

EPA Quality Assurance Project Plans: Environmental Information to Develop Emissions Inventories and/or Analysis of Emission Reduction Strategies

Clean Ports Program Grants

April 1, 2025

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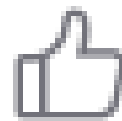
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RB Rachel Brunot 10:15 AM

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 2

Answer live **Type answer**

Agenda

Intro to Quality Assurance

Contents of a QAPP

QAPP Support

Questions & Answers

Disclaimer:



The information contained in this presentation is intended for the sole purpose of providing tools and technical assistance to grant recipients under the EPA's Clean Ports Programs. Specific questions on how this information relates to a particular grantee's deliverables should be directed to the grantee's EPA Project Officer.

Nothing contained in this presentation should be construed as creating new requirements beyond those already enumerated in program guidance or the terms and conditions that apply to the grantee.

Intro to Quality Assurance

What is a QAPP?

- A Quality Assurance Project Plan (QAPP) is your organization's planning document for conducting a specific project involving environmental information. It is an overview of your organization's specific business rules, policies, and quality assurance/quality control (QA/QC) procedures for conducting the project's activities that involve Environmental Information Operations (EIO).
- The QAPP helps to focus and define some of the key project details and decisions - WHO is doing WHAT, WHERE are they are doing it, WHEN are they doing it, HOW are they are doing it, and WHY are they doing it.

Why do I need a QAPP?

[2 CFR § 1500.12](#) requires the EPA to have a Quality Program, and each grant program's terms and conditions include stipulations for awardees to complete an approved QAPP.

The QAPP is designed to:

- Help your project team produce high quality data in a consistent manner.
- Help improve communications with all staff involved with the project.
- Detail each team member's responsibilities such that all parties are aware of their roles within EIO-related activities for the project.
- Help participants understand the importance of the specific project and can serve as both a training guide and legacy documentation.

See also:

- [CIO 2105.4](#): EPA's Environmental Information Quality Policy
- [EPA Solicitation Clauses](#)
- <https://www.epa.gov/quality/agency-wide-quality-program-documents>

When is a QAPP Needed?

- An approved QAPP is required when the project activities involve Environmental Information Operations (EIO).
- Environmental Information includes **data and information** that describe environmental processes or conditions.
- EIO is a collective term that includes the collection, production, evaluation, or use of environmental information including the design, construction, operation, or application of environmental technology.
- Awardees should work with their EPA Project Officer and Regional Quality Assurance Manager to determine the extent to which project activities include EIO.

Indicators that a project's activities may include Environmental Information Operations:

- | | |
|------------|-------------|
| • Gather | • Quantify |
| • Collect | • Compile |
| • Generate | • Analyze |
| • Monitor | • Model |
| • Evaluate | • Implement |
| • Use | • Measure |

QA Terms and Conditions

- Authority: Quality Assurance applies to all assistance agreements involving environmental information as defined in 2 C.F.R. § 1500.12 Quality Assurance.
- The recipient shall ensure that subawards involving environmental information issued under this agreement include appropriate quality requirements for the work. The recipient shall ensure sub-award recipients develop and implement Quality Assurance (QA) planning document[s] in accordance with this term and condition; and/or ensure sub-award recipients implement all applicable approved QA planning documents.

QAPP vs QMP: What is the Difference?

In addition to a QAPP(s), some recipients may also need to develop a Quality Management Plan (QMP). Please discuss requirements with your RQAM.

Quality Assurance Project Plan (QAPP):

A QAPP describes how environmental information operations are planned, implemented, documented, and assessed during the lifecycle of a **specific project**.

Quality Management Plan (QMP):

A QMP describes an **organization's quality program**, including descriptions of its internal quality procedures for implementing and assessing the effectiveness of the program; criteria for and areas of application; and roles, responsibilities, and authorities.

What is the process to develop and approve a project's QAPP?

- Grantees are responsible for developing a QAPP.
 - Details on recommended QAPP contents are included in the slides that follow.
 - Project Officers, grant program teams, and contractor support will be available to provide technical assistance for QAPP development (more detail to follow).
- EPA's Quality Assurance Managers review and approve QAPPs for all environmental information operations projects **prior to any information gathering, work, or use**, except under circumstances requiring immediate action to protect human health and the environment or operations conducted under police powers.

[EPA Quality Assurance Project Plan Standard \(8/21/2023\)](#)

Contents of QAPPs

QAPP Requirements

Quality Assurance Project Plan Standard (8/21/2023)



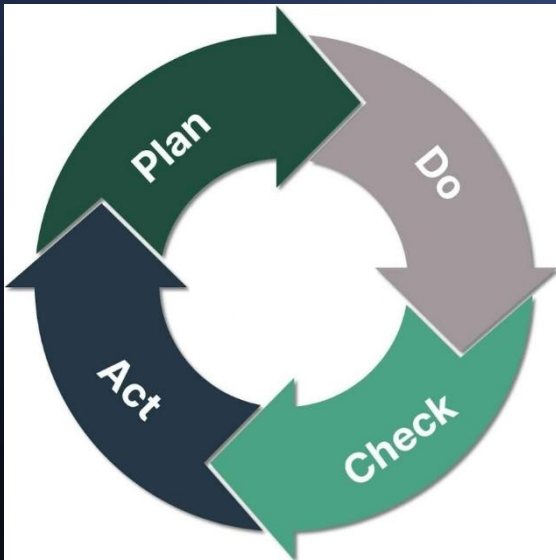
Directive No: CIO 2105-S-02.1

*Issued by the EPA Chief Information Officer,
Pursuant to Delegation 1-19*

Quality Assurance Project Plan Standard

<https://www.epa.gov/quality/agency-wide-quality-program-documents>

QAPP Elements



Group A: Project Management & Information/Data Quality Objectives

Describe the overall **plan** for the project

Group B: Implementing Environmental Information Operations

Describe **how** the plan will be implemented

Group C: Assessment, Response Actions, and Oversight

Describe how the project will be **assessed** and at what frequency

Group D: Environmental Information Review and Usability Determination

Describe how the resulting **information** will be evaluated

QAPP OPTIONAL Guide: Emissions Inventories and/or Analysis of Emission Reduction Strategies

Clean Ports Program Grants

QAPP Guide Outlines – what to expect

Guide Outline:

- Emissions Inventory and Reduction QAPP Outline

What this guide does:

- Provide awardees guidance on QAPP elements consistent with the EPA Quality Assurance Project Plan Standard Directive.
- Provide “helper text” to describe QAPP elements.
- Pose key “lead-in” questions to assist in thinking through the project as it pertains to a specific QAPP element.
- Provide examples of how awardees could respond to each QAPP element.
- Provide a list of key references to help with QAPP development.

What these guides do NOT do:

- Serve as a fill-in-the-blank template.
- Include examples that are specific to your organization or project.
- Guarantee that a QAPP will be approved on its first submission.

QAPP Outline: Group A Elements

Group A: Project Management & Information/Data Quality Objectives

- Describe the overall **plan** for the project

Element	Description
A1	Title Page
A2	Approval Page
A3	Table of Contents, Document Format, and Document Control
A4	Project Purpose, Problem Definition, and Background
A5	Project Task Description
A6	Information/Data Quality Objectives and Performance/Acceptance Criteria
A7	Distribution List
A8	Project Organization
A9	Project QAM Independence
A10	Project Organizational Chart and Communications
A11	Personnel Training/Certification
A12	Documents and Records

QAPP Outline: Group A Elements

Group A. Project Management and Information/Data Quality Objectives

A.1 Title Page

Quality Assurance Project Plan for
<add long title of project here line 1>
<add long title of project here line 2>

Grant Number:
<add grant number, line 1>

Prepared by:
<add name of grant applicant, line 1>
<add name of grant applicant, line 2>
<add street address, line 1>
<add street address, line 2>
<add city, county, state, zip code>

Prepared for:
US EPA Region <add EPA Region Number>
<add EPA regional office street address, line 1>
<add EPA regional office street address, line 2>
<add EPA RO city, state, and zip code>

Date prepared:
<add date of submission>

Period of Applicability:
<add period of applicability>

QAPP Outline: Group A Elements (cont.)

A.2 Approval Page

Signature of Project Manager
(Name and Title: Project Manager)
(Organization)

Date

Signature of Project Quality Assurance Manager
(Name and Title: Project Quality Assurance Manager)
(Organization)

Date

Signature of EPA Regional Project Officer
(Name and Title: EPA Regional Project Officer)
(Organization)

Date

Signature of EPA Regional Quality Assurance Manager or Designee
(Name and Title: EPA Regional Quality Assurance Manager or Designee)
(Organization)

Date

QAPP Outline: Group A Elements (cont.)

A.3 Table of Contents, Document Format, and Document Control

Instructions:

This table of contents includes all the elements specified in the EPA QAPP Standard consistent with EPA Quality Assurance Project Plan Standard (Directive No: CIO 2105-S-02.1). If you determine that one of the listed elements is not required for your implementation grant, please retain the section in your QAPP and provide an explanation as to why you believe your project does not require the associated content specified in the EPA's QAPP Standard.

Include a separate "List of Tables and Figures" that follows the main contents, if applicable. Provide page numbers for all tables and figures. It is recommended that tables be listed first, followed by figures.

Example Table of Contents

Group A:	Project Management and Information/Data Quality Objectives	
A.1	Title Page	1
A.2	Approval Page	2
A.3	Table of Contents, Document Format, and Document Control	3
A.4	Project Purpose, Problem Definition, and Background	4
A.5	Project Task Description	5
A.6	Information/Data Quality Objectives and Performance/Acceptance Criteria	6
A.7	Distribution List	7
A.8	Project Organization	8
A.9	Project QAM Independence	9
A.10	Project Organizational Chart and Communications	10
A.11	Personnel Training/Certification	11
A.12	Documents and Records	12
Group B:	Implementing Environmental Information Operations	
B.1	Identification of Project Environmental Information Operations	14
B.2	Methods for Environmental Information Acquisition	15
B.3	Integrity of Environmental Information	16
B.4	Quality Control	17
B.5	Instrumentation/Equipment Calibration, Testing, Inspection, and Maintenance	18

QAPP Outline: Group A Elements (cont.)

Outline Structure of Sections Starting at A.4

Sub-section Header

- Description of QAPP element
- ‘Helper’ questions to consider addressing in response to each section (tailored to each program’s typical grant activities)
- Example QAPP response for each section

QAPP Outline: Group A Elements (cont.)

Description of QAPP Element – Emissions Inventory/Reduction QAPP

A.4 Project Purpose, Problem Definition, and Background

Instructions:

In this section of the QAPP, state the specific environmental problem that is to be investigated, decision to be made, or outcome to be achieved. For example, if the QAPP is being developed for a port emissions inventory, this section could discuss the geographic domain of the inventory, which port equipment sectors and activities are covered, and which pollutants of concern will be included. For additional decision points and considerations for conducting a port emissions inventory, see EPA's Ports Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (EPA-420-B-22-011).

Include sufficient background information in this section to provide a historical, scientific, and/or regulatory perspective for the project. If data has been collected in the past or this is a revised QAPP, historic information / data should be summarized. Some information can be pulled from the approved workplan. For example: If this is an update to an existing inventory, discussion of the assumptions and findings of the prior study could be included here.

Quality Resources: EPA Environmental Information Quality Policy, Procedure, QMP Standard, and QAPP Standard are located at <https://www.epa.gov/quality/quality-program-directives>.

Regional-specific quality programs are available at <https://www.epa.gov/quality/regional-offices>.

QAPP Outline: Group A Elements (cont.)

‘Helper’ questions – Emissions Inventory/Reduction QAPP

When describing the project purpose, problem definition, and background, consider addressing the following questions if applicable to your project type:

- What is the environmental problem/issue to be studied?
 - Why is this project important?
 - What planned environmental decisions or actions might this work inform?
 - What is the geographic domain of the analysis?
 - Does it include both land side and marine activities?
 - Does it include any off-port activities beyond the port “fence line” such as vessel anchorages or hotelling areas, freight or intermodal terminals, or common drayage routes to access the port?
 - Which specific pollutant(s) is the QAPP addressing?
 - What equipment sector(s) will be included?
- What is the background / history of the problem?
 - Is this an update to or expansion of prior work?
- Is this a new QAPP or the revision of an existing QAPP? If it is a revision to an existing QAPP, when was the original QAPP developed for this project?
 - Identify other applicable QA planning documents programs and standards.
- What are the sources for collecting environmental information?
 - What type, quantity, and quality of information is needed?
 - What QA will be applied?

QAPP Outline: Group A Elements (cont.)

Example Response Text – Emissions Inventory/Reduction QAPP for Clean Ports' CAQP Awards

The purpose of this project is to conduct an updated refined analysis of mobile source emissions and evaluate six future scenarios including business as usual at the “Port of Stormhaven.” To implement this project, the project team will define the problem using three distinct sets of Environmental Information (EI) for port activities that impact local air quality:

a) *Update of baseline 2020 air emissions inventory.*

The project team will incorporate the port’s existing activity-based 2020 emissions inventory results into a revised assessment for 2020X using methodologies and estimates consistent with EPA’s current Port Emissions Inventory Guidance. The updated inventory will reflect all significant mobile sources within the port’s jurisdictional boundary consistent with the 2020 baseline emissions inventory.

b) *Business as usual inventory projections for 202X to 202Y.*

The project team will develop BAU projections, absent this project. BAU estimates for each year will reflect all significant mobile sources within the port’s jurisdictional boundary consistent with the baseline inventory. The project team will ensure baseline year estimates and BAU projections are completed on a comparable basis and consistent with EPA’s current Port Emissions Inventory Guidance; and

c) *Five Reference Case (RC) scenarios for evaluating five different lower-emitting operating scenarios for 202X to 202Y.*

This set of EI will be structured and calculated using the same activity framework used for the baseline and BAU scenarios. Each of the Reference Case projections will evaluate a unique emissions reduction strategy or a unique combination of strategies. Each Reference Case will reflect the same time period and port operations included in the Baseline and BAU estimates.

The question to be answered by the project team involves comparing the five different RC emissions reductions options for the period 202X to 202Y to the BAU projections for the same period to determine

QAPP Outline: Group B Elements

Group B: Implementing Environmental Information Operations

- Describe **how** the plan will be implemented

Element	Description
B1	Identification of Project Environmental Information Operations
B2	Methods for Environmental Information Acquisition
B3	Integrity of Environmental Information
B4	Quality Control
B5	Instruments/Equipment Calibration, Testing, Inspection, and Maintenance
B6	Inspection/Acceptance of Supplies and Services
B7	Environmental Information Management

QAPP Outline: Group B Elements (Selected)

B.1 Identification of Project Environmental Information Operations

- Overview: This section describes the Environmental information operations (EIOs) to be conducted and how they satisfy the project purpose, data quality objectives, and performance and acceptance criteria.
- EIOs are the work performed to collect, produce, evaluate, compile, or use environmental information and the design, construction, operation, or application of environmental technology.
- Environmental information can be classified as either:
 - Primary data - environmental data collected directly by the organization whether through field activities or other on-site data gathering activities.
 - Secondary data (also referred to as existing data or non-direct measurements) - may come from several sources, including other studies, government databases, etc.

QAPP Outline: Group B Elements (Selected)

B.2 Methods for Environmental Information Acquisition

- Overview: This section describes how environmental information will be acquired and implemented.
- Considerations for this section could include:
 - For primary data:
 - What primary data will be collected throughout the project period?
 - What analytical method was used to report any primary data collected?
 - Did you reference the specific analytical SOPs utilized for each method?
 - For secondary data:
 - What secondary data will be used for any reporting conducted throughout the project period?
 - If the information is to be combined with new environmental information, describe the criteria to ensure compatibility.

QAPP Outline: Group B Elements (Selected)

B.7 Environmental Information Management

- Overview: This section describes how environmental information will be managed from data generation to the final data use and end storage.
- Some considerations for this section could include:
 - How and where are data stored?
 - What type of data acquisition system (if any) will be used?
 - How is data integrity maintained? Is raw, unaltered data maintained such that the project team can always see or retrieve the original data? If so, where and how is the raw data maintained?
 - Are procedures to process, compile, and analyze data included in a specific SOP?

QAPP Outline: Group C Elements

Group C: Assessment, Response Actions and Oversight

- Describe how the project will be **assessed** and at what frequency

Element	Description
C1	Assessments and Response Actions
C2	Oversight and Reports to Management

QAPP Outline: Group C Elements

C.1 Assessments and Response Actions

- Overview: In this section of the QAPP, describe the assessments your project team performs or participates in, to ensure the project activities are being conducted as planned and are generating acceptable data.
- Considerations for this section could include:
 - How do you ensure the project is conducted as described in the QAPP?
 - Do you plan to conduct internal systems audits? If so, describe. Who will conduct them and on what frequency?
 - Is there a process in place that would allow project personnel to initiate a corrective action process, if warranted? If so, describe. If included in an SOP, provide the specific reference.
 - Who will assess the effectiveness of a corrective action measure to determine whether it successfully resolved the issue?

QAPP Outline: Group C Elements

C.2 Oversight and Reports to Management

- Overview: In this section of the QAPP, describe who is responsible for oversight activities and how the results of assessments are communicated up the management chain so that all parties supporting the project – including the lead organization's director (or equivalent) – are aware of data quality issues and concerns.
- Considerations for this section could include:
 - Are there routine reports to the appropriate project and QA managers that summarize the reporting period's activities and/or highlights specific reasons for data discrepancies?
 - If during a performance or systems audit issues are found that require corrective action, do you generate a separate Corrective Action Report that is geared towards correcting and monitoring the specific issue?

QAPP Outline: Group D Elements

Group D: Environmental Information Review and Usability Determination

- Describe how the resulting **information** will be evaluated

Element	Description
D1	Environmental Information Review
D2	Useability Determination

QAPP Outline: Group D Elements

D.1 Environmental Information Review

- Overview: In this section of the QAPP, describe the methods or procedures to be used when verifying and validating data, as well as documenting the process. The QAPP should describe who is responsible for each level of data review and what each level of data review entails
- Considerations for this section could include:
 - Do you have a Data Validation SOP?
 - Do you identify and flag data that may have been considered an outlier or exceptional event?
 - Who verifies the data? On what frequency does it occur and what does it entail?
 - Who validates data? On what frequency does it occur and what does it entail?
 - Is there a hierarchy in this data review process that ensures multiple sets of eyes review the data?

QAPP Outline: Group D Elements

D.2 Usability Determination

- Overview: Determining usability of the environmental information is the culmination of the entire QA process and involves a retrospective evaluation of the planning process. Not all environmental information may end up being suitable for its intended purpose.
- Considerations for this section could include:
 - Describe the overall project evaluation process that will be routinely performed to determine the usability of the data.
 - Identify who will conduct the determination and where documentation of the determination will be kept.
 - Describe communication methods of any known or anticipated limitations on the use of the environmental information, to whom that information will be communicated, and how and where the communication will be documented.

QAPP Outline: Key Takeaways

Address each element of the Standard;
provide a justification if not applicable



Emphasis is on environmental information
operations (EIO), not just data

Concentrate on content, not format

(Consider that if the QAPP follows the outline of the QAPP elements
in the Standard, then EPA can more readily verify that all elements
have been addressed)

EPA Grants QA Contractor Support

Clean Ports Program Grants

EPA Support for QAPP Development

To support CPP grantees with developing the required QAPP materials, the following resources will be available:

Optional QAPP Guides

- Compliant with EPA's new QAPP Standard
- Provide the QAPP structure and instructions on what should be included in each section
- Include sample text for example responses

QAPP Technical Assistance

- Contact your Project Officer to find out about technical assistance

Review Timing

- Work with EPA QA staff to support/expedite review as much as possible

Questions?

Specific questions on how this information relates to a particular grantee's deliverables should be directed to that grantee's EPA Project Officer.

Appendix

Environmental Information Operations:



- A collective term that encompasses the collection, production, evaluation, or use of environmental information and the design, construction, operation, or application of environmental technology.
- Environmental information includes **data and information** that describe environmental processes or conditions.
- Examples include but are not limited to:
 - direct measurements of environmental parameters or processes,
 - analytical testing results of environmental conditions (e.g., geophysical, or hydrological conditions),
 - information on physical parameters or processes collected using environmental technologies,
 - calculations or analyses of environmental information,
 - information provided by models,
 - information compiled or obtained from databases, software applications, decision support tools, websites, existing literature, and other sources,
 - development of environmental software, tools, models, methods, and applications, and
 - design, construction, and operation or application of environmental technology.

QA and QAPP Resources

EPA Quality Program Guidance

<https://www.epa.gov/quality/agency-wide-quality-program-documents>

- Environmental Information Quality Policy
- Environmental Information Quality Procedure
- Environmental Information QA Project Plan (QAPP) Standard

EPA Regional Sites for Quality Management Plans and Guidance

<https://www.epa.gov/quality/regional-offices>

