

Working Group – Consistency in data reporting quality

Goal - Water quality data collected in the US are presented with consistent qualifying information on data completeness and quality



The screenshot shows the homepage of the National Water Quality Monitoring Council's Water Quality Portal. The header features the council's logo and tagline, "Working together for clean water". Below the header, the page is titled "Water Quality Portal" and includes a descriptive paragraph about the portal's cooperative nature and the agencies it serves. The main content area is organized into three columns of links and information:

- DOWNLOAD DATA:** A large green button with a map background that says "DOWNLOAD DATA" and "Download water-quality data in Excel, CSV, TSV, and KML formats."
- HOW TO USE THE WQP:** A box with a book icon containing links for "User Guide", "Web Services guide", "FAQs", and "Upload Data".
- NATIONAL RESULTS COVERAGE:** A box with a map icon containing the text "Water-quality data in your state."
- ABOUT THE WQP:** A box with a bar chart icon containing links for "What is the WQP?", "Contributing organizations", "Other Water Quality Portals", and "Explore WQP Sites".

At the bottom of the page, there are logos for the USGS (United States Geological Survey) and the EPA (United States Environmental Protection Agency), along with a "Contact us" link.

WQP working group whitepaper

- Accurate and consistent metadata elements
 - parameter names and units of measurement (Sprague et al., 2017)
- Estimated uncertainty associated with the laboratory methods and field data collection.

Report Recommendations

- What are best practices for metadata?
- One size does not fit all, but **more** metadata makes portal data more valuable and useful for a wider audience
- Use recommended or optional WQX web elements to improve data quality
- Provide guidance including specific metadata submission examples

General Recommendations

- Physical/Chemical
 - Provide laboratory evaluation plan (NELAP), detection limits, quality control plans
 - Establish field verification program – side by side measurements, verify field data (blinds, blanks, replicates, duplicates)
 - Provide links to standard operating procedure/operating plans

Specific Recommendations

- Organization
- Project
- Monitoring location
- Physical-chemical

Thematic areas

- Project level
 - Detailed project description
 - Sampling design
 - QAPP or QAPP-like documentation
 - Modification of standard methods

Elements of a Quality Assurance Project Plan (QAPP) For Collecting, Identifying and Evaluating Existing Scientific Data/Information

This is a suggested template for EPA scientists and contractors

- 1. Title and Approval Page**
Include signature lines for the contractor, his/her quality system personnel, the NCEA project officer, and his/her quality assurance manager.
- 2. Quality System Components**
Describe the contractor's current organizational quality assurance program, including but not limited to:
 - a. Who has responsibility for the quality control of projects?
 - b. Where is this person in the organizational hierarchy?
 - c. What quality control and assurance procedures are planned or in place for projects like the proposed, and are these procedures documented?
 - d. How does the person responsible for quality assess and document the quality control exercised in projects and implement any necessary corrective actions, including those that require approval from the project's client?
- 3. Project Definition and Background**
This information may be found in the Project Plan, Statement of work or narrative for the contract.
- 4. Data Quality Objectives (DQOs)**
Include an explanation of data use and acceptance criteria (precision, accuracy, representativeness, completeness, and compatibility). Some of DQOs may be specified in the Statement of Work or narrative for the project.
- 5. Project Organization and Responsibilities of the Researcher**
Briefly describe how the project will be executed and who has responsibility for the various tasks. List licenses, certifications, and accreditations that are applicable to this project. Document how any items and services procured under this project will be determined to be of good quality and applicable to the needs of this project.
- 6. Project Description, Documentation, and Reporting**
 - A. Literature Search
 - B. Extracting, Proofing, Presenting Data from Literature Searches

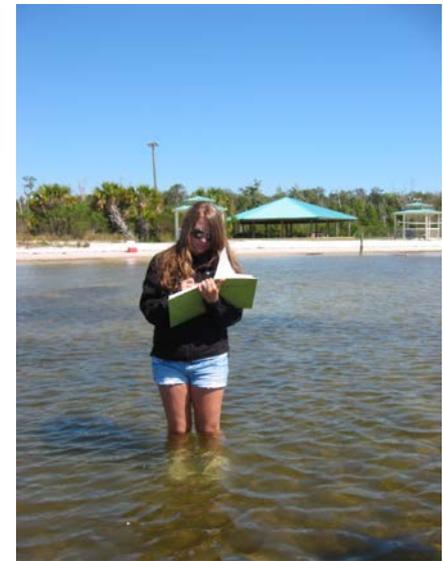
Best practices: Example for Project level data

From WQX template

Entity	Level	Best Practice
Organization	Description	enough information to understand background of organization, e.g. include website
	ID	More than one organization may enter data, so Organization ID may be unique (most likely) or may be the same
Project		May be small and concise or more inclusive.
		Is it tied to other programs (e.g. ambient or 319) and/or other projects and/or organizations?
		What is monitoring question? Duration of this project, what is media?
	Project Description	<i>Provide specific formatting suggestions (suggest answers for users)</i>
	Sampling Design type	Project plans or study design would include this information E.g. would be doing this if writing a grant) communicate codes in understandable way
	QAPP Approved	keep Y/N -include it as being present or not (not based on approval) or other project info as attachment very useful - should include when it has been done, and encouraged when not required
	QAPP Approval Agency Name	May not have to be approved, so not so critical, could be internal
	Project Attachment File Name	Would be very helpful/necessary if no QAPP present

Thematic areas

- Location
 - Station description in 3-D
 - Driving directions if relevant



Best practices: Example for Location level data

Entity	Level	Best Practice
Monitoring Location	Location Name	How to name station? Name and water body in one field <i>Establish a field of water body type</i>
Monitoring Location	Description	Station in 3D - more details about station needed E.g driving directions, shore collection, bridge crossing, pier, boat <i>Droplist for types of sampling.</i>
Monitoring Location	HUC Twelve-Digit Code	Can be generated based on lats and longs, so not required by portal 319 program wants planning and restoration based on HUC 12 Council have an app/tool for that and can enter
Monitoring Location	Alternate Monitoring Location ID	Can this include multiple IDs? Preserve the name of their data - attribution, link to other/complementary programs collecting at the same location
Monitoring Location	Alternate Monitoring Location Context	Organization responsible for alternate monitoring location ID
Monitoring Location	Monitoring Location Horizontal Accuracy Measure Value	Potential drift when collecting a sample (e.g. lake/boat). Site specific/context of sampling site would be most important to determine if this needed.

Thematic areas

- Physical-chemical
 - Grab versus depth integrated
 - Lab evaluation plan
 - SOP
- Biological
 - Identification (changing taxonomy, comparability of methods)
 - Methods description



Next steps

- Biological metadata
- Habitat metadata
- Development of tools and templates for portal
 - E.g. dropdown boxes, examples
 - Metadata indicators on portal
- Internet of Water

