# INSTRUCTIONS for EPA Region 8 Community Grant Recipients for completing the Water Infrastructure Construction Quality Assurance (QA) Plan Template for Construction with Analytical Sampling

(For construction activities with analytical sampling -- No construction design will occur.)

This Water Infrastructure grant Construction QA Plan template is intended for use **only by EPA Region 8 Community Grant recipients** receiving funding from State Revolving Funds to document project activities involving **Environmental Information Operations (EIO)** as part of a Community Grant. Complete all sections of this template. When this template is completed fully, the content meets EPA QAPP Requirements, QA/R-5.

**PREPARING THE Construction QA Plan:**

* For each section in the Construction QA Plan template, guidance is provided in a **comment box located on the righthand side as “NOTE to Preparer.**” Please click on the comment box to read the entire comment. Once the author addresses the comment, please delete the comment box. Text boxes in angle brackets **<Insert here>** are intended for the Preparer to complete by inserting appropriate text for each section. Enter content within the text box by overwriting the angle brackets. Text preceded by **“[EXAMPLE:”** is example text and may not accurately describe the project plans/processes that will be implemented. This example text may be used to help develop responses but should be modified as appropriate to accurately describe the project plans. Example text is signified enclosure with brackets (i.e., [ ]).
* If you plan to utilize a **contractor for IT** services to develop data architecture, processes, validation, maintenance, etc., we recommend referring to your information management resources such as a Data Management Plan.
* We recommend avoiding collection of Personally Identifiable Information **(PII**). If you decide to collect PII, you must comply with 5 U.S.C. § 552a and EPA’s Privacy Policy and describe the requirements within the Construction QA Plan.
* If any of the elements in the template are not applicable for your project, insert **Not Applicable** and include a statement as to why the element is not relevant to the project.
* If there are plans to **publish information** to a website for public access, you must state in the Construction QA Plan how data limitations will be conveyed to users, including the requirement to post a disclaimer onto the website along with the published information. Provide the specific disclaimer text in the plan.
* In the Construction QA Plan, if applicable, describe the process for how data/information will be collected, stored, retrieved, and used, and/or **attach** your Data Management Plan **(DMP)** to the Construction QA Plan.
* Attach any applicable Standard Operating Procedures **(SOPs)** to the Construction QA Plan.
* Links EPA guidance documents, policies, or statutes, State-issued permits, environmental impact statements, or other relevant documents may be provided in lieu of providing as attachments to the Construction QA Plan. Where links are provided, please ensure that the links are provided as hypertext so that the reader can navigate to the document location directly from the Construction QA Plan.

**FINALIZING THE Construction QA Plan:**

* **Delete this instruction page and all other instructional comments** after utilizing the guidance in the template and finalizing the document for review and approval.
* **For Community Grant Recipients:** All Construction QA Plans may be prepared by the Contractor or the Community implementing the project. The plan must be written from the grant recipient’s perspective and should therefore describe the roles, responsibilities, and activities that will be undertaken by both the Community implementing the project and the Contractor performing the work. Construction QA Plans must be submitted to the EPA Project Officer for routing to the appropriate reviewing entity (i.e., the Region 8 QA Branch or DAO) for review and approval. Once approved, provide a copy of the approved Construction QA Plan with completed signature page to your EPA Project Officer for their records.
* **For Contractors:** Submit your completed Construction QA Plan to the EPA Grant recipient who will coordinate with the EPA review and approval of the Construction QA Plan.

**Construction QA Plan Template Disclaimer:** This template describes a QA approach that could be used for a Water Infrastructure Community Grant construction project and has not been developed or reviewed to support other projects.

# Title Page

**U.S. Environmental Protection Agency Region 8**

**Water Infrastructure Community Grant**

<Insert Grant Recipient Organization Name

and Address>

**Construction Quality Assurance Plan**

<Insert Final Construction QA Plan Title>

<Insert Date of Construction QA Plan>

<Insert Construction QA Plan Revision No.>

<Insert Grant No.>

<Insert Period of Performance MM/DD/YYYY to MM/DD/YYYY>

# Approval Page

**Grant Recipient Approvals:**

Organization: <Insert here>

Project Quality Assurance Officer

Printed Name & Title: <Insert here>

Signature & Date:

Project Manager:

Printed Name & Title: <Insert here>

Signature & Date:

Construction Contractor Project Manager:

Printed Name & Title: <Insert here>

Signature & Date:

For Grant Recipients without EPA Region 8 Approved QMPs

**EPA Approvals:**

EPA Region 8 Project Officer

Printed Name & Title: <Insert here>

Signature & Date:

EPA Region 8 Quality Assurance Manager (RQAM)

Or Delegated Approving Officer (DAO):

Printed Name & Title: <Insert here>

Signature & Date:

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Revision History

|  |  |
| --- | --- |
| Revision No. | Description of Changes |
| <Insert here> | <Insert here> |

Acronyms

|  |  |
| --- | --- |
| DAO | Delegated Approving Officer |
| DCN | Document Control Number |
| DQI | Data Quality Indicators |
| DQO | Data Quality Objectives |
| EIO | Environmental Information Operations |
| EPA | Environmental Protection Agency |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| QAO | Quality Assurance Officer |
| QA | Quality Assurance |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| RQAM | Regional Quality Assurance Manager |
| SOP | Standard Operating Procedure |

# Introduction

<Insert here>

# Project Organization & Distribution List

|  |  |  |  |
| --- | --- | --- | --- |
| **Contact and**  **E-mail address** | **Title** | **Organization** | **Responsibilities** |
| <Insert here> | Water Infrastructure Grant Project Officer | U.S. EPA, Region 8 | <Insert here> |
| Mary Goldade  Goldade.Mary@epa.gov | EPA Regional Quality Assurance Manager or Delegated Approving Officer | U.S. EPA, Region 8 | Construction QA Plan Review and Approval |
| <Insert here> | Grant Recipient Project Manager | <Insert here> | <Insert here> |
| <Insert here> | Grant Recipient Project Quality Assurance Officer | <Insert here> | <Insert here> |
| <Insert here> | Grant Recipient Licensed Project Engineer/Architect | <Insert here> | <Insert here> |
| <Insert here> | Contractor Construction/Project Manager | <Insert here> | <Insert here> |
| <Insert here> | Contractor Construction Site Supervisor | <Insert here> | <Insert here> |
| <Insert here> | Water Treatment Plant Laboratory Manager | <Insert here> | <Insert here> |
| <Insert here> | <Insert here> | <Insert here> | <Insert here> |

**Figure 1. Organization Chart**

<Insert here>

Project Quality Assurance Officer

<Insert here>

EPA Region 8 Quality Assurance Manager or Delegated Approving Official

<Insert here>

EPA Region 8 Project Officer

<Insert here>

Water Treatment Plant Laboratory Manager

<Insert here>

City/Community Licensed Project Engineer/Architect

<Insert here>

City/Community Project Manager

<Insert here>

Contractor Project Manager

<Insert here>

City/Community Field Staff

**Legend**

Line of reporting

Communication

<Insert here>

Contractor Field Staff

<Insert here>

Contractor Construction Supervisor

# Problem Definition, Background and Project Description

<Insert the Problem Definition and Background here>

<Insert Project Description here>

Project Objectives:

Project Site(s) or Study Area(s) and Project Boundaries:

# Project Schedule

Table 6-1 includes a list of project activities and the anticipated timeframe for each.

**Table 6-1. Schedule**

|  |  |  |
| --- | --- | --- |
| Activities | Group/Person responsible  for activity completion | Timeframe work will be done |
| <Insert Here> | <Insert Here> | <Insert Here> |
| <Insert Here> | <Insert Here> | <Insert Here> |
| <Insert Here> | <Insert Here> | <Insert Here> |

# Data Quality Objectives and Indicators

<Insert here>

[EXAMPLE: Existing construction designs and permits obtained by and provided by the City to the Contractor will be utilized to complete the construction phase of the project; these will be assumed to be of sound quality for use during construction if received directly from the City and if the documents reference the correct project. Evaluation to ensure receipt of proper designs and permits will be the responsibility of the Contractor Project Manager.

Construction activities will be assessed for quality through the generation of weekly inspections throughout the construction process. The evaluations will be conducted by the Contractor Construction Supervisor.

Final as-builts will be developed by the City/Community Project Engineer (or delegated draftsperson) upon termination of construction. The licensed Project Engineer will review and provide an engineer’s stamp once the review is complete, signifying approval of the final as-built drawings.

In addition to the above, analytical testing will be required prior to placing the upgraded, newly installed sections of water line in service. The project will require analytical testing for the presence or absence of bacteria in the pre-existing water line sections as a health and safety measure to protect human health. The results of the analytical tests will inform whether additional flushing of the system with chlorinated water is necessary to remove harmful bacteria. The seven steps that follow detail the Data Quality Objectives (DQOs) for the analytical component of the project.]

1. **State the Problem:** <Insert what necessitates the study here> [EXAMPLE: Bacteria may build in population when residual water or moisture sits stagnant in water lines that are temporarily placed offline for system upgrades. The bacteria may pose a risk of harm to human health if not removed from the system prior to placing the water lines back in service. ]
2. **Identify the Goal of the Study:** <Insert how information will be used to meet the objectives here> [EXAMPLE: To determine if harmful bacteria are present in the service water lines prior to placing them back in service and routing water to customers.]
3. **Identify Information Inputs:** <Insert what information is needed to answer the study questions here> [EXAMPLE: Inputs include boundaries of the study that identify which sections of the water line need to be tested, SOPs describing the sampling procedure, field sampling equipment, personal protective equipment, the laboratory procedures for testing the analytical samples, and the laboratory instrumentation used to conduct the analysis.]
4. **Define the Study Boundaries:** <Insert target population & characteristics, geographical boundaries, and temporal limits here> [The geographical boundaries of the study include those sections of water line that were temporarily disconnected while new sections of water line were installed. The samples will be tested for <Insert name(s)> bacteria. Samples will be collected prior to placing the lines back in service.]
5. **Develop the Analytic Approach:** <Insert the parameters of interest and the logic for drawing conclusions from findings using If/Then statements here> [EXAMPLE: Analytical water samples will be collected by the City/Community field team members in accordance with SOP XXXX. A total of <Insert number> primary water samples and one field duplicate sample will be collected from sections of pipe that were placed offline temporarily, prior to connecting and placing the water line back in service. The samples will be submitted to the <Insert City/Community name> Water Treatment Plant laboratory for analysis of <Insert target analyte(s)> via <Insert analytical method>. Sample containers, volumes, preservatives, and holding times required for the proposed analytical method is included in Table 7-1, below. QA/QC samples for QA/QC procedures will be generated by the laboratory. Ifanalytical results determine the presence of bacteria,then water lines will need to be flushed chlorinated water and additional sampling will be necessary thereafter. Flushing of the water lines will be performed in accordance with <Insert SOP number and title>. Flushing and resampling of the lines will continue until analytical results indicate bacteria is not present in the water lines. If results indicate the absence of bacteria,then the water lines will be placed back in operation.]
6. **Specify Performance or Acceptance Criteria:** <Insert the probability limits, performance criteria for new data or acceptance criteria for existing data use here> [EXAMPLE: The Water Treatment Plant laboratory is a State-certified laboratory accredited for the analytical method proposed. Performance and acceptance criteria associated with the analytical sample results are described in Section(s) <Insert section number(s)> of the Water Treatment Plant Laboratory QA Manual (INSERT LINK if available or provide reference to the location of the manual and state that “The laboratory QA manual is stored at <Insert location> and will be made available to the EPA at any time.”). With the exception of field duplicate collection, which will be performed by the City/Community field samplers, QC samples will be generated and analyzed by the Water Treatment Plant laboratory in accordance with the Laboratory QA Manual. Performance and acceptability of the analytical results produced will be evaluated as indicated in the Laboratory QA Manual.]
7. **Develop the Plan for Obtaining the Data:** <Insert the plans to meet the performance criteria defined here> [EXAMPLE: Analytical samples will be collected as described in Step 5, above, and in <Insert SOP title and number> (Appendix A). The Water Treatment Plant laboratory will produce a data report that includes an analytical QA/QC narrative and analytical results presented in PDF form, as well as in an Electronic Data Deliverable. Report format will be as specified in the laboratory QA Manual. Data flags will be as defined in the Laboratory QA Manual and will be applied to the data as appropriate in accordance with the Laboratory QA Manual. Analytical results will be provided electronically by the Laboratory Manager to the City/Community Project Manager.]

**Table 7-1: Water Sample Target Analytes, Analytical Methods, Containers, Preservation, and Holding Times**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Target Analyte(s)** | **Analytical Method** | **Matrix** | **Sample Container(s)**  **(number, volume, type)** | **Preservation (chemical, temperature, light protected)** | **Maximum Holding Time from Collection to Extraction/Analysis** | **Data Package Turnaround Time** |
| Total Coliform and E. Coli. | EPA Method 1604 | Water | 250-mL Polypropylene | Cool to 1-4ºC | 6 hours to extraction; 8 hours to analysis | 3 days |
|  |  |  |  |  |  |  |

**Table 7-2: Data Quality Indicators**

|  |  |  |
| --- | --- | --- |
| **Data Quality Indicators** | **Quality Control (QC) Activities**  **and Checks** | **DQI goals** |
| Precision | <Insert here>. EXAMPLE: Field and laboratory replicates | <Insert here>. EXAMPLE: ≤20% relative percent deviation or relative standard deviation. |
| Bias | <Insert here>. EXAMPLE: Pre- and post-calibration, blanks, sample spikes | <Insert here>. EXAMPLE: Data are not biased in a particular direction |
| Accuracy | <Insert here>. EXAMPLE: Calibration standards, blanks, control samples | <Insert here>. EXAMPLE: No blanks contaminated and all calibrations within acceptable limits (or acceptance criteria); percent recovery is 80-120% |
| Representativeness | <Insert here>. EXAMPLE: Evaluate whether the data accurately represents the system, population, place, time, and/or situation of interest | <Insert here>. EXAMPLE: Data collected represent the system characterized or exposure experienced and are not biased |
| Comparability | <Insert here>. EXAMPLE: Compare to existing data or datasets | <Insert here>. EXAMPLE: Data collected are sufficiently similar in methodology to permit a meaningful analysis |
| Completeness | <Insert here>. EXAMPLE: Compare to intended sampling goals to meet the project purpose | <Insert here>. EXAMPLE: One sample will be collected from the offline portions of pipe to determine presence or absence of harmful bacteria. Results will determine if additional samples are needed. |
| Sensitivity | <Insert here>. EXAMPLE: Compare to reporting or detection limits from existing data or for decision-making | <Insert here>. EXAMPLE: The detection limit for <Insert analytical method> is <Insert method detection limit>. The action limit is any results greater than 0. |
| Measurement range | <Insert here>. EXAMPLE: The range of expected values for each group of analytes. | <Insert here>. EXAMPLE: Analytical results of EPA Method 1604 are a measure of the number of colonies per 100 mL of sample water, multiplied by 100. Results will be either positive, confirming the presence of bacteria, or negative, confirming the absence of bacteria. Positive values will necessitate re-flushing of the water lines and re-sampling. |

# Training and Specialized Experience

<Insert here>. [EXAMPLE: All field personnel involved in project construction shall have completed the 30-hour OSHA Construction training. The Contractor Project Manager is responsible for ensuring that all official certificates of course completion for each field team member has been received and is filed in the appropriate project folder on the Contractor network. The Construction Supervisor is responsible for checking the daily roster of employees against the certificates on file on the Contractor network prior to beginning work each day. Should an employee be found not to have a certificate on file, the Construction Supervisor will notify the Contractor Project Manager who will coordinate with the employee to either obtain the certificate for the file or enroll the employee in a training. The employee will not be allowed to perform work for the project until the training has been completed and the certificate has been filed.

The Construction Supervisor shall hold a current Construction Quality Assurance Manager certification and shall hold a Certified Sediment and Erosion Control Lead certification. The Project Manager is responsible for ensuring the trainings are up to date and on file in the appropriate location on the Contractor network.

The City/Community Project Engineer assigned to the project for review and approval of as-builts has an Engineer’s license and is be able to provide a stamp of approval at the end of the project for as-builts.

The Water Treatment Plant laboratory is a State-certified laboratory with accreditation for <Insert analytical method>. Laboratory accreditation certificates will be kept on file at the Water Treatment Plant laboratory and made available to EPA or the City/Community upon request.]

# Documentation and Records

<Insert here> [EXAMPLE: Documents that will be produced or utilized for the project include existing design drawings and construction plans, State-issued permits, an environmental impact statement, weekly inspections, water sample collection field notes, water sample chains-of-custody (CoCs), laboratory reports, and final as-builts.

**Existing Documents**

Existing engineer-approved construction plans, permits, and an environmental impact statement will be utilized to conduct the construction phase of the project. These will be provided to the Contractor Project Manager directly from the City/Community Project Manager electronically. The Contractor Project Manager will be responsible for identifying a storage location on the Contractor network for the documents and providing the documents to the appropriate personnel throughout the construction phase. The documents will be stored electronically on the Contractor network for <Insert retention period>.

Construction will proceed as described in the construction plan bid (Appendix A). It is the responsibility of the Contractor Project Manager to ensure construction proceeds as described in the construction plan bid.

**Inspections**

Weekly inspections will be conducted and recorded by the Contractor Construction Supervisor. The inspections will focus on construction progress, identification of any issues requiring corrective actions, and any safety or environmental observations. These will be recorded on Construction Walk-through Forms (Appendix B). Hard copy forms will be provided from the Contractor Construction Supervisor to the Contractor Project Manager, who will scan the forms to the Contractor network. The forms will be provided to the City/Community Project Manager and/or EPA if requested and will be maintained electronically on the Contractor’s network for <Insert retention period>.

**Field Notes**

Water sample field notes will be recorded in a field notebook using a write-in-the-rain pen by field staff. Field notes will include date, weather, field personnel names, personal protective equipment used, water sample information (time, sample ID, volume, sample container, preservation, target analytes, analytical method), and any notable physical characteristics of the water being sampled (e.g., water color, transparency, odor, sheen, etc.). Each entry will be signed by the recorder at the end of each day to certify the recorded information. Errors in field notes will be signified with a single strikethrough of the incorrect text notes and initials provided by the individual correcting the notes. Field notes will be checked for accuracy by the field team lead at the end of each day and by the Contractor Project Manager on a weekly basis. The field notebook pages will be scanned to the Contractor network on a weekly basis by the Contractor Project Manager. Field notebooks will be kept on file in hard copy form at <Insert Location> for <Insert retention period> and made available, electronically to the City/Community and/or the EPA upon request.

**Chains-of-Custody and Laboratory Reports**

CoCs will be produced with each sampling event conducted. The information contained on the CoCs is described in Section 10 of this Construction QA Plan and an example CoC is included in Appendix B. Copies of CoCs will be included in electronic analytical reports provided by the laboratory. The laboratory reports will be formatted as described in Section 7 and in Section <Insert section number> of the Laboratory QA Manual. The reports will be provided electronically to the City/Community Project Manager. The City/Community is responsible for maintaining these files, which will be stored on the City/Community network for a period of <Insert retention period> after completion of the project. The laboratory reports with CoCs will be provided to EPA upon request.

**As-Builts**

Final as-builts will be produced by the Contractor and supplied to the City/Community. The final as-builts will be reviewed and approved by the licensed professional engineer assigned to the project.

**Final Disposition of Documents**

All files utilized for and generated during the construction project will be provided to the City/Community electronically at or prior to project termination for storage by the City/Community. The City/Community networks are maintained by <Insert maintenance company or personnel title>; the system is backed up on a daily basis. All final project files, including permits, bid documents, inspection reports, field notes, analytical reports, and as-builts, will be kept in the City/Community electronic archive folders indefinitely.]

# Construction Materials and Analytical Methods

<Insert here>

[EXAMPLE: **Construction Materials**

Construction materials produced during the project include final as-builts and analytical data reports. As-builts will be reviewed and approved by the licensed professional engineer assigned to the project. Approval for final as-builts will be signified by the presence of the Engineer’s stamp.

**Analytical Methods**

Analytical water samples will be collected from water lines for analysis of coliform via <Insert analytical method>. Water samples will be collected after installation of the new water line sections but prior to placing them lines back in service. Water grab sampling will be conducted in accordance with <Insert SOP number and title> (Appendix A) and using the containers, preservation methods, and holding times specified in Table 7-1 (Section 7, above). Sampling equipment will include only collection containers and personal protective equipment donned by field staff; therefore, no sampling equipment calibration or maintenance will be required for the duration of the project.

Analysis via <Insert method number> will be performed by the <City> Water Treatment Plan in accordance with their Laboratory QA Manual (<Insert Link>). QC samples, with the exception of one field duplicate sample collected by the City/Community field personnel, will be the responsibility of the Water Treatment Plant laboratory to assess PARCCs parameters. QC samples will be collected/generated and analyzed in accordance with the Laboratory QA Manual. Performance criteria will be as defined in with the Laboratory QA Manual. Testing, calibration, and maintenance of instrumentation and equipment required for analysis of water samples will also be in accordance with the Laboratory QA Manual.

Analytical samples collected for the project will be provided a unique name for identification. The sample IDs will be developed using four identifiers, each separated by a hyphen, as follows:

* Four-digits representing location of sampling station (Example: ST01 = Station 01)
* W, indicating the sample is a water sample followed by a two-digit number corresponding to iteration of sampling at the station (Example: W03 = sampling event no. 3.)
* 8-digit number corresponding to date of sample collection (Example: 20240612 for 12 June 2024)
* One-digit number to represent primary or field duplicate sample (1 for primary sample, 9 for field duplicate sample.
* Example sample ID: ST01-W01-20240612-9 represents a field duplicate water sample collected from sampling event no. 1 at Station 01 on 12 June 2024.

All samples will be logged in a CoC form (Appendix B), to be completed by the sampler. A copy of the CoC is observed in the Laboratory QA Manual and contains spaces for sample ID, time of sample collection, sample matrix, analytical method, sample container, container volume, preservation method, and any notes needing to be relayed to the laboratory. The CoC also contains signature and date block to track sample custody. Field staff collecting the samples will be responsible for reviewing entries on the CoC forms to ensure accuracy and completeness.

Once samples are collected, they will be placed in a cooler with gel ice packs and cooled to 1-4ºC. The samples will immediately be driven to the Wastewater Treatment Plant to ensure the holding times are met. Once at the Wastewater Treatment Plant, the sampler will relinquish the samples by signing and dating the CoC in the appropriate relinquished signature block and the individual receiving the samples at the Wastewater Treatment Plant will sign and date in the appropriate receiving signature block. Copies of the CoC will be maintained at the Wastewater Treatment Plant and will be scanned for inclusion in the final analytical report.

The Wastewater Treatment Plan personnel are responsible for evaluating the condition of the samples upon receipt at the laboratory and producing a report outlining any conditions that may jeopardize the quality of the samples and potentially the usability of data from analysis of the samples. Such conditions will immediately reported by the Water Treatment Plant Laboratory Manager to the City/Community Project Manager to determine if additional sampling is required. All sample receipt reports/forms will be completed by Water Treatment Plant personnel for inclusion in the analytical report. Analytical reports will be produced by the laboratory and provided electronically by the Laboratory Manager to the City/Community Project Manager no later than 3 days after completion of sampling unless unforeseen circumstances prohibit this turnaround time. In such cases, the Laboratory will immediately notify the City/Community Project Manager of the delay and will propose a new turnaround time.]

**Table 10-1: List of Standard Operating Procedures or Other Methods**

|  |  |
| --- | --- |
| **Activity** | **SOP**  **Reference / User Manuals** |
| <Water Grab Sample Collection> | <Insert here> |
| <Global Position System> | <Insert here> |
| <Photos or Video> | <Insert here> |
| <Electronic Data Capture Device> | <Insert here> |
| <Security, Privacy and Publishing> | <Insert here> |
| <Data Storage, Transfer and Backup> | <Insert here> |

# Existing Data and Data from Other Sources

<Insert here > [EXAMPLE: Existing data that will be utilized for the construction phase of this project include State-issued permits, existing design drawings, an environmental impact statement, and archeological/historical determinations. All existing documents will be provided by the to the Contractor prior to commencement of construction. Existing documents received by the Contractor will be considered acceptable for use during construction if received directly from the City Project Manager and if the documents reference the appropriate project. The Contractor Project Manager will be responsible for receiving and reviewing documents from the City Project Manager for acceptability.]

# Data Management

<Insert here-This section should be detailed and describe the complete data life cycle>

<Insert here-Describe the project data management process>

<Insert here-Describe the record-keeping procedures, document control, data storage, retrieval and or cite SOPs>

<Insert here-Describe data handling equipment procedures to process, analyze and transmit data reliably and accurately, along with acceptability of hardware and software configurations>

<Insert here-Identify the individual(s) responsible for data management>

<Insert here-Attach and reference checklists or forms that will be used>

<Insert here-Attach your Data Management Plan>

[EXAMPLE: Data generated during construction will include analytical data reports and final as-builts.

Analytical data reports will be generated by the Water Treatment Plant and provided electronically, in PDF and in an electronic database (e.g., Microsoft Excel or Access) to the City Project Manager for filing on the City/Community network. The laboratory is responsible for managing and checking data entry/transcription across laboratory deliverables for errors and inaccuracies. Once received by the City/Community, it will not be transcribed or re-entered into any other database. It is the responsibility of the City/Community Project Manager or delegates to appropriately file and manage analytical data received from the laboratory for the duration of the construction project, and to archive and retrieve data and/or documents once the project has terminated. Laboratory reports and data will be made available to the EPA upon request.

Final as-builts will be created using spatial information collected by the Contractor using survey equipment. Survey data will be collected in accordance with SOP <Insert SOP name and number> (Appendix A). The Contractor Project Manager is responsible for offloading and packaging the survey data for transfer to the City/Community. The data will be offloaded using survey data software (e.g., Trimble software, or similar) and stored and transferred electronically to the City/Community Project Manager. The City/Community Project Manager or designee is responsible for receiving and evaluating the data received to ensure it is not corrupt and is usable. The City/Community Project Manager is also responsible for transferring the information to drafting personnel who will use the data in <Insert design software name> to produce the final as-builts. The licensed City/Community Project Engineer assigned to the project will review final as-builts and provide approval by means of an engineer’s stamp. The final as-builts will be kept on file electronically at the City/Community headquarters for <Insert retention period> and provided by the City/Community Project Manager to the EPA Region 8 Project Officer electronically for EPA’s records.

State-issued permits and design drawings will also be utilized during the construction phase of the project. These will be delivered by the City/Community Project Manager electronically to the Contractor Project Manager. Copies provided to the Contractor Project Manager will be stored electronically on <Insert network name>. Backups of the network occur on a <insert frequency> basis. The Construction Project Manager is responsible for management of electronic files associated with the project. Electronic files shall be retained on the Contractor network for a minimum of <Insert retention period>.]

# Reporting, Oversight and Assessments

<Insert what type of report(s) will be generated? [EXAMPLE: Reports generated during the construction phase of the project include weekly inspection forms, analytical reports, and final as-builts.]

<Insert what will the report(s) include? E.g., raw data, specific actions here> [EXAMPLE: Weekly inspection forms will include descriptions of construction progress, identification of any issues requiring corrective actions, and any safety or environmental observations.

Analytical reports will include both a written report containing a project narrative, results of the analysis, and a summary of QA/QC performed on the analytical samples. Raw data will also be provided as part of the report in an electronic data deliverable (i.e., Microsoft Excel or Access file).

Final as-builts will include a diagram showing actual locations and features of the newly installed water line upgrades.]

<Insert who will receive the report(s) here> [EXAMPLE: The City Project Manager will receive weekly inspection reports from the Contractor, analytical reports from the Water Treatment Plant and will receive the as-builts from the City’s licensed professional engineer, or delegate, assigned to the project.

<Insert who is responsible for preparing and delivering to the recipient(s) here> EXAMPLE: The inspection forms/reports will be prepared by the Contractor Construction Supervisor who will deliver the forms electronically to the Contractor Project Manager on a weekly basis. The Contractor Project Manager will, in turn, deliver the inspection forms to the City Project Manager electronically on a weekly basis.

Analytical reports will be prepared by Water Treatment Plant personnel, and reviewed, approved, and delivered to the City/Community by the Water Treatment Plant Laboratory Manager as the reports are finalized.]

<Insert for assessment reports, who is responsible for implementing and monitoring Corrective Actions here> [EXAMPLE: Although no construction assessment reports are anticipated to be generated as part of this projects, any corrective actions identified during construction site inspections will be the responsibility of the Contractor Supervisor to implement or delegate for implementation and the Construction Project Manager for monitoring the corrective actions.

Assessment reports conducted by the Water Treatment Plan laboratory will be in accordance with the Laboratory QA Manual. Any corrective actions identified during a laboratory assessment will be the responsibility of the Laboratory Manager to implement and monitor.]

# Data Review and Usability

<Insert here>. [EXAMPLE: Data reviews will be performed by the Water Treatment Plant laboratory personnel in accordance with the Laboratory QA Manual. The data reviews will include application of data flags, defined in the Laboratory QA Manual, as appropriate, as well as an assessment of data usability. All findings from the data review will be included in the analytical report narrative, as described in the Laboratory QA Manual. Data validation and verification will be performed by the <Insert either Community or Contractor> <Insert Title>, who will apply final data qualifiers and determine if the analytical result is accepted or rejected.]

# References

U.S. EPA, Privacy Policy (CIO 2151.1), September 2018. Website: https://www.epa.gov/irmpoli8/privacy-policy-and-procedures#privacypolicy

U.S. EPA, Requirements for Quality Assurance Project Plans (EPA QA/R-5), EPA/240/B-01/003, March 2001. Web site: https://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans

U.S. EPA, Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4), EPA/240/B-06/001, February 2006. Web site: https://www.epa.gov/quality/guidance-systematic-planning-using-data-quality-objectives-process-epa-qag-4

U.S. EPA, Guidance for Preparing Standard Operating Procedures (EPA QA/G-6), EPA/600/B-07/001, April 2007. Website: https://www.epa.gov/quality/guidance-preparing-standard-operating-procedures-epa-qag-6-march-2001

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U.S. EPA, Guidance for Data Quality Assessment: Practical Methods for Data Analysis (EPA QA/G-9), QA00 Version, July 2000. Website: https://www.epa.gov/sites/default/files/2015-06/documents/g9-final.pdf

# List of Figures

# [*Figure 1 Location Map(s)*](#Figure3)

# Appendices

# *Appendix A*

# *Planning Bid Documents, Standard Operating Procedures, and User Manuals*

# *Appendix B*

# *Project Forms*

# *Appendix C*

# *Cross-reference Between Construction QA Plan and EPA QA/R-5 Elements*

|  |  |
| --- | --- |
| **Project Management** | |
| **Construction QA Plan Element** | **Agency QAPP Element (EPA QA/R-5)** |
| **Title Page**  **Approval Page**  **Table of Contents** | A1. Title and Approval Sheet  A2. Table of Contents |
| **Introduction**  **Problem Definition, Background and Project Description** | A5. Problem Definition and Background  A6. Project/Task Description |
| **Data Quality Objectives and Indicators**  **Reporting, Oversight and Assessments** | A7. Quality Objectives and Criteria  C2. Reports to Management  C1. Assessments and Response Actions |
| **Project Organization & Distribution List**  **Training and Specialized Experience** | A3. Distribution List  A4. Project/Task Organization  A8. Special Training/Certifications |
| **Documentation and Records**  **Data Management** | A9. Documents and Records  B10. Data Management |
| **Project Implementation** |  |
| **Construction QA Plan Element** | **Agency QAPP Element (EPA QA/R-5)** |
| **Design and Data Collection Methods**  **Existing Data and Data from Other Sources**  **Data Review and Usability** | B1. Process Design (Experimental Design)  B2. Sampling Methods  B9. Non-Direct Measurements  D1. Data Review, Verification, and Validation  D2. Verification and Validation Methods  D3. Reconciliation with User Requirements |