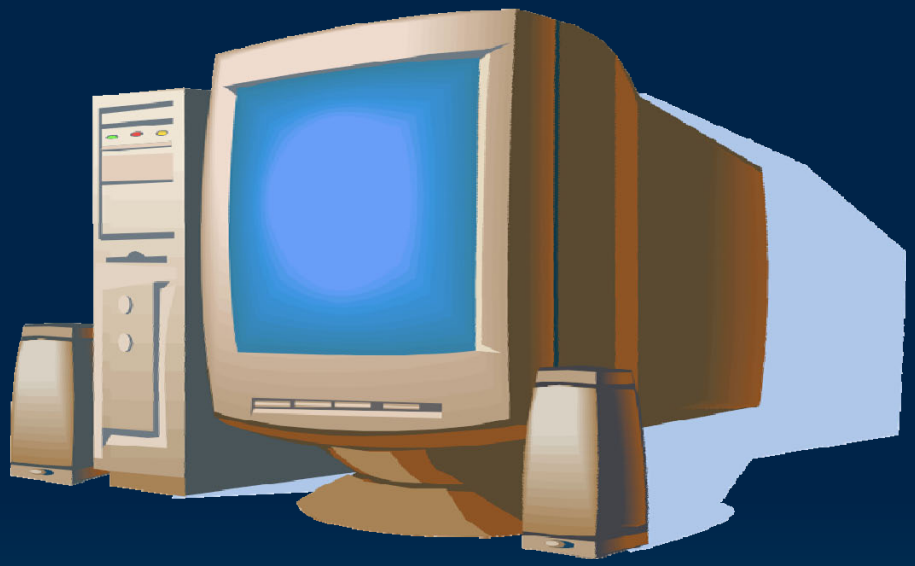
STORET/WQX for Tribes

November 18-19, 2008

EPA Region 9

Clean Water Act §106 Guidance

DATA MANAGEMENT REQUIREMENTS

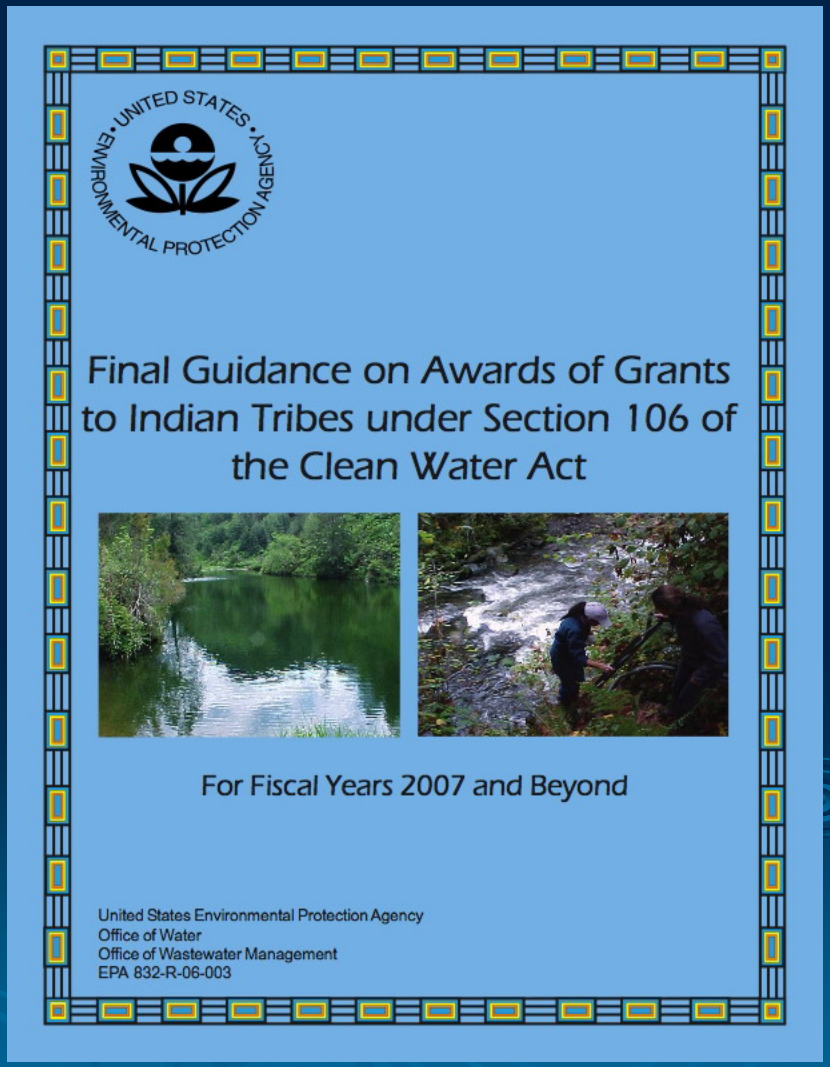


Items to be Discussed

- 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

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)

Tools

How is your field *and* lab data stored and managed?

Paper records or Word documents	Spreadsheet(s)	Database(s)	A combination of these...
Paper data records and electronic Word documents are cumbersome to manage and analyze.	Properly formatted spreadsheets can be transmitted to the STORET warehouse via WebSIM or WQXWeb.	Databases ensure data consistency and functionality, but management and operation can be difficult.	Conversion of your data into a single electronic system is ideal for optimal use of your water quality data.
Recommendations: •Convert your data to an electronic format such as the STORET-compatible data template to allow for full use of your data •Request that your lab submit data in an electronic format which matches your field data (provide the STORET-compatible template as a guide)	***Recommendations:*** •Organize your data in columns (not rows) to facilitate use of WebSIM/WQXWeb •Use the template to guide which parameters should be included in your spreadsheet •Develop a storage plan for naming and tracking spreadsheet revisions, and back up your data in case of accidental loss	***Recommendations:*** •Use the template to guide which parameters should be included in your database •Combine field and lab data into a single database for full use of your water quality data •Back up your data in case of accidental loss, and devise a system for tracking updates and uploads	***Recommendations:*** •Consider your Tribe's data management objectives, and devise a system which meets your needs and grant reporting requirements •Consider use of the STORET-compatible data template as a first step in your data management process

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 106 Guidance	Training necessary Somewhat difficult to manage over time and with large data sets	Tribes 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	Tribes can learn the WebSIM interface and continue to use this application 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	Tribes 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	Tribes with Exchange Network grants are encouraged to build a node that can both request data from and publish data to 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)

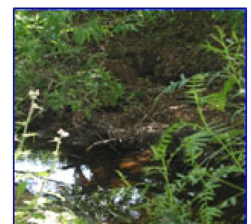
Components of a Monitoring Strategy:

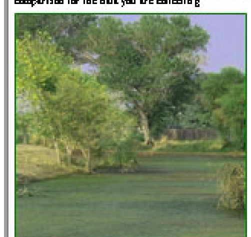
A Guide to the STORET/WQX Transition

Original name	Will be (2008-09)	Function
STORET (STOrage and RETrieval)	STORET/WQX (Water Quality Exchange)	EPA water quality data system.
National WebSIM	WQXWeb	Upload data from spreadsheets and databases to the STORET warehouse.
STORET Data Template	WQX Data Template	Facilitate entry of water quality data for eventual upload to the STORET warehouse.

Application	Function	Timeline for implementation
Distributed STORET		Decommissioned
STORET Warehouse		Ongoing
National WebSIM		To be decommissioned in 2009
Water Quality Exchange (WQX)		Ongoing
WQXWeb		Fall 2008
STORET-Compatible Data Template		
Metadata		--
Node and Node Client		Ongoing

Temperature





Understanding the Impact of Temperature Fluctuations:

Monitoring Temperature:

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