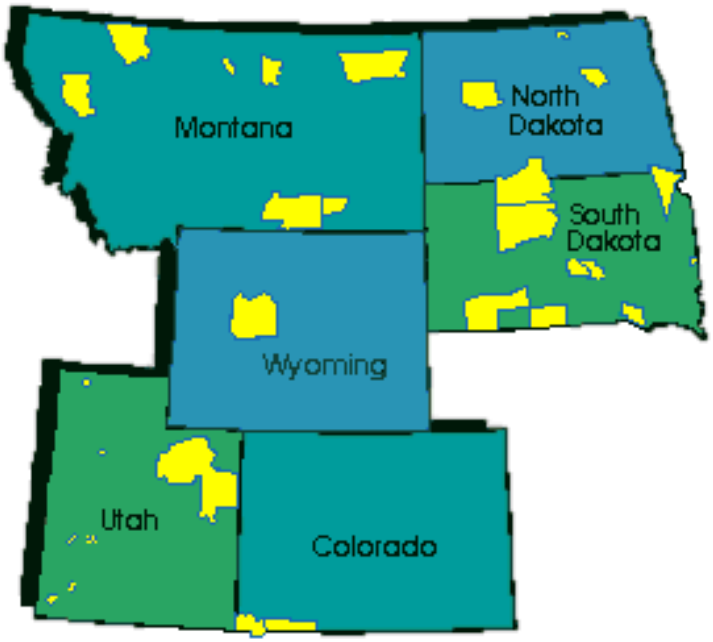
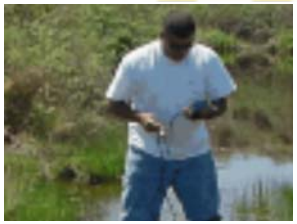
RVIII TRIBAL WATER QUALITY DATA MANAGEMENT MODEL



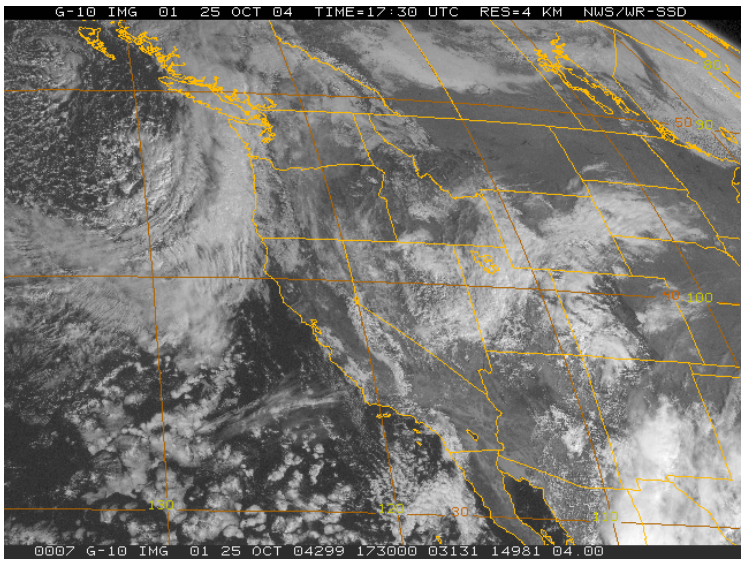
regional triumphs and tribulations

Presented by
Dave Wilcox, Gold Systems Inc., and
Christa Tyrrell, Fort Peck Assiniboine & Sioux Tribes

Fort Peck Data Management



... data rich, but information poor



Three Key Components of Successful Data Management

<u>Accessibility</u>: Tribal Database

<u>Usability</u>: Data Confidence

<u>Consistency</u>: National Standards

Existing Data

- Where does the data reside?
- Is the data electronic or in hardcopy?
- Where does it come from?
- Who thinks they “own” it?
- How do users access it?

accessibility

Data Security

- Data Storage and Replication
- Accessibility and Content Modification
  - Roles and Responsibilities
  - Software Controls
- Data auditing and Validation Procedures
- Backup and Recovery Plan
- Retrieval Protocols and Return Procedures for Originals

usability

Program Expectations

- User Capabilities
  - Can those who need the data access it?
  - Can the data be retrieved in a variety of formats?
- Program Reporting Requirements
  - Are there retrieval formats that will enhance program reporting efficiency?
- Requests for Program Data
  - Can the data be utilized for future analysis?
  - Can data users retrieve data directly through a website?

usability

Data Quality Control Procedures

- Data Acquisition Requirements
  - EPA approved QAPP? Including DAP?
  - DQO’s for collection and analysis?
- Data Confidence
  - Data Validation - QC measures
  - Data Reconciliation Protocols
- Acceptability Ranges
  - Minimum Data Elements
- Data Compatibility

NPS

NON POINT SOURCE
POLLUTION PREVENTION
PROGRAM

OEP DIVISION OF WATER QUALITY

Data Reconciliation Protocol

consistency

Comprehensive Management

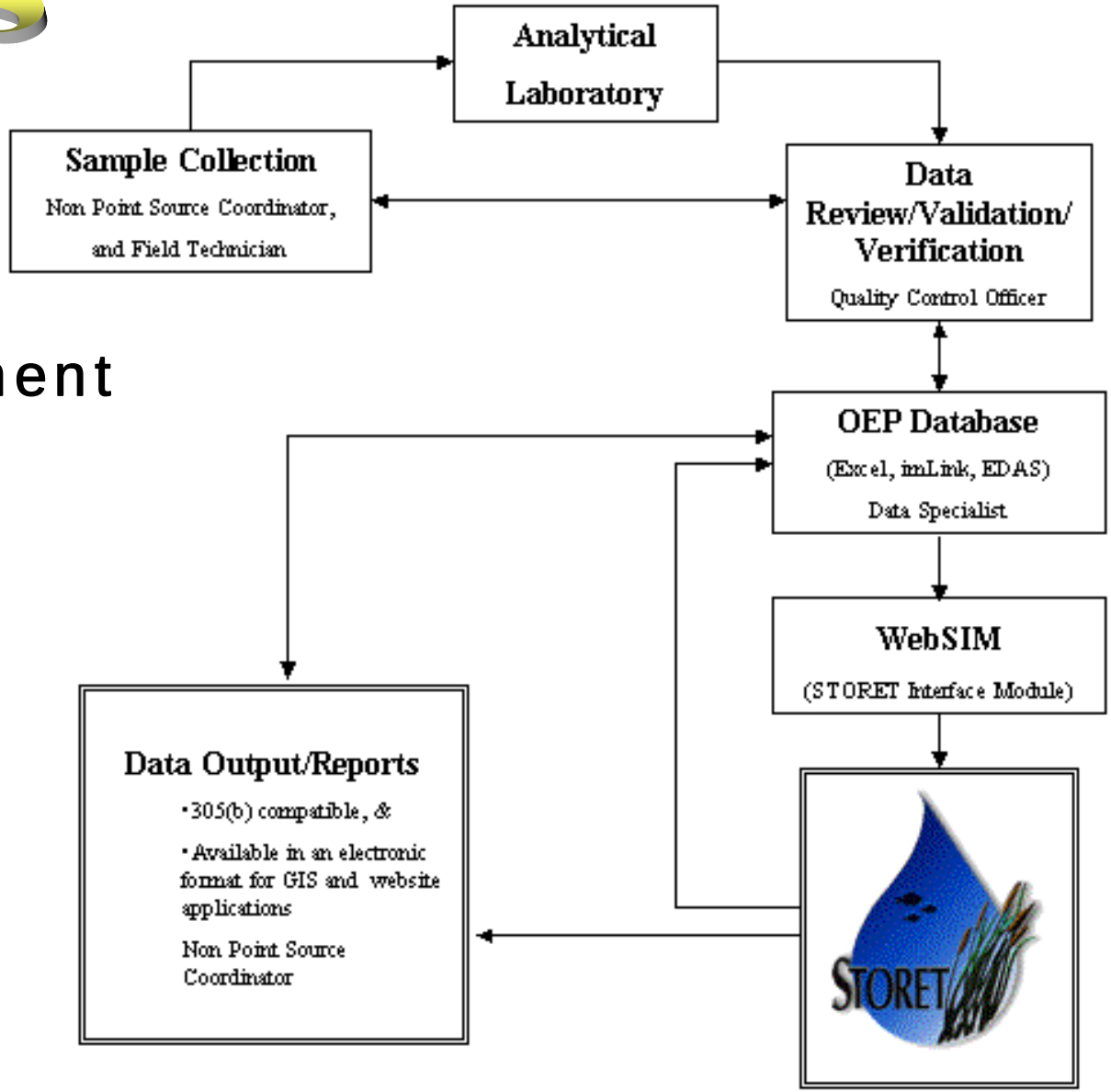
- Compile Historical Data
- Create a Uniform Format for Water Quality Data
- Simplified Data Sharing
  - Internally within Tribal programs
  - Externally with other agencies, watershed groups, organizations, and individuals
- Increase Reporting Efficiency

Data Pathways

- Diagram Data Movement
  - Start from Sample Collection
  - Who are samples submitted to?
  - Data QC procedures - processes, approvals and reconciliation
  - Time Limits/Ranges
  - End Point – Local or National Access

NON POINT SOURCE
POLLUTION PREVENTION
PROGRAM
OEP DIVISION OF WATER QUALITY

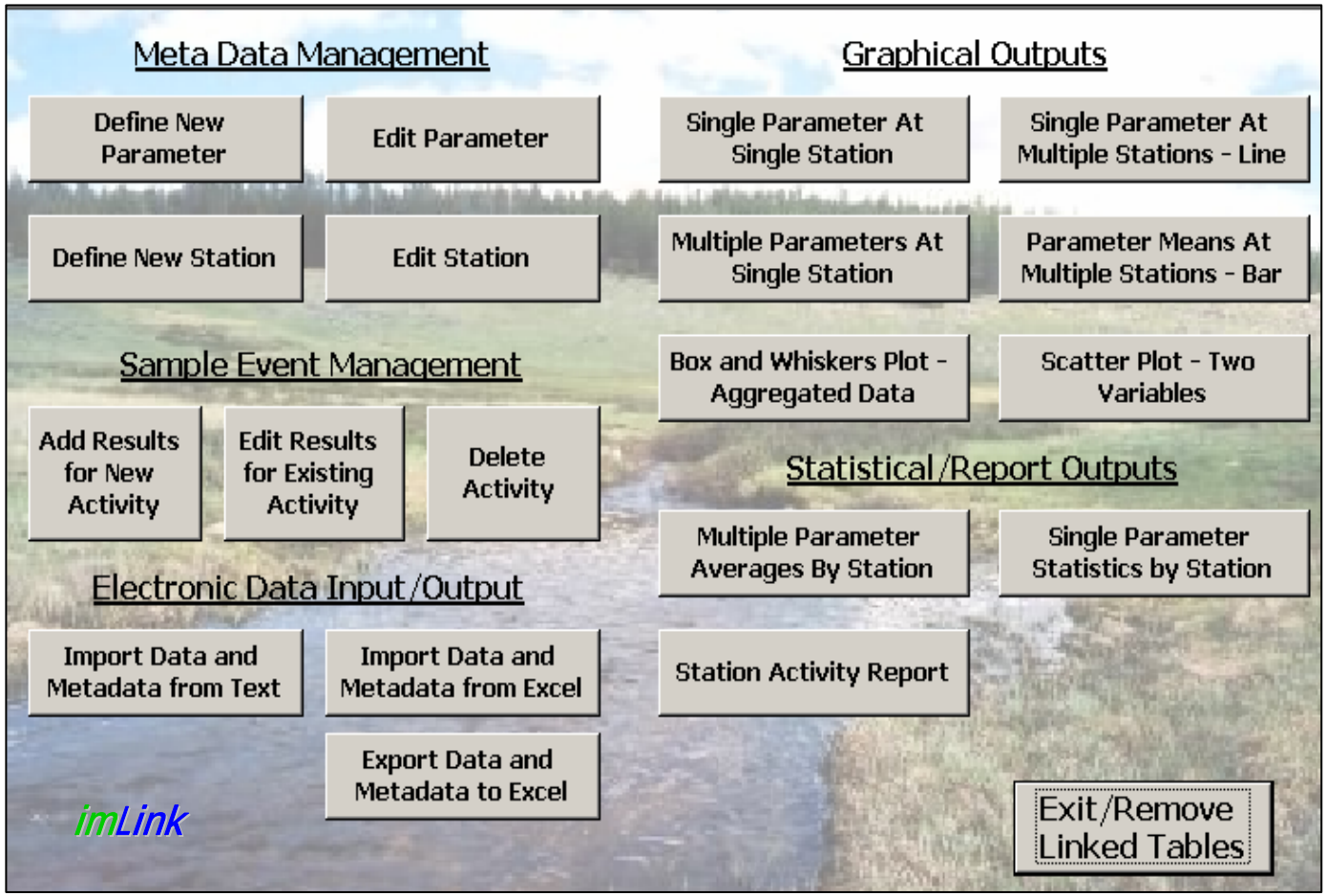
Data Management Diagram



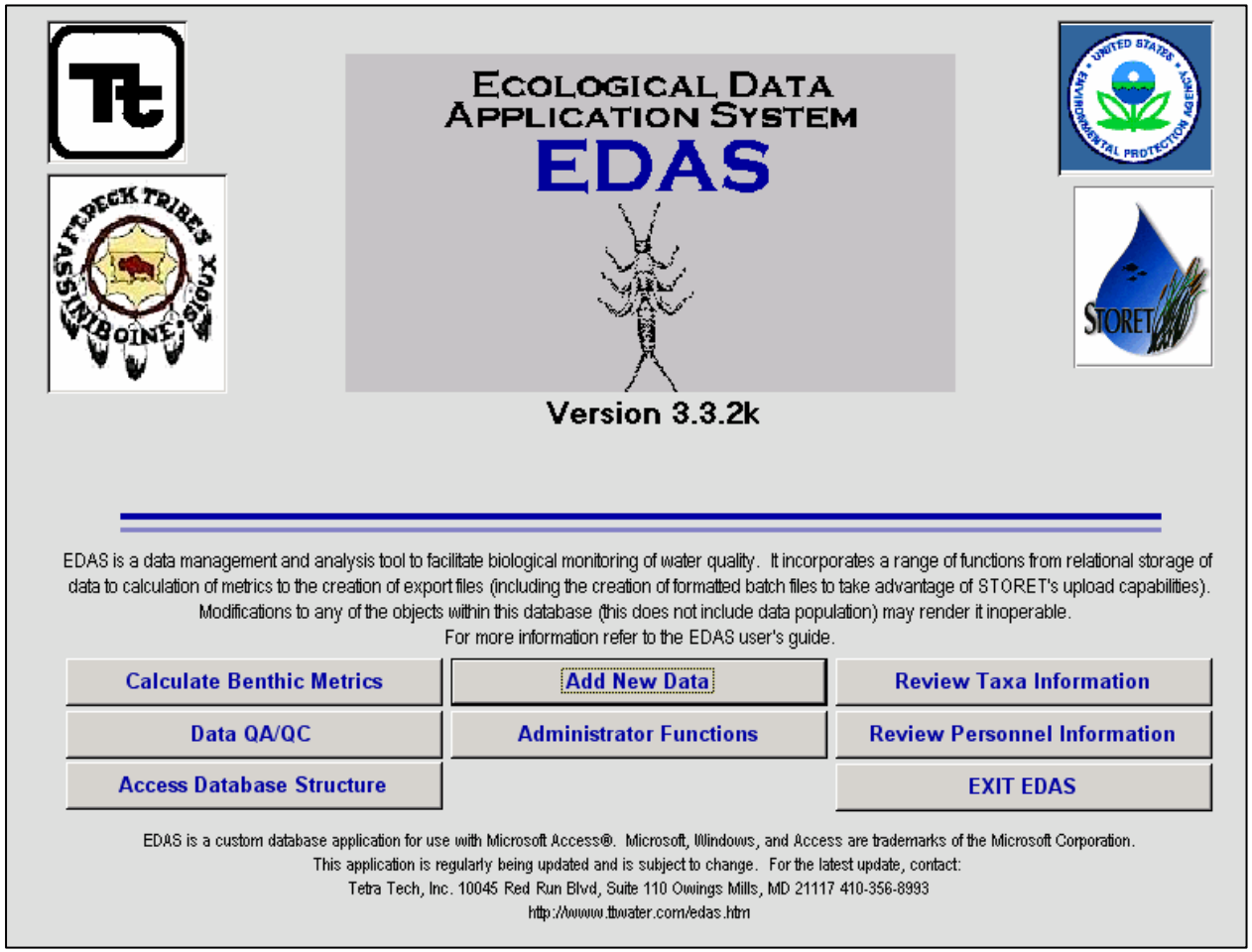
Data Management Tools

- Data Management
  - imLink
  - EDAS
  - Region VIII Tribal Template
- Data Loading
  - WebSIM
  - Exchange Network - WQX

imLink


Meta Data Management
Define New Parameter
Edit Parameter
Define New Station
Edit Station
Sample Event Management
Add Results for New Activity
Edit Results for Existing Activity
Delete Activity
Electronic Data Input/Output
Import Data and Metadata from Text
Import Data and Metadata from Excel
Export Data and Metadata to Excel
imLink
Graphical Outputs
Single Parameter At Single Station
Single Parameter At Multiple Stations - Line
Multiple Parameters At Single Station
Parameter Means At Multiple Stations - Bar
Box and Whiskers Plot - Aggregated Data
Scatter Plot - Two Variables
Statistical/Report Outputs
Multiple Parameter Averages By Station
Single Parameter Statistics by Station
Station Activity Report
Exit/Remove Linked Tables

EDAS


ECOLOGICAL DATA
APPLICATION SYSTEM
EDAS
Version 3.3.2k
EDAS is a data management and analysis tool to facilitate biological monitoring of water quality. It incorporates a range of functions from relational storage of data to calculation of metrics to the creation of export files (including the creation of formatted batch files to take advantage of STORET's upload capabilities).
Modifications to any of the objects within this database (this does not include data population) may render it inoperable.
For more information refer to the EDAS user's guide.
Calculate Benthic Metrics
Add New Data
Review Taxa Information
Data QA/QC
Administrator Functions
Review Personnel Information
Access Database Structure
EXIT EDAS
EDAS is a custom database application for use with Microsoft Access®. Microsoft, Windows, and Access are trademarks of the Microsoft Corporation.
This application is regularly being updated and is subject to change. For the latest update, contact:
Tetra Tech, Inc. 10045 Red Run Blvd, Suite 110 Owings Mills, MD 21117 410-356-8993
http://www.tbwater.com/edas.htm

Region VIII Tribal Template

Microsoft Excel - Region VII Tribal Template.xls

File Edit View Insert Format Tools Data Window Help

A1 Included Data Elements

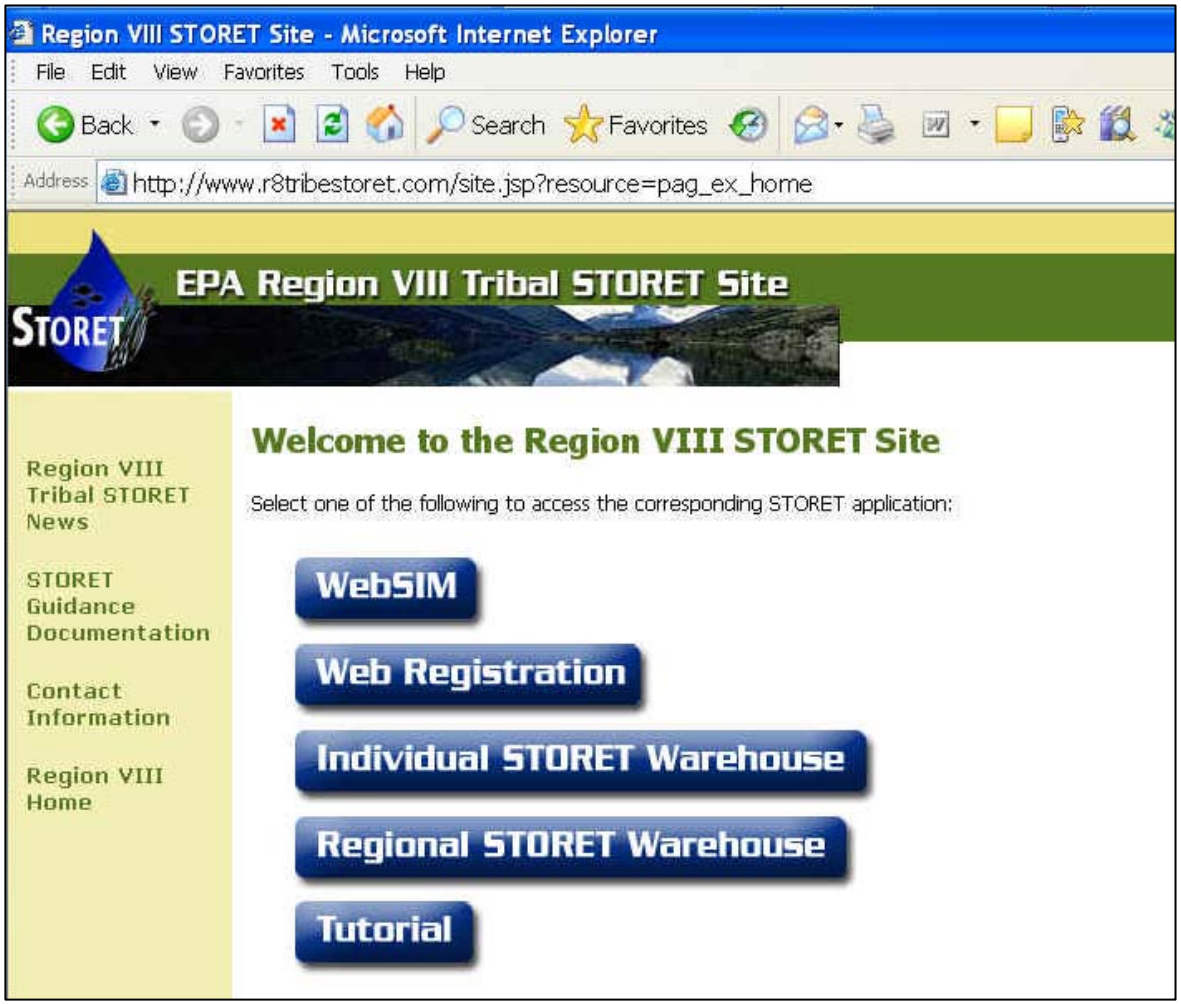
Included Data Elements

Field Name	Required	Association	Length	Field Type	Description
Project ID	R	Activity	8	Allowable Value	Valid STORET Project ID; separate multiple Projects with "\".
Station ID	R	Activity	15	Allowable Value	Valid STORET Station ID
Activity ID	R	Activity	12	Freetext	A unique identifier for each Activity
Medium	R	Activity	8	Allowable Value	Medium in which this Activity occurs
Activity Type	R	Activity	15	Allowable Value	Type of Activity
Activity Category	R	Activity	30	Allowable Value	Category of Activity
Replicate Number	C	Activity	3	Freetext	Used to differentiate between samples/measurements of the same type, medium, etc.
Activity Start Date	R	Activity	10	Defined Format	Date Activity began (MM/DD/YYYY)
Activity Start Time		Activity	8	Defined Format	Time Activity began (HH:MM AM/PM)
Activity Start Time Zone	C	Activity	3	Allowable Value	Time Zone for Activity Start Time
Depth to Activity		Activity	8	Freetext	The distance from the surface to the point in the water column at which the activity is conducted
Depth to Activity Units	C	Activity	2	Allowable Value	Units for Depth to Activity
Activity Comments		Activity	254	Freetext	Text comments for Activity
Sample Collection Procedure ID	C	Activity	8	Allowable Value	Valid STORET Sample Collection Procedure. For SAMPLES ONLY.
Gear ID	C	Activity	30	Allowable Value	Valid STORET Gear ID
Characteristic Name	R	Result	60	Allowable Value	Valid STORET characteristic name
Result Value	R	Result	254	Freetext	Measured value of characteristic
Result Value Units	R	Result	10	Allowable Value	Units for characteristic result
Sample Fraction	C	Result	15	Allowable Value	Fraction for characteristic
Result Comment		Result	4000	Freetext	Result comments
Field/Lab Procedure	C	Result	15	Allowable Value	The field or lab procedure used to analyze the sample
Field/Lab Procedure Source	C	Result	12	Allowable Value	Source Acronym for Field/Lab Procedure
Analysis Date		Result	10	Defined Format	Date sample analyzed (MM-DD-YYYY)
Detection Limit		Result	8	Freetext	Detection limit
Detection Limit Unit	C	Result	8	Allowable Value	Units for detection limit
Result Status	C	Result	1	Allowable Value	Result status (Final or Preliminary)
Statistic Type		Result	18	Allowable Value	Statistic Type
Value Type	C	Result	11	Allowable Value	Conveys how the result value was determined (e.g., Actual, Estimated, Calculated); SIM defaults to "Actual"

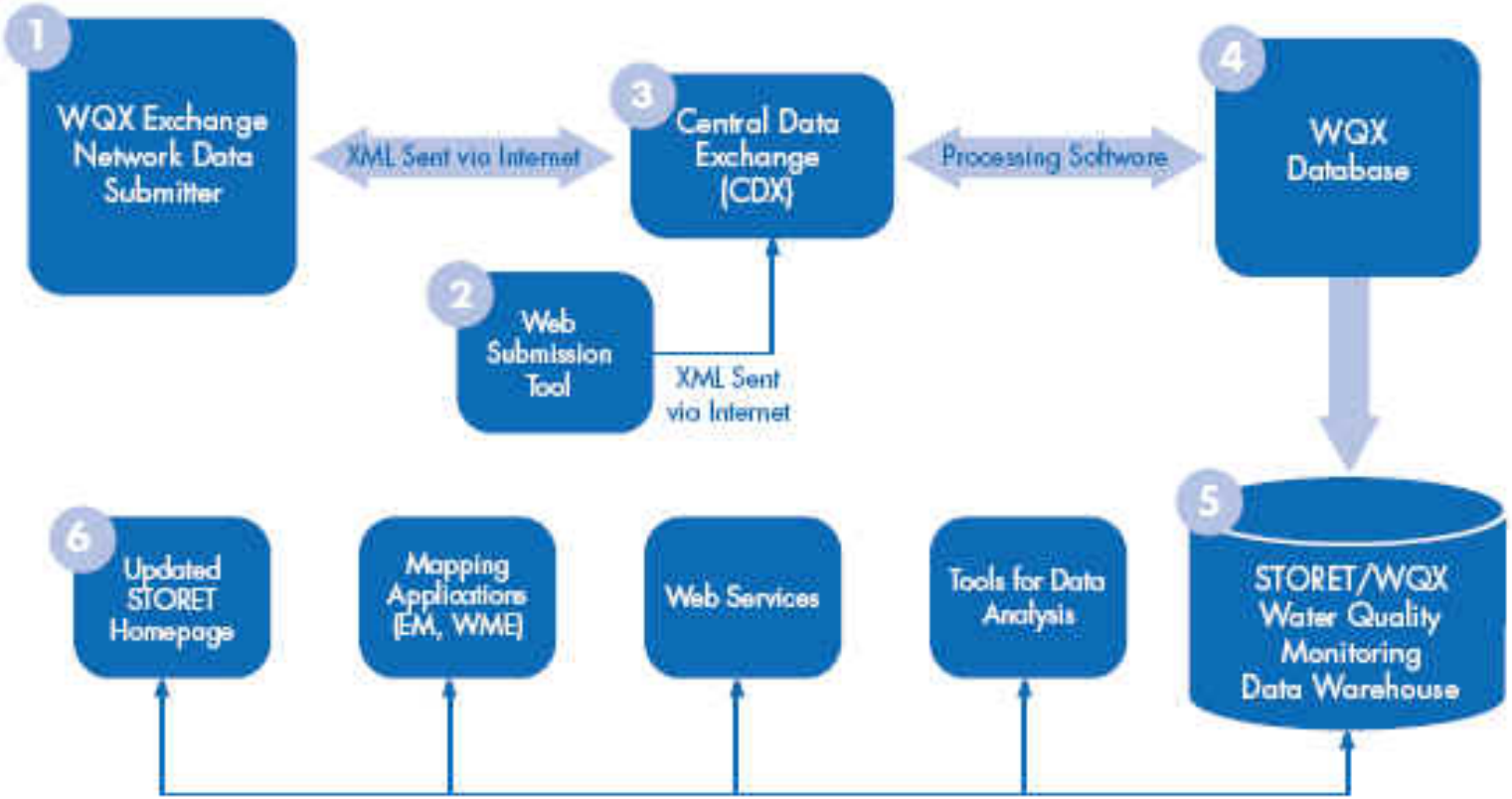
Instructions / Project Columns / Station Columns / Result Columns / Projects / Stations / Results / Allowed Values - Stations / Allowed

Ready

WebSIM


Region VIII STORET Site - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://www.r8tribestoret.com/site.jsp?resource=pag_ex_home
EPA Region VIII Tribal STORET Site
STORET
Region VIII Tribal STORET News
STORET Guidance Documentation
Contact Information
Region VIII Home
Welcome to the Region VIII STORET Site
Select one of the following to access the corresponding STORET application:
WebSIM
Web Registration
Individual STORET Warehouse
Regional STORET Warehouse
Tutorial

Exchange Network - WQX



Data Submission

outcome

- 75% of the Region VIII Tribes with water programs have loaded results data to STORET.
- 16 Tribes have loaded field measurements and observations.
- 16 Tribes have loaded analytical results.
- 1 Tribe has loaded Biological and Habitat Assessment Data
- 4 Tribes are loading data without assistance.

Data Utilization

outcome

- Watershed Planning
- Establishing/Determining baseline/background conditions
- Identification of potential sources
- Comparing biological condition criteria
- Input regarding TMDLs being developed on border waters

Report Output

STATION ACTIVITY REPORT PW-S-LP-030 Little Porcupine Creek - North

Sample Date: 6/5/2002

Field Data

Parameter	Value	Units
Arsenic	0.011	mg/L

Analytical Results

Parameter	Value	Units
Alkalinity Total as CaCO3	434	mg/L
Alkalinity, Bicarbonate as CaCO	591	mg/l
Alkalinity, Carbonate as CaCO3	0	mg/l
Aluminum	Present+OL	mg/L
Ammonia	Present+OL	mg/L
Barium	0.03	mg/L
Beryllium	Present+OL	mg/L
Cadmium	Present+OL	mg/L
Calcium	44	mg/L
Chloride	17	mg/L
Chromium	Present+OL	mg/L
Cobalt	Present+OL	mg/L
Copper	0.004	mg/L
Fluorides	0.5	mg/l
Iron	0.08	mg/L
Lead	Present+OL	mg/L
Magnesium	94	mg/L
Manganese	0.008	mg/L
Mercury	Present+OL	mg/L
Nickel	Present+OL	mg/L
Nitrogen, Nitrate (NO3) as NO3	0.08	mg/l
Nitrogen, Nitrite (NO2) + Nitrate	0.08	mg/l
Nitrogen, Nitrite (NO2) as NO2	Present+OL	mg/l
Phosphorus	0.08	mg/l
Potassium	10	mg/L
Selenium	0.002	mg/L
Silver	Present+OL	mg/L
Sodium	138	mg/L
Sulfate	295	mg/L
Thallium	Present+OL	mg/L

15-Oct-02 09:21 PM Page 1

PW-S-LP-030 - Little Porcupine Creek - North

VisitStartDate: 6/24/2002

Location: SP

Latitude: 48.452083 *Longitude:* -106.063749

Benthic IBI (1998)

Numerical Score: 0.25

Water Quality Rating:

Partial Support, moderately impaired

Metric	Value	Score
Total Taxa*	5	2
EPT Taxa*	2	1
HBI	6.1	1
% Oven Tax	83.2	0
% Collector + % Filterer	93.45	1
% EPT	0.934	0
% Scraper + % Shredder	5.6	1
% Dipter + % Non-Insect	95.1	0
Total	107	

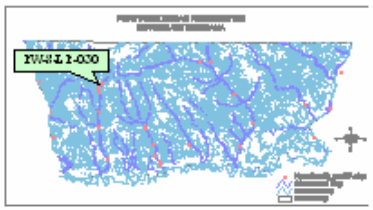
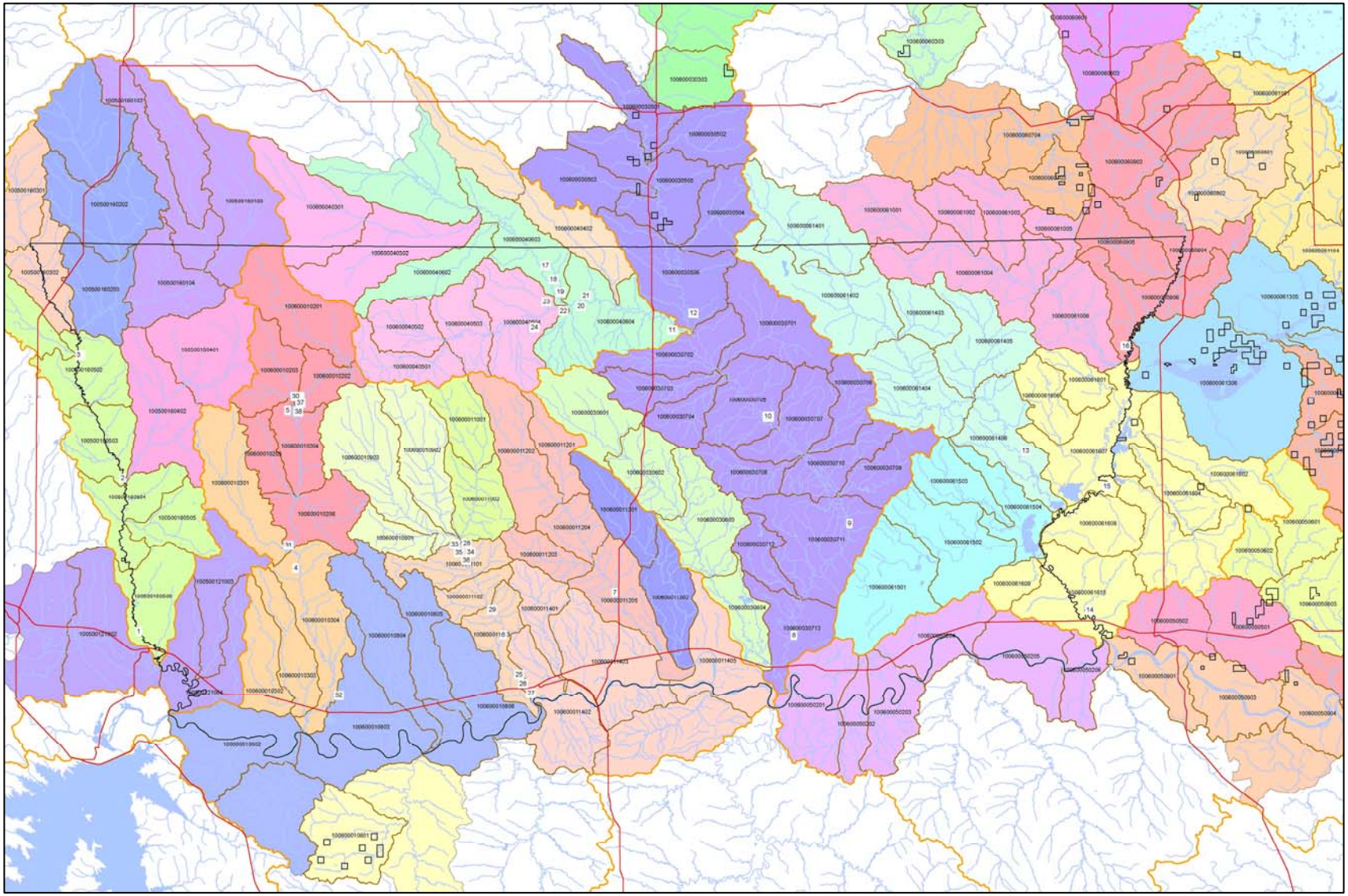
*Metric value includes CPOM data

Water Chemistry

Water Temperature	25.7
Dissolved Oxygen	8.2
pH	8.52

Physical Habitat

Frequency of Riffles	18
Embeddedness	16
Instream Cover (Fish)	15
Riparian Vegetative Zone Width (Right Bank)	10
Riparian Vegetative Zone Width (Left Bank)	10
Vegetative Protection (Right Bank)	10
Vegetative Protection (Left Bank)	9
Bank Stability (Right Bank)	10
Bank Stability (Left Bank)	9
Channel Alteration	20
Channel Flow Status	20
Sediment Deposition	6
Epibenthal Substrate/Available Cover	20



71