

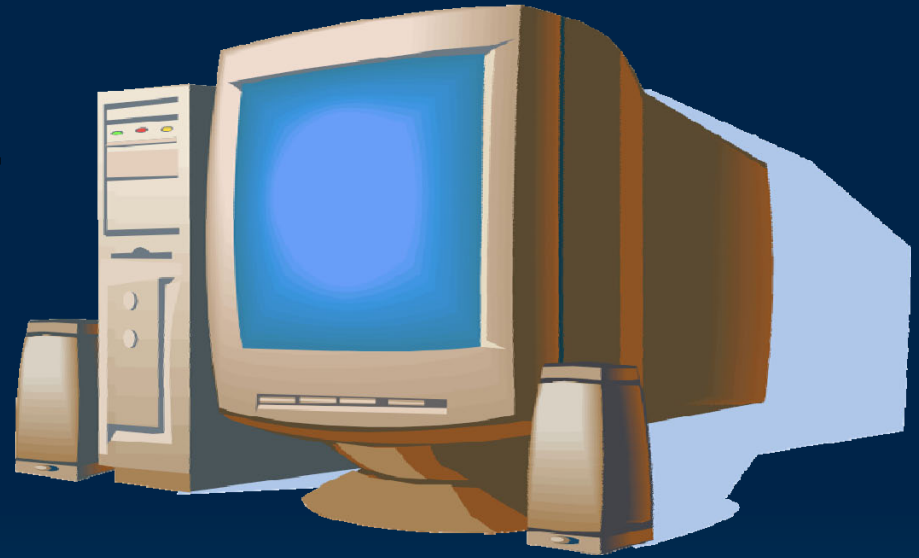
STORET/WQX for Tribes

November 18-19, 2008

EPA Region 9

Clean Water Act §106 Guidance

DATA MANAGEMENT
REQUIREMENTS



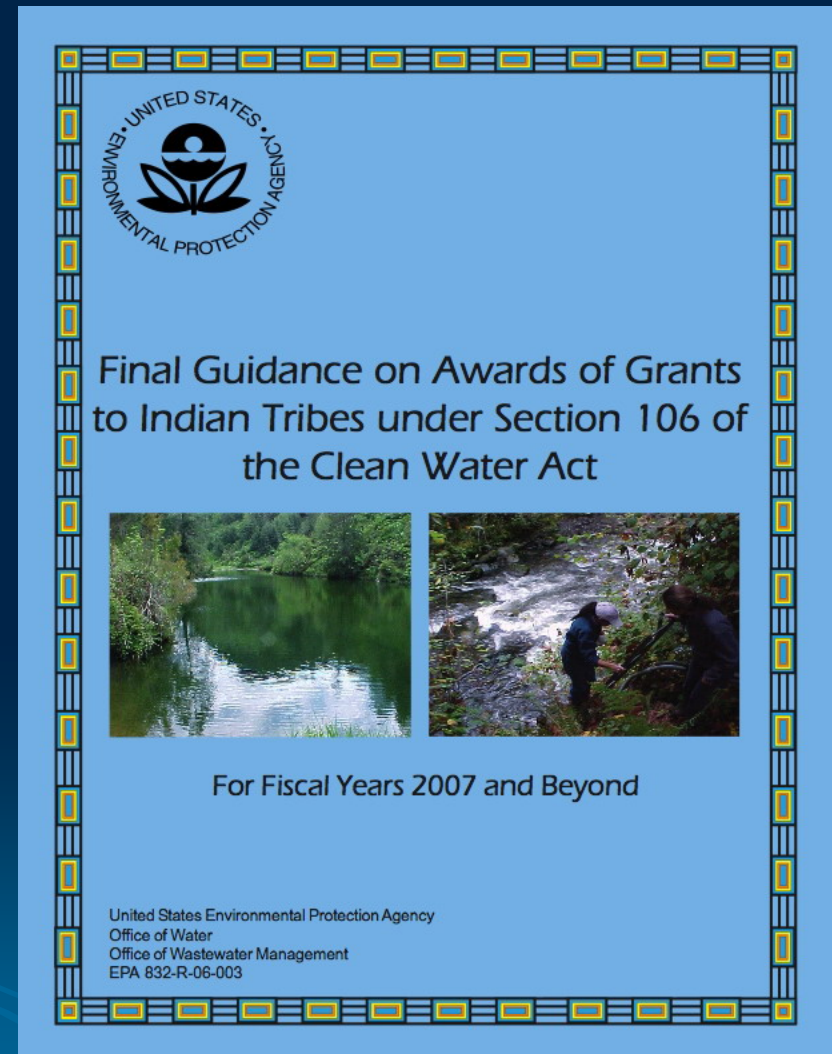
Items to be Discussed



- Background Information
- Reporting Requirements
- Developing Data Storage Capacity
- Reporting Data to EPA
- Tools and Resources

Background Information

- Final CWA §106 Guidance for Tribes released by EPA in 2006
- Outlines approaches of CWA §106 programs by maturity level
- Tribal Assessment Report
 - Three components



Tribal Assessment Report: Three Components

1. Monitoring Strategy

- See page A-1 of the CWA §106 Guidance and your CWA §106 QAPP

2. STORET-Compatible Electronic Data

- See page 8-6 of the CWA §106 Guidance

3. Water Quality Assessment Report

- See page A-4 of the CWA §106 Guidance

Parameters by Maturity Level

- **Fundamental (4)**
 - pH
 - Temperature
 - Dissolved Oxygen
 - Turbidity
- **Intermediate (+2)**
 - Total Nitrogen
 - Total Phosphorus

- **Mature (+3)**
 - E. coli or enterococci
 - Macroinvertebrates
 - Basic Habitat Information

Maturity level for monitoring determined through discussions between Tribe and Project Officer

Developing Data Storage Capacity

•Fundamental Tribes

- Use of electronic spreadsheets allow for easily stored data
 - Data can be organized, summarized and manipulated
 - Tools can be used to analyze the data


•Intermediate and Mature Tribes

- Upgrading electronic data systems
- Incorporating additional monitoring parameters, evaluating monitoring frequency

Developing Data Storage Capacity

- National Template for Data Storage
 - Template developed in Region 5 in response to requirements of CWA §106 Guidance
 - Excel spreadsheet that is STORET/WQX compatible
 - Uses metadata to provide context for all data, whether collected in the field and analyzed in a lab
 - Compatible with WebSIM and WQXWeb, in order to upload data to the National STORET Warehouse

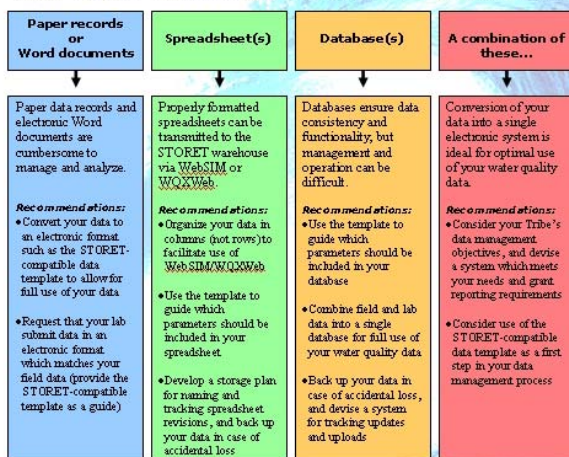
Developing Data Storage Capacity

- Managing electronic data:
 - Check field and lab forms for accuracy
 - Find out if your lab can report data in a STORET/WQX-compatible format (template)
 - Enter data using electronic software
 - Conduct quality control on data after entry
 - Evaluate data and produce reports for your environmental program
 - Maintain backups of electronic data
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Reporting Data to EPA

- CWA §106 Guidance requires Tribes to submit data in STORET-compatible, electronic format
- Tribes are not yet **required** to upload data to the STORET Warehouse, but it is encouraged
- If not submitted to the warehouse, electronic data must be submitted with the Assessment Report to your Project Officer
- Data should include the parameters required by maturity level (decision of the Tribe to include more parameters)

How is your field and lab data stored and managed?



Tools



Advantages and Disadvantages of Water Quality Data Submission Tools

Tool	Definition	Advantages	Disadvantages	Advice
STORET Data template	An Excel file formatted to provide the parameters and metadata necessary for STORET compatibility	Free, appropriate for electronic data submission requirements of ID6 Guidance	Training necessary Somewhat difficult to manage over time and with large data sets	Tribe's are encouraged to use the template as a first tool to submit data electronically to EPA.
WebSIM and WQX Web	Web-based STORET Import Module and WQX Submission Tool sites which allow users to upload data and configure formatting for transmission to the STORET warehouse	Free, relatively simple internet applications to upload data into the STORET Warehouse Data analysis easier through STORET	Requires manual operation to submit data, some configuration required	Tribe's can learn the WebSIM interface and continue to use this configuration as it transitions to WQXWeb (similar interface and function).
Network Node	A web server that facilitates the interface between database systems and the Exchange Network	Seamless exchange of data between groups regardless of hardware, operating system, or programming environment Fully-automated	Costly, usually only feasible under Exchange Network grants Technical expertise and network server required	Tribe's with Exchange Network grants are encouraged to build a node that can both request data from and publish data to the Exchange Network.
Network Node Client	Software on a web server that facilitates the interface between database systems and the Exchange Network	Seamless publishing of data to the STORET Warehouse Cheaper than a network node Requires manual operation to submit data	Requires manual operation to submit data Cannot respond to data queries from other nodes, and therefore cannot interact with the Exchange Network Technical expertise and network server required	Tribe's with Exchange Network grants are encouraged to build a node that can both request data from the Exchange Network. A network node client only has the capability to publish data.

Clean Water Act/106 Water Pollution Control Program Monitoring Strategy Requirement (FY 2008)



Developing a monitoring strategy for the Upper San Pedro River, California, for the Upper San Pedro River.

A monitoring strategy is an implementation plan that describes how a monitoring program will serve tribal water quality management needs and address tribal waters over time. It should be comprehensive in scope and identify the issues and needs that are currently important to an adaptive monitoring program.

Understanding existing water quality is a key step in protecting and improving the waters within the tribal boundaries. Developing a comprehensive monitoring strategy helps tribes understand existing water quality conditions. Identifying strategies should vary among tribes due to the varying tribal programs and objectives, the level of CWA/106 program sophistication, and the resources available to the grant recipient. A monitoring strategy does not need to be submitted annually, just updated as needed by the grantee.

Components of a Monitoring Strategy

- Monitoring Objectives:** The strategy should describe information about the water bodies within tribal boundaries to determine how they will implement their monitoring program. This should be a user-driven strategy that includes objectives of the monitoring program. This may include identifying water quality problems across the watershed over time, identifying New Point Sources, and identifying problems with existing water quality monitoring.
- Monitoring Design:** Establishes the frequency of monitoring the water bodies that will be monitored, the locations that will be monitored within the water body, the parameters to be monitored, and the methods used to collect and analyze the information will be used or deployed to monitor the grant recipient's water quality.
- Clean Water Quality Indicators (WQI):** The strategy should define the scope of WQI parameters that will be monitored within the program. It is expected that tribal programs monitor for a range of parameters (temperature, pH, dissolved oxygen, turbidity, and nitrogen and phosphorus) and other parameters (metals, pesticides, and herbicides) based on the objectives of their water quality program.
- Quality Assurance:** A Quality Assurance Plan (QAP) must be developed and approved by EPA to ensure the validity of monitoring laboratory services. The QAP should include details of quality that is appropriate for the objectives of the data.
- Data Management:** The strategy should describe how the grant recipient will store data in a data management system that can be used to manage data and is a system that will allow data sharing with EPA. Data collected in a data management system should be managed electronically.
- Data Analysis and Assessment:** The strategy should describe the grant recipient's assessment methodology—how data collected will be compared and analyzed to make an assessment. Assessments should address whether water quality is meeting established goals and objectives.
- Reporting:** The strategy should describe the tribal water program procedures and process for preparing and submitting its annual tribal assessment report, which includes a description of the monitoring strategy, water quality assessment, and electronic copies of the data collected. Any other reporting requirements (quarterly reports, periodic assessments, etc.) should be included as well.
- Program Review, Evaluation, and Needs Monitoring:** The strategy should describe the process for conducting regular review of the tribal water quality monitoring program with the Regional EPA office. These reviews will help the grant recipient and the programs serving water quality decision needs. These reviews should also identify any current and future monitoring resources needed to fully implement a comprehensive program.

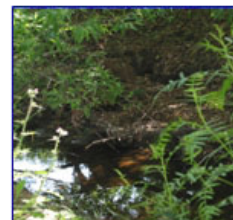
A Guide to the STORET/WQX Transition

Original name	Will Use (STORET/WQX)	Function
STORET Data Template	STORET Data Template	EPA water quality data system.
Water Quality Exchange (WQX)	WQX Data Template	Used to transfer data from the STORET Data Template to the WQX Data Template.
STORET Data Template	WQX Data Template	Used to transfer data from the STORET Data Template to the WQX Data Template.
Application	Function	Recommendation
Disinfectant STORET	Disinfectant STORET Data Template	Disinfectant STORET Data Template
STORET Warehouse	STORET Warehouse	Disinfectant STORET Data Template
Water Quality Exchange (WQX)	Water Quality Exchange (WQX)	Disinfectant STORET Data Template
WQX Data Template	WQX Data Template	Disinfectant STORET Data Template
STORET-Compatible Data Template	STORET-Compatible Data Template	Disinfectant STORET Data Template
Metadata	Metadata	Disinfectant STORET Data Template
Node and Node Client	Node and Node Client	Disinfectant STORET Data Template

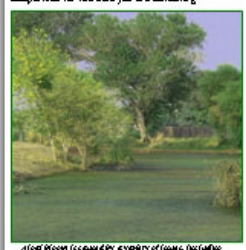


Temperature

Temperature is an important indicator of the general condition of a water body and the ecosystem it supports. The following physical and chemical processes are all affected by water temperature: dissolved oxygen levels, the rate of photosynthesis of aquatic plants, the metabolic rates of aquatic organisms, and the sensitivity of aquatic organisms to toxic substances, pesticides, and diseases. Changes in temperature can severely affect these processes, leading to stress in organisms and death. Reporting strategies are the most sensitive to a change in temperature. The following are some factors that could cause a change in the temperature of a water body: weather, riparian shade, water level, dam, industrial discharges, and more water.



Understanding the Impact of Temperature Fluctuations: Optimal temperature ranges depend on the water body. If temperatures are outside the optimal range for the water body, the survival of many organisms will be affected and the water body may become less healthy. For fish, there are two levels of limiting temperatures: the maximum temperature for short-term exposure and a weekly average temperature that may vary by time of year and life stage. It would be beneficial to know optimal ranges for the organisms in the water body. Find out what the optimal, acute or chronic standard range for temperature is to use as a comparison for the data you are collecting.



Monitoring Temperature: There are a variety of monitoring devices available to measure temperature. When you select, you will depend on the monitoring objectives so far as to your cost, accuracy, and monitoring program. The following equipment options are commonly used to collect temperature data from the field:

All options should be readily available at a laboratory supply store:

- Thermometers
- Meters
- Multi-parameter probes
- Continuous Laboratory (if necessary)

For more information, visit the EPA website at www.epa.gov/epaospr/monitoring/monitoring.cfm

At the bottom of the page, there is a small text block that reads: "A Guide to the STORET/WQX Transition" and "Water Quality Exchange".