How to Stop Worrying and Love the QAPP*

Webinar for NEP Projects
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*Quality Assurance Project Plan
Outline

QAPP Basics – who, what, when, why

The QAPP Review Process

How to Write a QAPP

QAPP Addenda

Lab Accreditation
Why do I have to write a QAPP?

- National Estuary Program (NEP) projects are funded by the U.S. Environmental Protection Agency (EPA).

- All projects that collect or analyze data for the EPA must write a Quality Assurance Project Plan (QAPP).

- EPA’s QA philosophy is a “graded approach”
  - The level of detail in each QAPP will vary according to the nature of the work being performed and the intended use of the data.

- A QAPP describes the **technical and quality activities** of an environmental data operations project that should be implemented to ensure that the results of the work performed will satisfy the data user’s needs.
Why is it smart to write a QAPP?

- Document all roles and expectations
- Increase efficiency by reducing the chance of errors and the need to repeat work
- Increase reliability of decisions made with project results
- Increase credibility and defensibility of project results
- Save time writing reports and scientific papers
Who has to write a QAPP?

Does your project...
- Collect new environmental data?
- Analyze existing environmental data (including GIS data)?
- Model environmental conditions?

If you are not doing any of these activities, you may not need to write a QAPP. You must obtain written confirmation from your grant manager or the NEP Quality Coordinator that a QAPP is not required.

If you’re not sure – ask me! (britta.voss@ecy.wa.gov)
How do QAPPs get approved?

1. Use the QAPP Template to draft your QAPP.
2. Send draft QAPP to the NEP Quality Coordinator.
   – NEP Quality Coordinator reviews, provides feedback.
3. Revise your QAPP as needed.
   – Once finalized, the NEP Quality Coordinator recommends approval of your QAPP to the Ecology QA Officer.
   – NEP Quality Coordinator will notify you when your QAPP is signed by the Ecology QA Officer.
4. Collect all remaining approval signatures.
   – If significant changes are made after the Ecology QA Officer signs, you will need to obtain new approval signatures.
5. Begin work on your project!
When do I write the QAPP?

Your QAPP must be approved before you can begin any field, lab, or modeling work.

“Approval” means everyone on the signature page has signed:

- Author(s)
- Strategic Initiative grant manager
- Department of Ecology QA Officer
- Others with data responsibilities (contractors, labs, etc.)

First submitted draft QAPP → Approved QAPP can take a few weeks (or more). Get the QAPP process started ASAP – as soon as you are ready to discuss your project activities!
What does QAPP review accomplish?

- Provides QA and technical resources for project managers and Strategic Initiatives.
- Ensures QA consistency across Strategic Initiatives.
- Ensures projects meet key standards:
  - Are the plans accurate and complete?
  - Will sufficient data be collected using appropriate measurement and data acquisition methods?
  - Are the planned assessment procedures adequate to evaluate the project?
  - Is there a process to identify any limitations on the data use?
How do I write a QAPP?


- QAPP Template
- Example QAPPs
- Ecology SOPs
- Lab accreditation information

Use previous QAPPs and examples as a starting point!
What’s in a QAPP?

- 1.0 Table of Contents
- 2.0 Abstract
- 3.0 Background
- 4.0 Project Description
- 5.0 Organization and Schedule
- 6.0 Quality Objectives
- 7.0 Study Design
- 8.0 Field Procedures
- 9.0 Laboratory Procedures
- 10.0 Quality Control Procedures
- 11.0 Data Management Procedures
- 12.0 Audits and Reports
- 13.0 Data Verification
- 14.0 Data Quality (Usability) Assessment
- 15.0 References
- 16.0 Appendices

*Some sections may not be relevant to your project!*
What’s in a QAPP?

- **1.0 Table of Contents**
  - A list of all the elements, references, and appendices in a QAPP.
  - Includes a list of tables and a list of figures.
  - Relies on built-in heading and caption formatting!

- **2.0 Abstract**
  - 300 words or less.
  - Describe the purpose of the project and why it matters.
  - List the main objectives and how they will be approached and accomplished.
What’s in a QAPP?

3.0 Background
- Provide historical and scientific perspective on the project and explain why the project is needed.

4.0 Project Description
- Tell the “story” of the project.
- Define the problem and summarize the anticipated study outcomes.

5.0 Organization and Schedule
- Describe who will be involved in the project, what their responsibilities will be, their relevant expertise and training, and a timeline for completing milestones for the overall project.
What’s in a QAPP?

6.0 Quality Objectives
- Data Quality Objectives – brief narrative describing criteria for study success.
- Measurement Quality Objectives – quantitative criteria for precision, bias, and sensitivity.
- Acceptance criteria for quality of existing data – how will you screen data collected outside the project?
- Model Quality Objectives – quantitative criteria for bias, error, goodness-of-fit, and other measures of uncertainty; can also include narrative/qualitative criteria.

7.0 Study Design
- Describe key features of the study area in relation to the spatial and temporal distribution of data to be collected modeled.
- Address underlying assumptions of the study approach and potential challenges.
What’s in a QAPP?

8.0 Field Procedures
- Sampling methods (SOPs) and equipment
- Containers, holding times, and preservation methods for lab samples
- Invasive species mitigation and equipment decontamination
- Chain of custody
- Field logs
- Other activities

9.0 Laboratory Procedures
- Sample preparation and analysis methods
- Expected range of results and reporting limits
- Special method requirements
- Lab accreditation
What’s in a QAPP?

- **10.0 Quality Control Procedures**
  - Field QC: blanks, replicates
  - Laboratory QC: standards, blanks, duplicates, spikes
  - Corrective action processes

- **11.0 Data Management Procedures**
  - Data recording and reporting
  - Laboratory data packages
  - Model data management

- **12.0 Audits and Reports**
  - Field and laboratory audits
  - Responsible personnel
  - Frequency, distribution, and responsibility of reports
What’s in a QAPP?

13.0 Data Verification
- Field and laboratory verification activities
- Data validation – independent external data review, usually not necessary
- Model quality assessment – calibration, precision, bias, etc.

14.0 Data Quality (Usability) Assessment
- Describes how you will evaluate whether project objectives were met
- Treatment of non-detects
- Evaluation of sampling
- Documentation of assessment

15.0 References

16.0 Appendices
- SOPs, example forms, large tables
- Glossaries and acronyms
Why do I have to use an accredited lab?

- EPA requires documentation of competency to generate environmental data.
- Ecology is authorized to evaluate documentation of competency. Ecology policy requires environmental data to be generated by accredited labs.
  - NEP projects can use facilities accredited by Ecology’s **Laboratory Accreditation Unit (LAU)** or other authoritative bodies (NELAC, ASTM, etc.).
  - Accreditation is specific to the Analyte, Matrix, and Method.
  - Matrix: non-potable water (environmental samples), drinking water, or solid material (incl. tissue).
- **Exceptions are rare and considered on a case-by-case basis.**
- Common parameters that require accreditation: Fecal coliform, *E. coli*, nutrients, chlorophyll, dissolved oxygen, DOC, TSS, metals, PAHs, pesticides, PCBs, …
How do I find an accredited lab?

  - Search by lab name, analyte, matrix, or method.
  - Make sure the lab accepts outside samples!

- See if the lab you want to use has accreditation other than LAU, such as:
  - NELAC: [https://lams.nelac-institute.org/](https://lams.nelac-institute.org/)

- Search for methods:
  - NEMI: [https://www.nemi.gov/](https://www.nemi.gov/)
QAPP Addenda

- If your project is making minor changes (new sampling sites, extended timeline, updated methods, etc.), you MUST write a QAPP Addendum.
  - Original QAPP is only valid for the activities and dates it includes.

- A QAPP Addendum only describes things that are new/different from the original QAPP. Omit anything that is unchanged from the original QAPP.

- The QAPP Addendum must be approved before you start the new project activities.

- If the original QAPP is five years old, a new QAPP is required.

- Don’t guess whether a QAPP Addendum is appropriate for your project – contact the NEP Quality Coordinator!
Questions?

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- **NEP Quality Assurance Website**