS/RIVERS
NUTRIENTS	PATHOGENS	SEDIMENTS
SEDIMENTS	FCA ²	METALS
DISSOLVED OXYGEN	METALS	PATHOGENS
pH	DISSOLVED OXYGEN	NUTRIENTS

¹Based on 1998 303(d) listing cycle

²Fish Consumption Advisory

Sources of Stressors Causing Use Impairment

Nationally . . .

- 45%-55 % combination of point and nonpoint sources
- 35%-45% nonpoint sources only
- 5-10% point sources only

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PERCENT RIVER MILES AFFECTED BY

Agriculture	25%
Removal of Streamside Vegetation	3%
Alteration of Stream Flow	5%
Channel Modification	5%
Municipal Sewage Plants	5%
Urban Stormwater	5%
Industrial Point Sources	4%
Resource Extraction	4%

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Changing a 303(d) List

- Situations that justify removing a waterbody from list:
 - Attainment of WQS
 - Due to a reduction of loads
 - Due to changing a WQS
 - Downgrade DU and/or site-specific WQC
 - Specific requirements under federal, state, or local law will result in WQS attainment in the near future
 - TMDL developed for the waterbody
 - Flaws in the original listing process
 - New monitoring data, improved modeling
- *May add waters, for similar reasons*

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INTEGRATED 305(b)/303(d) CATEGORIES

- Category 1: All DUs fully supported
- Category 2: Some DUs fully supported
–insufficient info on the rest
- Category 3: Insufficient info for all DUs
- Category 4: TMDLs done; other controls will achieve WQS; no pollutants involved
- Category 5: **(303d list)**: Not supporting one or more DUs – also, threatened waters
–need one or more TMDLs

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Speaker Information

Ellen Tarquinio,
Environmental Protection Specialist
EPA's Monitoring Branch
tarquinio.ellen@epa.gov



William (Bill) Painter
Environmental Scientist
EPA's Watershed Branch
painter.william@epa.gov



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Next Watershed Academy Webcast

Tools for Addressing Coastal Wetlands Loss

Tuesday, May 4, 2010

1:00 – 3:00 PM Eastern



Registration will open approximately three weeks prior to
the Webcast at: www.epa.gov/watershedwebcasts

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Participation Certificate

If you would like to obtain participation certificates for multiple attendees, click the link below:

www.epa.gov/owow/watershed/wacademy/webcasts/pdf/2010_4_7_certificate.pdf

You can type each of the attendees names in and print the certificates

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