National CWA 106/319 Conference

Developing an Annual Water Quality Assessment Report

CWA 106 Program Requirements

1. Monitoring Strategy
2. Electronic copies of surface water quality data for nine basic parameters (submitted in a STORET-compatible format)
3. Annual Water Quality Assessment Report

Why Report?

- Provides foundation for assessing water quality for reservation waters
- Allows for the comparison of water quality data over time in order to make informed decisions about your program's future
- Allows EPA to assess national results associated with CWA Section 106 Tribal Program

What to Report?

Minimum Reported Water Quality Indicators for Baseline Monitoring Programs

Fundamental	Intermediate	Mature
Dissolved Oxygen	Total Phosphorus	Macroinvertebrates
pH	Total Nitrogen	*E. coli* or enterococci
Temperature		Basic Habitat Information
Turbidity		

Reporting Requirements for Annual Assessment Reports

1. Description of monitoring strategy
2. Water quality assessment
3. Surface water quality monitoring data
   - For the nine required reporting parameters
   - Electronic, STORET-compatible format
   - Include metadata

Description of Monitoring Strategy

- Include a description of your existing monitoring strategy in your assessment report
- The description can vary in length as long as you adequately describe a program that:
  - Meets your current data and information needs
  - Considers future needs

Water Quality Assessment

- Summary of water quality
- Key components
  1. Atlas of tribal water resources
  2. Description of tribal water quality monitoring program and assessment methods
  3. Results of water quality monitoring
  4. Summary of issues of tribal concern (e.g., sources of impairments)
- Content and level of detail will vary based on tribal program's sophistication

Atlas of Water Resources

(Water Quality Assessment #1)

Atlas of Tribal Waters	
Total stream miles	95
Total lake acres	250
Total of wetland acres	140
Total estuarine square miles	10

Description of Water Quality Monitoring Program

(Water Quality Assessment #2)

- Purpose of the monitoring program
  - For example: Identify problem areas, track trends over time,. identify NPS impacts, address public health concerns, etc.
- Number of stream miles, lake or wetland acres, and estuary square miles monitored
- Parameters monitored
- Monitoring frequency
- Discussion of applicable WQIs, tribal goals and objectives, or standards
- Coordination or collaboration with other organizations
- Lab support (if any)
- How data are interpreted and managed

Description of Assessment Methods

(Water Quality Assessment #2)

- Methodology for analyzing data and interpreting results
- Each of the nine parameters should be analyzed
  - Calculation of mean/median values
  - Range of measured concentrations
  - Comparison of data against a threshold (e.g., WQS)
    - Include summary of number of sampling locations (or stream miles, lake acres, etc.) for which samples are above or below (as appropriate) the threshold value

Description of Assessment Methods (cont.)

(Water Quality Assessment #2)

- For tribes with EPA-approved or tribally-adopted WQS and designated uses, include a summary of the number of stream miles, lake acres, etc. that are:
  - Meeting designated uses
  - Not meeting designated uses (i.e., impaired waters)
  - Unassessed
- This information will be helpful for measuring success towards water quality improvements in tribal waters

Example Summary Tables

Making Assessment Decisions

Designated Use or Tribal Goal	Parameter(s) to be Measured to Determine Support of Use or Goal
Contact recreation / swimming / cultural uses	*E. coli* or *enterococci*, nitrogen, phosphorus
Aquatic life and wildlife	Dissolved oxygen, temperature, pH, turbidity, macroinvertebrates, habitat, nitrogen, phosphorus
Drinking water	*E. coli* or *enterococci*, nitrates, turbidity
Shellfish / fish consumption	*E. coli* or *enterococci*,

Example Summary Tables

Use / Goal Support

Designated Use or Tribal Goal	# of Stream Miles Monitored / Assessed	# of Stream Miles Fully Supporting Use or Goal	# of Stream Miles Threatened*	#of Stream Miles Not Supporting Use or Goal
Swimming	50	40	5	10
Aquatic Life	45	20	20	25
Cultural	30	30	5	0
Fish Consumption	20	10	5	10

**Note: Threatened miles are those that are not fully supporting the use or goal*

Description of Water Quality Monitoring Results

(Water Quality Assessment # 3)

- An interpretation and summary of the findings of monitoring activities
  - Including probable causes and sources of impairments
  - Summarize using narrative, tables, and charts / graphs
- Consider conducting a watershed survey to learn about potential sources of impairment
  - EPA's Volunteer Stream Monitoring Manual contains more information (including field sheets) on conducting watershed surveys
    http://www.epa.gov/volunteer/stream/stream.pdf

Presenting Data Results
(Water Quality Assessment #3)

- Include statistical summaries of your data in tables
- Summarize data using scatter plot graphs, line graphs, bar charts, etc.
  - Summarize/graph data on a site-by-site basis instead of aggregating data
  - Identify the number of samples used to create each graph or chart (i.e., n = 10)

Example Summary Tables

Field Data Collected at Station RIV-1

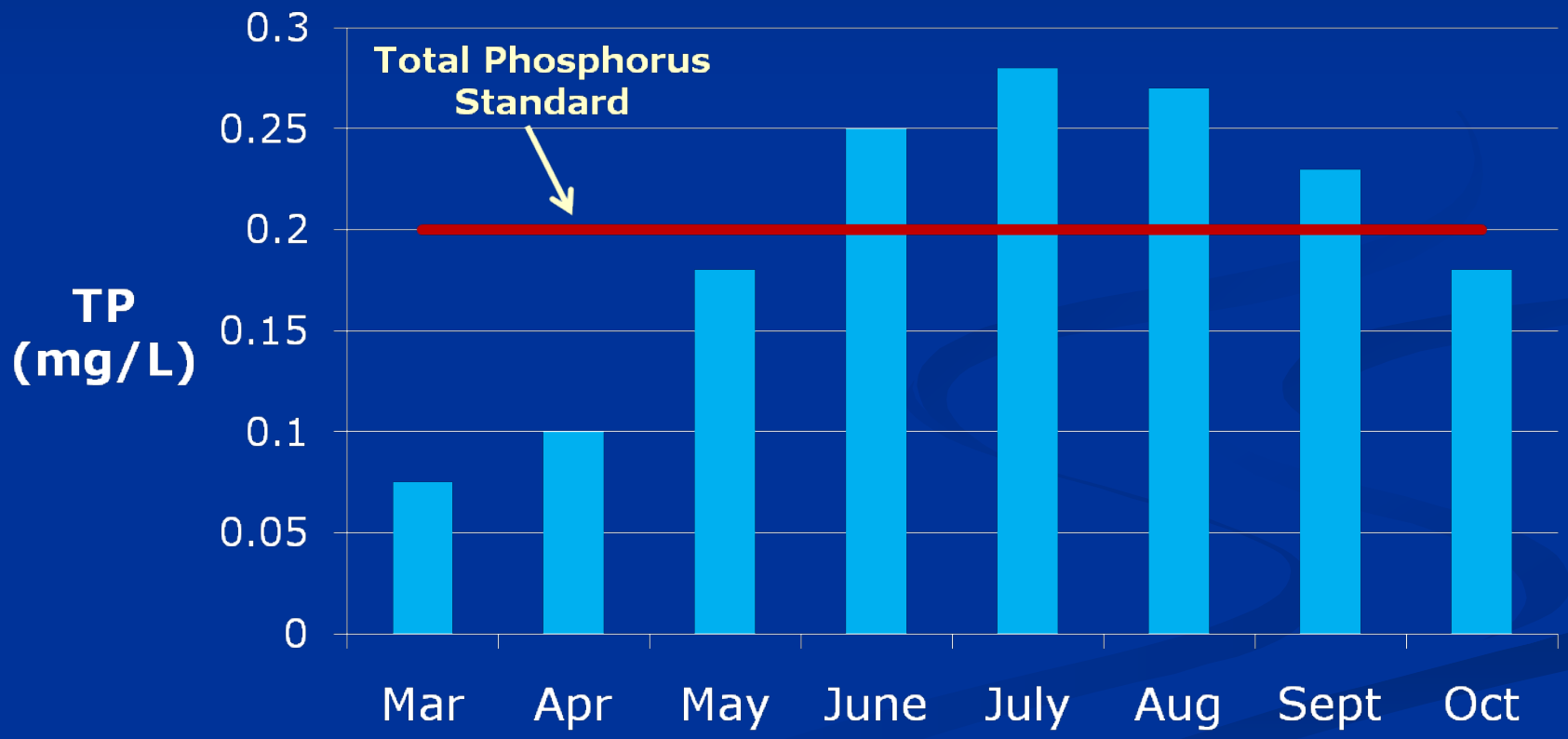
Statistic	DO (mg/L)	Temp (°C)	Conductivity (µmhos/cm)	pH	Turbidity (NTU)
Max Value	15.67	29.0	2190	9.43	2000
Min Value	1.25	6.0	534	8.29	4
Median	9.89	23.0	1475	9.05	36
Mean	9.53	21.4	1473	8.97	64
# of Samples	12	17	19	18	5

Example Summary Tables

Lab Data for Station RIV-1

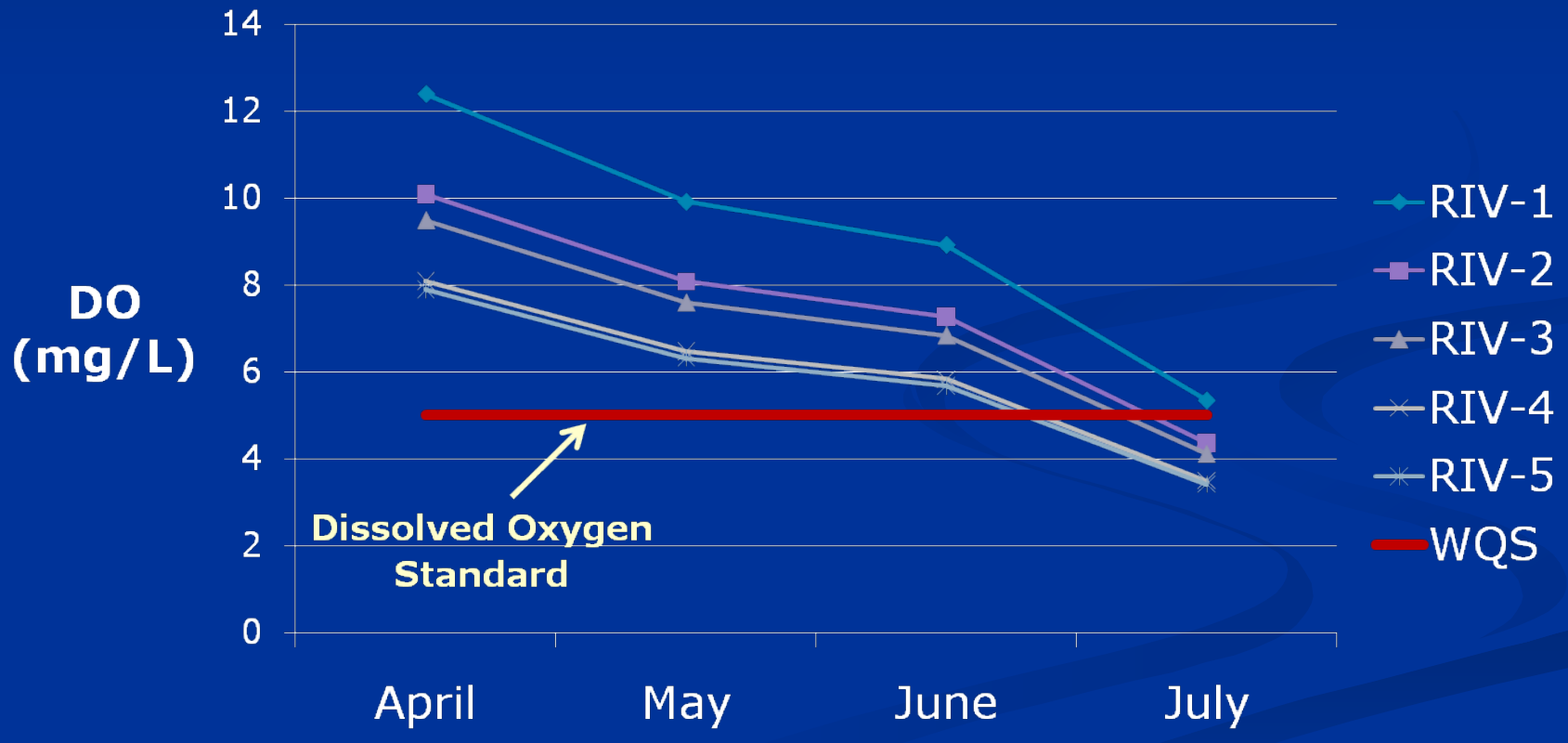
Statistic	Total Phosphorus (mg/L)	Copper (mg/L)
Max Value	0.075	0.0030
Min Value	0.28	0.0020
Median	0.205	0.0025
Mean	0.196	0.0025
# of Samples	8	2

Example Bar Chart



Example Line Graph

Dissolved Oxygen Data for the RIV Stations



Summary of Issues of Tribal Concern

(Water Quality Assessment #4)

- Brief description of any issues of tribal concern
- Examples:
  - Outbreaks of waterborne disease
  - Fish kills
  - Fishing or shellfishing advisories
  - Restrictions on surface water supplies of drinking water
  - Restrictions on swimming

Example Summary Tables

Causes of Impairment

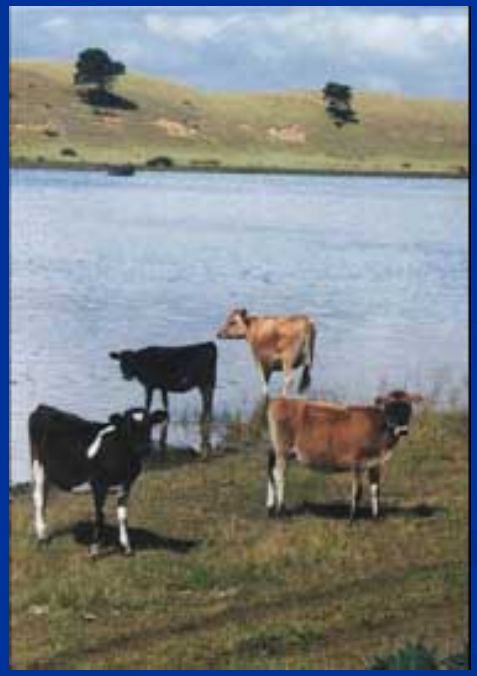
Parameter	# of Stream Miles Monitored or Assessed	# of Stream Miles Not Supporting Use or Goal
E. coli	40	10
Dissolved Oxygen	45	25
Turbidity	45	20
Habitat Degradation	45	25

Example Summary Tables

Sources of Impairment

Source of Impairment	# of Stream Miles Monitored or Assessed	# of Stream Miles Not Supporting Use or Goal
Hydrologic modification	45	25
Agriculture (livestock grazing)	45	30
Stormwater runoff	20	20
Unregulated septic systems	50	25

Example Sources of Impairment



Environmental Results

- Support Tribal Water Quality Programs:
  - Identifying water quality priorities in Indian Country
    - Maintain the natural habitat for wildlife, native plants, and for those in your community
    - Support the designated uses of that waterbody (fishable, swimmable, etc)
    - Protect and maintain the cultural significance
    - Protect drinking water (health concern)
  - Supporting future funding needs for CWA § 106, 319
- Provide R9 with information on status of tribal water quality:
  - For EPA management (e.g., IPPC)
  - Information for Accomplishments Report, Success Stories, etc.

Questions??