

APPENDIX D

NJDEP CSRR Remedial Investigation and Design Services Term Contract T2621 Bid Solicitation 26DPP01289

MASTER QUALITY ASSURANCE PLAN (QAPP) MINIMUM REQUIREMENTS

The Contractor's Master QAPP is the prime document governing sample collection, sample analysis, and data generation for environmental and waste samples. It encompasses the activities of certified laboratories providing services under this Contract, including Contractor staff measuring “analyze immediately” parameters in the field. The Contractor shall utilize the template contained herein to prepare the Master QAPP.

New Jersey Department of Environmental Protection (NJDEP) Quality Assurance Project Plan (QAPP) Template Introduction

The QAPP is a formal document which details plans for a project, including implementation, documentation, and assessment. The QAPP describes the necessary Quality Assurance (QA) and Quality Control (QC) requirements and other technical activities that will be implemented to ensure that the project activities performed will satisfy the stated performance and acceptance criteria.

QAPPs shall be drafted with the assistance and involvement of all relevant project staff. NJDEP Office of Quality Assurance (OQA) staff are available to assist with any questions and to provide guidance. The OQA developed this document to assist in QAPP development. The template was designed following the organizational structure established in the EPA Quality Assurance Documents: [EPA-IT/IM Directive Standard Quality Assurance Project Plan Standard, July 2023, Directive No. CIO 2105-S-02-1](#); [EPA-IT/IM Directive: Quality Assurance Project Plan Standard, Directive # CIO 2105-S-2.1](#); and

- *EPA Guidance for Quality Assurance Project Plans* (EPA QA/G-5), December 2002, EPA/240/R-02/009, <https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5>.

The OQA anticipates this template will expedite the QAPP development, review, and approval process by clarifying required QAPP elements. Please note this document may not be inclusive of all requirements contained within the EPA QA documents referenced above and does not supplant any requirements contained therein. *Although not required, the OQA strongly recommends the use of this template for QAPP submittals. Other formats may be used if the required information is present.*

How to use this template:

- 1) Each section contains text describing the information to be detailed within that section in bracketed *[blue italics]*. Enter information for your project in each section as specified.
- 2) Fill in all grey boxes with the applicable project-specific information by clicking on the box and typing.
- 3) Some sections may not be relevant to your project. In such instances, write “Not applicable” with a very brief description of why the section is not applicable under that section heading (e.g., “Not applicable – sampling not performed during this project”). Conversely, your project may require additional sections. Add additional sections (e.g., appendices, tables, maps, etc.) at the end of the QAPP and update the Table of Contents (Section A3) accordingly.
- 4) Once the QAPP is ready for final approval, this guidance information page and all *[explanatory text]* can be deleted from the draft.

Questions/Concerns:

For further clarification about the information to be detailed in a particular section, please refer to the EPA QA documents referenced above. If you have any questions or concerns during the QAPP development or implementation process, please reach out to Jenna Majchrzak or Megan Rutkowski of the OQA at jenna.majchrzak@dep.nj.gov or megan.rutkowski@dep.nj.gov, or to your NJDEP Project Manager.

Revision 1, Effective Date: January 19, 2024

A1 Title Page

[This section contains project administrative information (title, identification of the organization developing the QAPP, etc.). If the project is being done as required in a contract, please use the official name and contract number from the contract as the "Project Name."]

Quality Assurance Project Plan

for

Enter Project Name

NJDEP QAPP Number:

QAPP # will be assigned and entered by the OQA

Prepared by:

Enter name of person developing QAPP

Enter title and organization of person developing QAPP

Enter e-mail address of author

Prepared for:

New Jersey Department of Environmental Protection (NJDEP)

Enter NJDEP division or bureau responsible for the project

Enter version description (1st Draft, 2nd Draft, etc., or Final)

Enter month and year of QAPP preparation

Funding Source:

Specify if project is State funded, EPA funded, etc. If EPA funded, please enter either grant or cooperative agreement number, contract number, or interagency agreement number.

Period of Applicability:

Enter period of applicability. QAPP duration cannot exceed 5 years.

A2 Approval Page

[This section is where applicable project staff will sign/approve the QAPP. The project CANNOT start until all signatures are obtained. Additional signature lines may be added. Project staff include:

- Project Manager (principal investigator) – holds overall responsibility for managing the project, may be external or internal to DEP.*
- NJDEP Project Manager – if the project is solely performed by DEP personnel, the NJDEP project manager will be the project manager and the NJDEP project manager line can be deleted.*
- Project QA Manager (QAM) – the person responsible for day-to-day quality assurance/quality control (QA/QC) during the project. This person must be independent from the project manager and is separate from the DEP QAM.*
- DEP QAM – an assistant QA Manager from the NJDEP Office of Quality Assurance, who provides QA/QC assistance during the QAPP development and implementation process. The NJDEP QAM performs QAPP review and approval and is required to have ongoing oversight during the project and to be the final signatory on all Departmental QAPPs.*

Note: Do not sign submitted drafts. Final draft will be circulated for signature.]

My signature below indicates my approval of the plan and my commitment to follow the procedures noted herein. I understand that changes to this plan shall not be made without approval/signature by all below signatories.

Project Manager	_____ _____ Enter name and title of Project Manager	_____ Date
NJDEP Project Manager	_____ Enter name and title of NJDEP Project Manager	_____ Date
Project QA Manager	_____ Enter name and title of Project QA Manager	_____ Date
Enter project role of additional signatory (if applicable).	_____ Enter name and title of signatory	_____ Date
NJDEP QA Manager	_____ OQA will enter the name and title of NJDEP QA Manager	_____ Date

QAPP Approval Date: Entered by the OQA upon approval. Project cannot start prior to the date entered here. OQA will send the QAPP to the DEP project manager for distribution after QAPP approval is complete.

A3 Table of Contents, Document Format, and Document Control

[Sections A1-D2 are organized in accordance with the EPA IT/IM Directive Standard: Quality Assurance Project Plan Standard (CIO 2105-S-02.0) and must be included in all QAPPs. Sections E1 and E2 are optional. Additional sections may be added as needed.]

Group A: Project Management and Information/Data Quality Objectives	
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

Group B: Implementing Environmental Information Operations	
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
Group C: Assessment, Response Actions and Oversight	
C1	Assessments and Response Actions
C2	Oversight and Reports to Management

Group D: Environmental Information Review and Usability Determination	
D1	Environmental Information Review
D2	Useability Determination

Group E: Additional Information	
E1	References
E2	Appendices

A4 Project Purpose, Problem Definition, and Background

[Identify any project planning documents that have relevant requirements in the table below (e.g., previous QAPPs, NJDEP Field Sampling Procedures Manual, etc.). The Department's QMP shall be referenced in all QAPPs – it has been listed on the first line below.]

Title of Document	Date of Document	Pertinence to this QAPP
NJDEP's Quality Management Plan (QMP)	7/1/2020 – 6/30/2025	This QAPP was developed in accordance with the NJDEP's QMP.
<i>Enter additional documents if applicable. Add more lines, as needed.</i>		

Project Purpose and Problem Definition

[Explain the project purpose (the specific problem to be solved, decision to be made, etc.) as follows:

- a. Define the purpose of the project's environmental information operations (e.g., research, monitoring, environmental technology for clean-up, use of existing data from other sources, etc.).*

- b. Define problem(s) to be addressed and question(s) to be answered by the project.*
- c. Define the decision(s) to be made and the level of information quality needed to ensure that those decisions are based on sound environmental information.*
- d. List any applicable regulatory programs and standards.]*

- a. Enter project purpose.
- b. Enter problem(s) to be solved.
- c. Enter decision(s) to be made.
- d. Enter applicable regulatory programs.

Project Background

[Provide a historical, scientific, and regulatory perspective for the project. If this work relates to work done under a previous QAPP, add a reference to that QAPP and explain how long the related project has gone on (e.g., annual pH testing has taken place in the Raritan River since 2019).]

Enter background information.

A5 Project Task Description

[Fill in Table 1 to describe:

- all project tasks (e.g., QAPP development, sampling, annual review, etc.) and who is responsible for each task;*
- products to be produced (i.e., what is the project deliverable, e.g., a final report, publication on a website, other);*
- the schedule for accomplishing those tasks and for completing the deliverables;*
- the process for an annual review of the QAPP, including who is responsible for the review (required if project duration exceeds one year). Annual reviews must confirm the suitability of and evaluate the effectiveness of the QAPP and are typically performed by the project manager or project QAM. The review shall be documented, and though it is not required to be submitted to the OQA for review, must be available upon request. List the timeframe (month/year) for the annual review in Table 1.]*

Table 1: Task / Deliverable Schedule			
Task/Deliverable	Responsible Individual	Anticipated Start Date	Anticipated End Date
Enter project tasks/deliverables and descriptions.	Enter name.	Enter month/year.	Enter month/year.

A6 Information/Data Quality Objectives and Performance/Acceptance Criteria

[Describe the data/information quality needed to make project decisions. Discuss data quality indicators (DQI) (precision, accuracy/bias, representativeness, completeness, comparability, and sensitivity) and the acceptance/performance criteria for each. Each DQI is listed below, but any which are not applicable can be marked N/A, and an explanation of why that element is N/A shall be given. Note: Section B4 has additional detail on QC requirements.]

Precision

[Precision: The measure of agreement among repeated measurements of the same property under the same conditions. Methods to determine precision during a project may include:

- using the same analytical instrument to make repeated analyses of the same sample;*
- using two or more laboratories to analyze the same sample;*
- splitting a sample in the field and submitting it to the laboratory as two samples for comparison;*
- collecting, processing, and analyzing duplicate samples.*

Specify precision determination method and acceptance criteria. Acceptance criteria are typically defined in analytical methods. However, in the absence of method-specific limits, a limit of agreement within 20% relative percent difference (or other appropriate limits) may be applied to duplicate results. [Note: duplicate limits can be tabulated in section B4 in lieu of in this section.]

Specify frequency of precision measurements (typically at least 5% of samples are analyzed/collected in duplicate). Specify what will be done when precision criteria are not met.]

Enter precision requirements and criteria.

Accuracy (Bias)

[Accuracy: The measure of the overall agreement of a measurement to a known value. Methods to determine accuracy/bias during a project may include:

- *Analysis of a reference material; or*
- *Analysis of a matrix spike sample.*

Specify accuracy/bias determination method and acceptance criteria. Accuracy/bias requirements are typically defined in analytical methods. In the absence of method-specific limits, a limit of 80-120% recovery (or other appropriate limits) may be applied.

Specify frequency of accuracy/bias measurements (typically at least once per batch of 20 samples). Specify what will be done when accuracy criteria are not met.]

Enter accuracy/bias requirements and criteria.

Representativeness

[Representativeness: the extent to which results represent a population, or true environmental condition.

Briefly discuss how the study was designed to ensure measurements will be made in such a way that the data reflects the conditions you are measuring. An explanation of representativeness may detail the rationale for selecting specific sampling sites to demonstrate the samples are representative of the population; or taking samples through all seasons at a particular site to represent that site over all conditions.]

Enter representativeness requirements and criteria.

Comparability

[Comparability: the measure of confidence that one data set can be compared to another and/or that ensures data sets can be combined for decision making.

Briefly discuss how the study results can be compared to like data sets (e.g., explaining that measurements will be taken using the same method/equipment as was used previously).]

Enter comparability requirements and criteria.

Completeness

[Completeness: the amount of valid data needed to be obtained to meet the goals of the project for each parameter and/or sampling location.

Briefly discuss how the study is designed to ensure completeness. Specify that the number of valid measurements completed will be compared to the number of planned samples collected/analyzed during data validation to ensure the study is complete. If there is a specific

amount of environmental information needed for decision making, specify that amount. Specify what will be done if the study is not completed as described.]

Enter completeness requirements and criteria.

Sensitivity

[Sensitivity: the ability of a method or instrument to differentiate between measurement responses at different levels.

Record sensitivity information for any equipment/instrumentation used. For analytical laboratory testing, users may tabulate the method detection limit (MDL), reporting limit, and/or action level for each parameter (if applicable) in Table 2, below. If reporting to an MDL, specify the procedure used to determine the MDL. Limits in laboratory standard operating procedures (SOPs) or methods can be referenced, if applicable.]

Enter sensitivity requirements and criteria.

Table 2: Project limits				
Analyte	Matrix	Method Detection Limit (Units)	Project reporting limit (Units)	Project action level (Units)

A7 Distribution List

[In Table 3, list the individuals who will receive copies of the approved QAPP and any subsequent revisions/addenda. Include all individuals responsible for QAPP implementation (e.g., project managers, QAMs, and representatives of all groups involved).]

Table 3: Distribution List			
Name	Organization	Title	E-mail Address
		Project Manager	
		NJDEP Project Manager	
		Project QA Manager	
	NJDEP – Office of Quality Assurance	NJDEP QA Manager	

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A8 Project Organization

[Fill in Table 2 with the names, roles, and responsibilities of key project participants, including:

- The project manager [in research projects, the project manager may be known as the principal investigator (PI). The project manager has overall responsibility for the project, from planning through reporting. The project manager may be internal to DEP or external];*
- The NJDEP project manager. If the project is solely performed by DEP personnel, this line may be deleted as it would be duplicative to the project manager described above;*
- The project QA manager [the person responsible for overall quality assurance/quality control (QA/QC) for a particular project];*
- The NJDEP QA manager [an assistant QA Manager from the NJDEP Office of Quality Assurance, who can provide technical assistance during QAPP development. The NJDEP QAM performs QAPP review and approval.];*
- Data users [individuals to whom final project results are submitted]; and*
- All individuals responsible for implementation of the project;*

List “maintaining and distributing the QAPP” as a project duty – this is typically done by the project manager, but this duty could be assigned to someone else, as appropriate.]

Table 4: Roles and Responsibilities of Key Project Personnel			
Name	Organization	Project Role	Project Duties
		Project Manager	
		NJDEP Project Manager	
		Project QAM*	Planning, documenting, coordinating, and assessing effectiveness of the QAPP
	NJDEP – Office of Quality Assurance	NJDEP QAM**	QAPP review and approval

** The project QAM has the authority to access and discuss quality-related issues with senior management outside of their direct supervisory chain as necessary.*

*** The assistant QAM from the NJDEP OQA has been delegated QAPP signature authority from the EPA as described in the Department’s Quality Management Plan (QMP).*

A9 Project QAM Independence

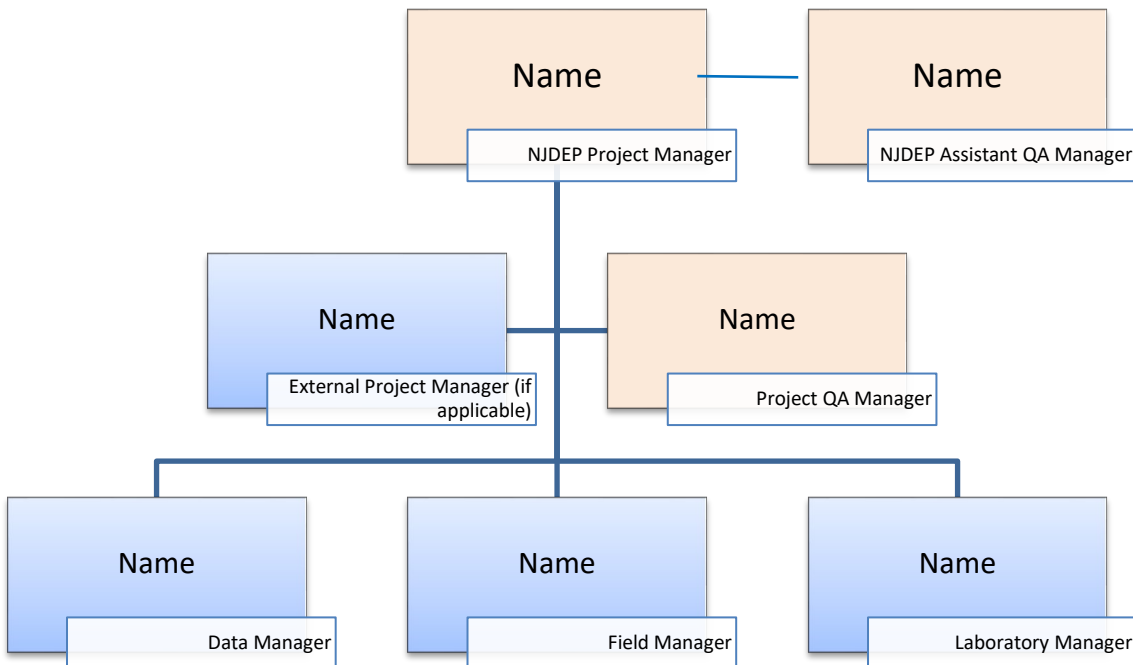
[The project QAM must be independent from the personnel generating the data, including the project manager. Describe how the project QAM's independence is ensured. The project QAM is not required to be independent of senior officials and department managers who are not functionally involved in the project.]

Enter description of how QAM independence is ensured.

A10 Project Organizational Chart and Communications

[Include a project organizational chart and, if needed to clarify project roles, describe any additional specifics concerning project organization. The example organizational chart below was made in Microsoft Smart Art within Word and can be edited within this document. OQA also has a PowerPoint organizational chart template, available upon request. Note: the roles in green boxes in the organizational chart must be filled out if this organizational chart is used. Those in blue boxes may or may not be applicable, depending on the project.]

Figure 1: Organizational Chart



Enter additional description of project organizational structure, if needed.

A11 Personnel Training / Certification

[Describe:

- Any specialized training or certifications needed by personnel to successfully participate in the environmental information operations;*
- How the training will be provided;*
- Who is responsible for ensuring project personnel are trained and qualified;*
- Who is responsible for documenting training; and*

- Documentation of training and verification of adequacy of training.

If NJ certified environmental laboratories will be performing testing during the project, specify the applicable laboratory names and NJDEP OQA identification numbers. If multiple certified environmental laboratories are used, the parameters to be tested by each laboratory must be detailed in section B2, below.

Note: training requirements may vary across areas of the project (e.g., between field staff and laboratory staff). Detail any differences as applicable.]

Enter training/certification information.

A12 Documents and Records

[Describe procedures relating to project documents and records, including:

- *What documents (e.g., QAPP, SOPs, etc.) and records (e.g., calibration logs, photographs, preparation logs, etc.) will be produced during the project? Note: include copies (as attachments) of any forms or checklists that will be used.*
- *If applicable, how are the results obtained from any contractors (e.g., laboratory)? For example, are results sent hard copy, e-mail to project manager, other)? What type of data package is requested (e.g., will the laboratory be requested to provide full deliverables or results only?)*
- *What document control procedure will be followed (i.e., what is the procedure for preparing, reviewing, approving, issuing, and archiving documents and who is responsible for implementation)? Does the DEP program have a specific tracking format – if so, what is it?*
- *How, where, and by whom, are documents maintained? (E.g., electronically (file path or cloud location, other?), paper?)*
- *How, where, and by whom, are records maintained? (E.g., electronically or paper, will paper records be digitized? If so, how, and by whom? Will data be stored in an electronic database? If so, which one, and who will enter the data?)*
- *What retention requirements will be applied to project records (e.g., length of retention period, location of retention – electronic or physical files, etc.)? When and how will documents and records be disposed?]*

Enter document and record procedures.

B1 Identification of Project Environmental Information Operations

[Describe the environmental information to be obtained during this project by placing an “X” in the appropriate box(es) below. Aside from the entry of the “x’s” where appropriate, no additional entries are needed in this section.]

This project will employ the environmental information operations identified with an “x” in the table below. These operations will satisfy the project purpose through the implementation of the tasks described in A5. This task implementation will ensure satisfaction of the data quality objectives and performance and acceptance criteria described in sections A4 and A6.

		direct measurements of environmental parameters or processes.
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Environmental Information		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, applications;
Environmental Technology		systems, devices and their components applicable to both hardware and methods or techniques that measure and/or remove pollutants or contaminants and/or prevent them from entering the environment
		pollution prevention: measurement, monitoring, reduction, control, and/or treatment processes, such as wet scrubbers (air), granulated activated carbon unit (water), filtration (air, water).
		Contamination: containment to prevent further movement of the contaminants, such as capping, and solidification or vitrification, and biological treatment.
		Storage containers, methods, or facilities, such as drums, tanks, and ponds or lagoons.
		Design, construction, and operation or application of environmental technology.
		Remediation processes and their components, and/or technologies, such as soil washing (soil), pump and treatment, soil vapor extraction (soil), land farming and other bioremediation processes.
Other		

B2 Methods for Environmental Information Acquisition

[In the applicable subsection(s) below (Field Activities, Laboratory Analyses, Existing Information, or Environmental Technology), identify and describe methods and procedures for how data/environmental information will be acquired. Information to be covered includes collection, production, evaluation and/or use, design, construction, operation, or application of environmental technology. Delete any subsection(s) (Field Activities Environmental Measurements, Laboratory Analyses, Existing Information, or Environmental Technology) that is (are) not applicable to your project.]

Field Activities

[For field activities:

- Describe or reference methods (by number/identifier, version/revision date, and regulatory citation (if applicable) and SOPs used for field activities. Specify who is responsible for updating and maintaining the SOPs. If an SOP or method provides more than one option (e.g., one SOP covering the use of multiple different types of field equipment for the same task), specify which equipment will be used during this project. Describe any modifications to SOPs that are expected during the project, if applicable.*
- If the field activities include sampling, describe, or reference the sampling design, including, as appropriate:*
Sample locations/ collection frequencies

- How was the design of sample sites and sampling timeframes established (e.g., random, systematic, etc.) and how were sample sites/ collection timeframes chosen (e.g., seasonal differences, proximity to a city, etc.);
- Planned sampling locations (Include maps or tabulate coordinates of sample locations), or, if sampling locations have not been chosen, detail the rationale to be used in choosing sites during the project. If location information would jeopardize site participation, specify sites are confidential, but still, provide as much information as possible concerning sample location(s);
- How will sample locations be marked/identified (e.g., GPS coordinates logged at each site using xxxxxx type GPS meter);
- Procedures for inaccessible sample locations;
- Any specifications for the timeframe for sample collection and number of samples per site (e.g., grab samples taken every 15 minutes for two hours at the same point in the stream);
- If important to obtaining usable results, note the order of sampling, as well as any restrictions on times between samples (e.g., “For sites at which multiple samples will be collected, the samples shall be collected from upstream to downstream. All project sites will be sampled eight times during the year of the project – there shall be at least 30 days between sampling dates.”)

Sampling procedures

- Specify sample collection procedures (e.g., published methods, reference documents such as the NJDEP Field Sampling Procedures Manual) to be used;
- Specify equipment to be used (e.g., sampling devices such as pumps, bailers, etc.);
- Specify equipment preparation and decontamination procedures;
- Type(s) (grab or composite) of samples and QC samples;
- Specify sample information (sample volumes, preservatives, # of containers per sample, container types (e.g., glass or plastic, new or reused)); and
- Sample matrices (e.g., soil, groundwater, etc.);

For more information on Sampling Design, refer to “Guidance on Choosing a Sampling Design for Environmental Data Collection for Use in Developing a Quality Assurance Project Plan,” EPA QA/G-5S, EPA/240/R-02/005, December 2002:

<https://www.epa.gov/sites/default/files/2015-06/documents/g5s-final.pdf>]

- If the field activities include field analysis describe or reference:
 - the methods to be used for testing each parameter (e.g., SM 4500-H B-11 for pH)
 - the name of the laboratory performing the field testing. If the laboratory is certified through the OQA’s environmental laboratory certification program, specify the laboratory ID number.

Enter field activity information.

Laboratory Analyses

[For laboratory analyses:

- *List all parameters (e.g., lead, ammonia, total suspended solids, etc.) to be analyzed in a laboratory. If samples are sent to multiple laboratories for analysis, specify what testing will occur at each laboratory. If the laboratory is certified through the OQA's environmental laboratory certification program, specify the laboratory ID number. It is often useful to tabulate parameter/analysis information.*
- *Describe or reference methods (by number/identifier, version/revision date, and regulatory citation (if applicable) and SOPs used for the testing (be sure to identify the preparation and analysis methods to be used for each analysis, as applicable (e.g., SW-846 1311 TCLP extraction and SW-846 6010D analysis for manganese and copper)).*
- *Specify who is responsible for updating and maintaining the laboratory SOPs. If an SOP or method provides more than one option (e.g., one SOP covering the use of multiple different types of field equipment for the same task), note which equipment will be used during this project. Describe any modifications to SOPs that are expected during the project, if applicable.*
- *If using non-standard methods (e.g., for unusual sample matrices or emerging contaminants), appropriate method performance study information is needed to confirm the performance of the method for the matrix. If previous performance studies are not available, performance studies shall be developed during the project and included as part of the project results. If such methods will be used, describe the performance studies to be performed during the project.*
- *Specify corrective actions for when analytical problems arise (who is responsible, how will they be confirmed effective.))*

Enter laboratory activity information.

Existing Information

[Identify any data that will be obtained from existing sources, rather than measured directly during the project.

- *Describe the existing information to be obtained, the collection process, the plans for use of that information, and how the information will be determined to be suitable.*
- *If the existing information is to be combined with new environmental information, describe criteria to ensure compatibility with new information and any constraints on the use of the data. Constraints may include age of data, proximity to current project location, nomenclature, whether there was a QAPP for the previous work, etc.*
- *Indicate whether the existing information is central or ancillary to the project.*
- *If the sources of the information have not yet been determined, specify the process to identify and select these sources.*

Examples of existing information include:

- *existing sampling and analytical data from a previous effort (current or related project);*
- *photographs or topographical maps of the water body being studied;*
- *background information from facility or State files;*

- *measurements that are ancillary to addressing the project's objectives (for example, meteorological data, primarily used to better predict or explain dispersion and concentration of airborne toxic compounds in a localized area).]*

Enter existing information sources.

Environmental Technology

[If the project involves environmental technology, specify what the technology will be applied to (e.g., pollution prevention, contamination containment, storage, or remediation). For additional advice on environmental technology QAPPs refer to the current version of [EPA Guidance on Quality Assurance for Environmental Technology Design, Construction and Operation](#)

Examples of environmental technology projects include:

- *Pollution prevention reduction, control, and/or treatment processes (e.g., wet scrubbers (air), granulated activated carbon unit (water), filtration (air, water);*
- *Containment of contaminants (e.g., capping, and solidification or vitrification, and biological treatment); and*
- *Storage containers, methods, or facilities, such as drums, tanks, and ponds or lagoons;*
- *Remediation processes (e.g., soil washing (soil), pump and treatment, soil vapor extraction (soil), land farming and other bioremediation processes).]*

Enter environmental technology information.

B3 Integrity of Environmental Information

[Describe or cite the procedures for ensuring project integrity.

For projects that involve field sampling: describe the requirements for sample handling and custody from the field to the laboratory (and in transit). Specify:

- *Materials used for labeling (e.g., labels and pen with waterproof ink);*
- *Labeling convention used (e.g., labeled with date, sample location, and collection time (Site name or ID/date/time)). If a printed label will be used, include a copy of the label;*
- *Chain-of-custody (COC) procedures, including details to be included on COC such as date, location, collector initials, etc.;*
- *Reference to where a copy of the COC to be used can be found (e.g., Appendix A) [Note: a COC should be included as part of the QAPP];*
- *Sample holding times between collection and extraction or analysis;*
- *Sample storage criteria (e.g., store in a freezer until extraction);*
- *Shipping information to ensure sample integrity is maintained (e.g., list the name and address of laboratory to which samples will be shipped and how samples will be packaged for transport (e.g., cooler packed with dry ice)).*
- *Specify the laboratory turnaround time (if important to project schedule).*

For projects that involve laboratory analysis:

- *Identify each laboratory to be used as well as a back-up laboratory (if required for a specific project). If the laboratory is certified through the OQA's environmental laboratory certification program, specify the laboratory ID number.*
- *Describe the processes for ensuring the laboratory maintains current accreditation and/or certification for applicable analytes and matrices (e.g., will the accreditation/certification status of the laboratory be verified during the annual review to ensure the laboratories chosen are still certified).*

Other project types – specify how you ensure the integrity of the project.]

Enter details addressing integrity of environmental information.

B4 Quality Control

[Note: Some QC information may already be detailed elsewhere in the QAPP (e.g., section A6). Do not repeat information, rather refer to the other section(s) as appropriate.

Describe the QC activities needed to meet project environmental information/data quality objectives and performance/acceptance criteria. Describe or reference the procedures to be used to calculate applicable statistics (e.g., precision and bias).

*For projects involving field sampling, or measurements, or laboratory analysis: either in a table, or as narrative, detail all required QC activities (e.g., blanks, duplicates, matrix spikes, laboratory control samples, surrogates, second column confirmation, etc.) for each sampling and analytical technique, including their frequency, acceptance criteria, and corrective actions if acceptance criteria are exceeded. Alternately, refer to where the performance criteria can be found (e.g., stating SW-846 6010D, section 9.0 details the QC requirements that will be adhered to during this project for SW-846 6010D testing). However, if a reference method (e.g., SW-846 6010D), allows the user to select from various QC options, then the QAPP shall state exactly which options are being selected during the project. ***If the QC information is available in laboratory SOPs, these SOPs can be referenced in lieu of repeating information in the QAPP. These SOPs shall be included as appendices unless a certified laboratory is being used. If a certified laboratory is being used, the QAPP writer does not need to attach the laboratory SOPs to the QAPP, as the OQA has already verified the method QC limits are met by the laboratory through the laboratory certification program.****

For projects using existing data, QC activities may include the use of systematic review, independent secondary review of studies in the literature, and QC of constructed databases or spreadsheets.

For projects using environmental technology (e.g., models or modeling), QC activities may include model calibration and model validation (sensitivity analyses).]

Enter QC information as specified.

B5 Instrument / Equipment Calibration, Testing, Inspection and Maintenance

[Identify instruments and equipment that will be used during the project. SOPs or other documents may be referenced, as appropriate [Note: copies of SOPs shall be included as QAPP attachments unless the SOPs are for procedures performed by NJDEP certified environmental laboratories, in which case these SOPs need not be attached – only their revision dates and SOP numbers need to be specified. Describe or reference:

- Procedures and schedules for testing, inspecting, and maintaining instruments/equipment to ensure that it is available and in working order;*
- How and when (e.g., before each use, weekly, monthly, etc.) calibration will be performed. Identify any certified equipment and/or standards to be used during calibration;*
- Any critical spare parts (e.g., spare batteries for cameras are kept on the plane during the flight, spare dissolved oxygen sensor membranes will be always kept in the field sampler's truck such that the membrane can be changed at any time when problems with the current membrane arise.); and*
- Procedures for retaining records of calibration, testing, inspection, maintenance.]*

Enter instrument/equipment calibration information as specified.

B6 Inspection/Acceptance of Supplies and Services

[Describe how and by whom supplies will be inspected and accepted for use. State acceptance criteria for such supplies (e.g., specify that bottles of known cleanliness are used for trace metals analysis). State how acceptance of supplies will be documented – will such acceptance be identified on the items themselves or in records? Examples of supplies include spare parts for instruments/equipment, standard materials and solutions, sample bottles, calibration gases, reagents, hoses, deionized water, potable water, and electronic data storage media.

Describe any services (e.g., document development, sample collection, etc.) provided by vendors (e.g., contractors, sub-contractors, and sub-grantees). Specify which elements of the project will be performed by the vendors and how vendor adherence to QAPP requirements will be verified.]

Describe requirements for supplies and services.

B7 Environmental Information Management

[Describe project environmental information (data) management. Address topics including:

- What procedures will be implemented to prevent loss of information during data entry, reduction, and reporting to databases, forms, and reports (e.g., separate analyst reviews all data entry)? How will errors be detected and corrected?*
- How is environmental information (either that which is generated during the project, or existing information) processed, compiled, and analyzed? Is any specific equipment/software used to process the data? Any formulas used? How is the acceptability of the hardware/software configuration verified?]*

Describe environmental information management protocols.

C1 Assessments and Response Actions

[Describe assessments to ensure that the QAPP is implemented as approved and any actions that may be needed to address deviations from the QAPP:

Assessments: Describe the plan to ensure the QAPP is adhered to by detailing information such as:

- *assessment types (e.g., audits, performance evaluations, management reviews, inspections, peer reviews, product reviews (e.g., review of deliverables));*
- *documentation of assessments & assessment findings;*
- *the number of assessments to be performed & frequency; and*
- *who will perform the assessments (and the scope of their authority (e.g., when does the project need to be halted, data discarded, and who has the authority for such)). Note: when possible, assessors should be free from any conflicts of interest with the area being assessed.*

Response Actions: Discuss corrective action (CA) protocols to be followed in response to any assessment findings. Include information such as:

- *Who is responsible for CAs?*
- *How will CAs be determined?*
- *How will CA effectiveness be confirmed?*
- *How will CAs and evaluations of CA effectiveness be documented?]*

Describe plans for assessments and response actions.

At any point during the project, the NJDEP Office of Quality Assurance may audit compliance with the required elements of this QAPP.

C2 Oversight and Reports to Management

[This section describes who is responsible for ensuring assessments (section C1) are performed, and for ensuring that any response actions (section C1) are implemented.

Oversight:

- *Describe activities to ensure that assessments are performed, and to ensure that response actions are implemented, as needed; and*
- *Identify the individual(s) responsible for oversight and how any findings will be addressed/ reported.*

Reports: Identify the reports that will be generated during the project and who will prepare those reports, including, as applicable:

- *Report types (e.g., quarterly reports, final reports, etc.);*
- *Planned frequencies/timeframes for reporting;*
- *Detailed description of report contents (e.g., raw data, processed data, audit results, description of any QA problems, etc.);*
- *Discussion of who/what organization will receive the reports (note: project manager and project QAM must receive a copy of the report) and how the report will be transmitted and/or distributed (e.g., final report submitted to xyz program, then published on DEP website, final report submitted to EPA, etc.)*

- *If testing/analysis will be performed in laboratories that are not certified through the NJDEP OQA's environmental laboratory certification program, the QAPP must contain a statement that data obtained during the project cannot be used for regulatory purposes.*
- *For EPA-funded projects, the EPA organization sponsoring the work should be contacted regarding any additional reporting requirements to detail in this section.]*

Detail oversight and reporting protocols.

D1 Environmental Information Review

[Describe or cite the procedures for the data quality assessments that will occur after environmental information operations (data collection/gathering) concludes. Specify who is responsible for these activities and how they will be documented. Activities to perform include:

Verification, which is the process of evaluating the completeness, correctness, and conformance/ compliance of a specific data set to the method, procedural, or contractual requirements. Describe how project data will be verified (e.g., reviewing how the data was recorded, analyzed, transformed (e.g., calculations of replicate measurements, dry weight to wet weight values), reduced, or transferred). State the criteria used to accept, reject, or qualify data during verification, as well as how any issues will be resolved.

Validation, which is an analyte and sample-specific process that extends the evaluation of data beyond data verification to determine the analytical quality of a specific data set. Validation is confirmation that the requirements for a specific intended use or application have been fulfilled. Describe how project data will be validated, including any calculations or statistical procedures to be used for this determination. State the criteria used to accept, reject, or qualify data during validation, as well as how any issues will be resolved.

Data Quality Assessment, which is the scientific and statistical evaluation of data to determine if the data obtained from environmental information operations are of the right type, quality, and quantity to support their intended use. Describe or reference how the environmental information/data review process will confirm the data quality criteria described in section A6 have been met.]

Discuss environmental information review.

D2 Useability Determination

[Determining whether environmental information may be used for the project purpose is the culmination of the entire QA process. The useability of the environmental information is determined using the outputs of the data validation, data verification, and any data quality assessment activities detailed in D1.

Describe or reference the process to determine whether the environmental information obtained during the project is useable. Describe how this determination will be documented and the individual(s) responsible. Discuss how limitations on the use of the data will be handled and reported to the decision makers. For example, what will be done if the quality control criteria specified in the QAPP are not met?

Note: it may be useful to tabulate the questions that will be asked when determining data usability. An example table is provided below. If using the table, be sure to specify who will be responsible for asking the questions detailed below.

<i>Item</i>	<i>Assessment Activity</i>
<i>Data Deliverables</i>	<i>Was all necessary information (e.g., results and reports) performed/provided, including validation and verification of results?</i>
<i>Deviations from QAPP (e.g., sampling sites, sample handling (preservatives, holding times, etc.), analytical methods, QC sample failures)</i>	<i>Were there any deviations from the QAPP? If so, what impact do these deviations have on usability?</i>
<i>SOP deviations</i>	<i>Were there any deviations from the SOPs that were used? If so, what impact did these have on adhering to the QAPP?</i>
<i>Metrological effects/site conditions</i>	<i>Were there any weather or site conditions that may have affected results?</i>
<i>DQI: Precision</i>	<i>Were precision criteria met for all samples? If not, what percent of samples had precision issues? Is there enough data that met criteria for use in decision making?</i>
<i>DQI: Accuracy (Bias)</i>	<i>Were accuracy criteria met for all QC samples? Is there enough data that met criteria for use in decision making?</i>
<i>DQI: Representativeness</i>	<i>Was the data collected in a manner that ensured representativeness (e.g., if it was planned that samples would be taken every month to ensure seasonal differences were captured, but three samples were missed, can you confirm that the 3 samples that were missed were not all from the winter months?)</i>
<i>DQI: Completeness</i>	<i>Was any planned data collection omitted? Is there enough data that met criteria for use in decision making?</i>
<i>DQI: Comparability</i>	<i>Did results from different environmental information operations agree in an expected manner?</i>
<i>DQI: Sensitivity</i>	<i>Were the quantitation/ reporting limits specified in the QAPP met?</i>
<i>Usability decision</i>	<i>Based on an evaluation of all criteria tabulated above, is there enough usable data to make a specific decision?</i>

Discuss useability.

E1 References

[Provide sources for all documents referenced in the QAPP.]

Enter references.

E2 Appendices

[Include all appendices referenced above. Additional appendices may be added, as needed.]

Appendix A: Enter title or description of appendix.

Appendix B: Enter title or description of appendix.

SITE-SPECIFIC QUALITY ASSURANCE PLAN (QAPP) MINIMUM REQUIREMENTS

When sample collection and analysis are required for an Engagement, the Contractor shall submit a Site-Specific QAPP to the NJDEP Representative for review and approval. The Master QAPP must be referenced in the site-specific QAPP but should not be repeated. The Contractor shall comply with all requirements in the Master QAPP unless deviations are approved by the State Contract Manager or designee.

The Site-Specific QAPP must include the following at a minimum:

1. Engagement definition;
2. Engagement and data quality objectives;
3. Description of the site and sampling activities that will be conducted, including identification of where samples will be taken;
4. Description of any proposed sampling and analysis deviations from the Master QAPP, if applicable. If proposed deviations are approved by the State Contract Manager or designee, the Contractor shall update the Master QAPP upon request;
5. Listing of or a reference to compounds to be analyzed per matrix and the corresponding required levels of analytical sensitivity;
6. Table including the following minimum information:
 - a. Sample matrix;
 - b. Analytical parameter and method. Samples being analyzed by SW-846 Methods must also specify all preparation and cleanup methods;
 - c. Sample bottle type and size;
 - d. Number of bottles per sample;
 - e. Sample preservation requirements;
 - f. Holding times from sample collection;
 - g. QC samples required for each method, such as MS/MSD samples, field blanks, field reagent blanks, field duplicates, and trip blanks; and
 - h. Laboratory name(s) and certification number(s).