# Any Town, Inc.*

# Wastewater Treatment Facility

# Quality Assurance Project Plan

## December, 2002

**A1. Approvals:**

| | |
|---|---|
| **Any Town Utilities Project Manager** | **Date** |
| **Any Town Utilities Quality Assurance Officer** | **Date** |
| **DEC Project Manager** | **Date** |
| **DEC Water Quality Assurance Officer** | **Date** |

*Note: Any Town Utilities, Inc. is a fictitious small wastewater treatment facility, for purposes of showing the elements of a good Quality Assurance Project Plan (QAPP). This document can be used as a template by small wastewater treatment facilities in developing site-specific Quality Assurance Project Plans as required by their federal and/or state permits. Appendices referenced in this document are not included.

## A2. Table of Contents



**Appendices**: Not included in this example.

## A3. Distribution List

This list includes the names and addresses of those who receive copies of this approved QAPP and subsequent revisions. It is not the list of those who receive data reports.

John Brown, Project Manager
Any Town Utilities, Inc.
100 Main Street,
Any Town, Alaska
Phone: (xxx) xxxx
Email: xxxxxxxx

Mary Smith, Project Quality Assurance Officer
Any Town Utilities, Inc.
100 Main Street
Any Town, Alaska
Phone: (xxx) xxx-xxxx
Email: xxxxxxxx

Tim Wingerter, DEC Project Manager
Domestic Wastewater Program
Air and Water Division
Alaska Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709
(907) 451-2116
twingerter@envircon.state.ak.us

Jim Gendron, Water Quality Assurance Officer
Water Division, Monitoring and Quality Assurance
Alaska Department of Environmental Conservation
Juneau, Alaska
(907)-465-5305
Jim_Gendron@dec.state.ak.us

Jack Jones, Project Manager
Far North Laboratories, Inc.
500 Main Street
Any Town, Alaska
Phone: (xxx) xxx-xxxx
Email: xxxxxxxx

Whole Effluent Toxicity testing Contracted Laboratory – Project Manager and QA Officer – to be determined

## A4. Project/Task Organization

Any Town Utilities, Inc. was issued EPA NPDES Permit No. AK-000000-00 on June 25, 2002 and the associated DEC State Certification, on June 30, 2002. This approval authorizes Any Town Utilities, Inc. to discharge treated wastewater to Any Town Bay in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit and certification. Duties and responsibilities are listed below.

Any Town Utilities, Inc. Project Manager – John Brown
Mr. Brown signed the permit application for the company and is responsible for the implementation of permit and certification requirements.

Any Town Utilities, Inc. Quality Assurance Officer – Mary Smith
Responsible for QA/QC of all self-monitoring required under federal and state permit.

Far North Laboratories Project Manager – Jack Jones
Any Town Utilities, Inc. subcontracted Laboratory Operations Manager. Responsible for ambient water quality monitoring and analysis.

Far North Laboratories Quality Assurance Officer. – Joan Woods
Responsible for QA/QC of ambient water quality sampling and analyses under federal and state certification.

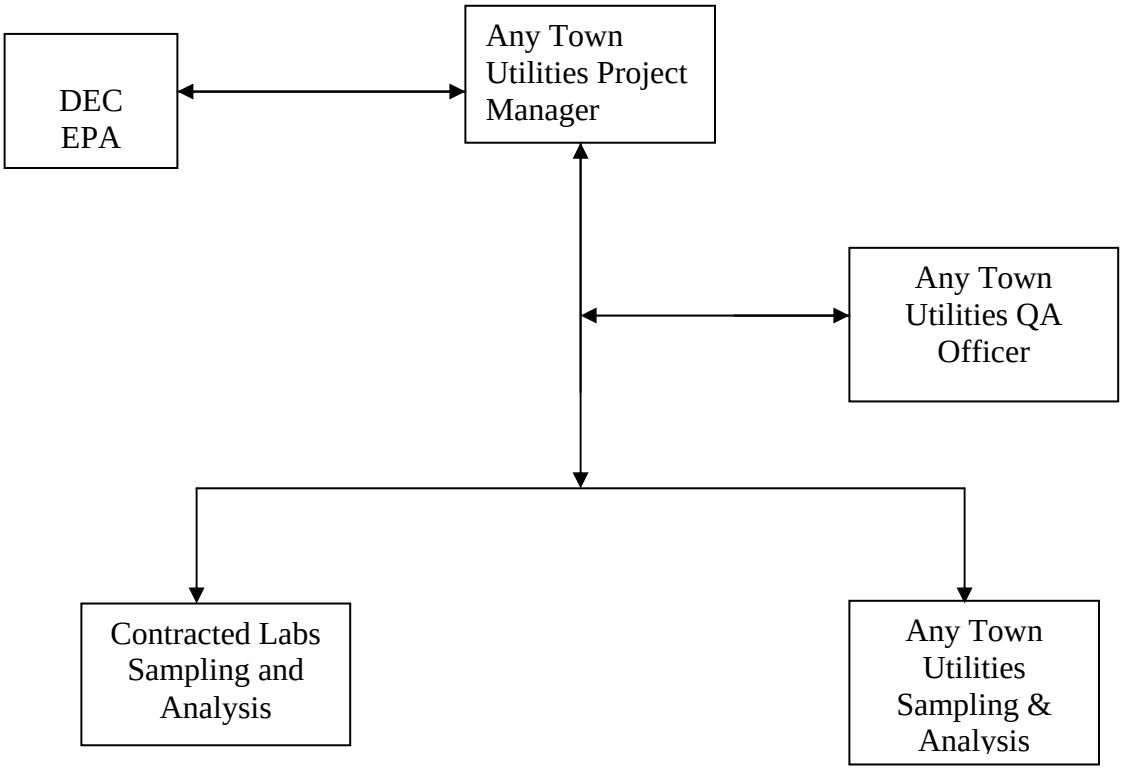
Contracted Laboratory Project Manager and Quality Assurance Officer – to be determined. Responsible for Whole Effluent Testing analyses and QA/QC.

DEC Project Manager – Tim Wingerter
Primary contact between Any Town Utilities, Inc. and DEC regarding permit and monitoring requirements.

DEC Quality Assurance Officer – Joyce Beelman
Assists in development of the QAPP if necessary and approves it for DEC along with the DEC Project Manager. May review data and/or audit monitoring activities.

EPA –
NPDES permit development and approval. Receives DMR reports.

**Organization Chart**




## A5. Problem Definition/Background

Any Town Utilities, Inc. was issued federal and state approvals in June, 2002 to discharge treated wastewater to Any Town Bay in accordance with effluent limitations, monitoring requirements and other conditions set forth in these permits.

This QAPP ensures that data collected and analyzed for this project are valid and verifiable. If implemented correctly, this QAPP ensures that Alaska Water Quality Standards are met and that Any Town Bay water quality uses (public health and public resource protection) are protected.

## A6. Project/Task Description

Any Town Utilities Wastewater Treatment Facility discharges a maximum of 200,000 gallons per day (gpd) treated domestic wastewater, with chlorination and dechlorination, into Any Town Bay, through a 400-foot outfall line with a 4-inch diffuser at –100 feet MLLW at Latitude 60°00’00” and Longitude 140° 00’00’’.
(See Figure 1 -Map in Appendices)

**Influent and Effluent** –The laboratory at Any Town Utilities will perform the standard tests required by permit and will contract out the Whole Effluent Toxicity testing. See Table 1 for the sample frequency and type.

**Receiving Water Monitoring** –
The discharge is assigned a mixing zone for the purpose of achieving sufficient dilution to meet Alaska Water Quality Standards for Total Chlorine and Fecal Coliform bacteria. The mixing zone for this discharge is defined as a rectangular area, 1,600 feet by 500 feet at –100 feet MLLW, centered at the outfall and over the diffuser, extending from the diffuser to the surface.

Any Town Utilities will contract out the Receiving Water testing.

**Sludge** – A contracted laboratory will annually analyze sludge for metals.

**Table 1** below lists the parameters, sample locations, sample frequency, sample type, and laboratory responsibility for all self-monitoring required by permit.

| Parameter | Sample Location | Sample Frequency | Sample Type | Lab Responsibility |
|---|---|---|---|---|
| Average Monthly Flow | Influent and Effluent | Continuous | Recording | Any Town WWTF |
| Dissolved Oxygen | Effluent | 1/week | Grab | Any Town WWTF |
| pH | Effluent | 1/week | Grab | Any Town WWTF |
| Temperature (C°) | Effluent | 1/week | Grab | Any Town WWTF |
| Total Ammonia (mg/L N) | Effluent | 1/month | 24 hr. Composite | Any Town WWTF |
| $BOD_5$ (mg/L, lb/day) | Influent and Effluent | 2/month | 24 hr. Composite | Any Town WWTF |
| TSS (mg/L, lb/day) | Influent and Effluent | 2/month | 24 hr. Composite | Any Town WWTF |
| Fecal Coliform | Effluent | 2/month | Grab | Any Town WWTF |
| Fecal Coliform Receiving Waters | Any Town Bay | 2/year | Grab | Contracted Lab |
| Total Chlorine (residual) | Effluent | 1/week | Grab | Anytown WWTF |
| Total Chlorine (residual) | Anytown Bay | 2/year | Grab | Contracted Lab |
| Total Metals; arsenic, chromium, nickel (mg/kg dry wt) | Sludge | Annually | Grab | Contracted Lab |
| Whole Effluent Toxicity | Effluent | 1/year (first & fourth year) | Grab | Contracted Lab |

- Influent and effluent composite samples shall be collected during the same 24-hour period.
- Effluent samples shall be collected after the last treatment unit prior to discharge.
- Sample collection shall be evenly spaced throughout the month.
- The sewage sludge shall be sampled at or immediately before the point of discharge into the sludge transport vehicle, or at or immediately before the point of discharge from the transport vehicle to the recipient facility.
- The sample method shall be representative of production on the day of sampling, and the number and timing of samples shall be representative of the quantity and quality of the sludge generated over the year.

# A7. Data Quality Objectives and Criteria for Measurement of Data

## Project Data Quality Objectives

The overall Quality Objective of this QAPP is to ensure that the requirements of EPA NPDES Permit No. AK-000000-00 and the associated DEC Water Quality Certification are fulfilled and that data collected are scientifically verifiable and valid.

## Criteria for Measurement of Data

Criteria for Measurements of Data are the performance criteria: the accuracy, precision, comparability, representativeness and completeness of the tests. These criteria must be met to ensure that the data are verifiable and that project quality objectives are met.

Any Town Utilities' objectives for accuracy, precision, comparability, representativeness and completeness are summarized in this section. All results will be recorded in field and laboratory logbooks. Additional sampling and analyses will be performed when results fall outside the specified ranges and when Data Quality Objectives are not met. Any changes in Data Quality Objectives will be submitted to DEC for approval before implementation.

Any Town Utilities' subcontracted laboratories will be DEC drinking water-certified if possible. Should Any Town Utilities use a contracted laboratory that is not DEC drinking water-certified, Any Town Utilities will notify DEC.

(Note: DEC does not presently have a wastewater certification program, but recommends that contracted laboratories are DEC drinking-water certified. The DEC Water Quality Assurance Officer keeps copies of drinking-water certified laboratory Quality Management Plans (QMPs) on file. These QMPs describe the laboratory measurement criteria. Therefore, Quality Assurance and Quality Control measures described in a contracted laboratory QMPs are not repeated in this document.)

## Accuracy

Accuracy is a measure of confidence that describes how close a measurement is to its "true" value.

Any Town, Inc. ensures field accuracy by field instrument calibration according to the manufacturers' instructions and by using standards and chemicals that are current (prior to expiration date), and by following proper sampling, sample handling and field analysis protocols.

Laboratory accuracy is normally determined by the percent recovery of the target analyte in spiked samples and also by the recoveries of the surrogates in all samples and QC samples. Accuracy is calculated as follows:

$$\%R = \frac{\text{Analyzed value}}{\text{true value.}} \times 100$$

Laboratory accuracy ranges are specified in the contracted laboratory Quality Management Plans (kept on file at DEC) and depend on the parameter being measured. Any Town Utilities will ensure its own laboratory accuracy by meeting %R values as shown in Table 3 below.

Additionally, each year Any Town Utilities analyzes an unknown sample from an EPA-approved laboratory. EPA performance evaluation results are kept on file at Any Town Utilities' laboratory.

**Precision**

Precision is the degree of agreement among repeated measurements of the same characteristic, or parameter, and gives information about the consistency of methods. Precision can be considered a product of the repetitiveness of effluent monitoring.

Precision is expressed in terms of the relative percent difference (RPD) between two measurements (A and B), and is computed as follows:

$$RPD = \frac{A - B \times 100}{(A + B)/2}$$

Field and lab precision is measured by collecting blind (to the laboratory) field duplicate samples. Any Town Utilities ensures field precision by taking field duplicates at least every quarter. (See B.5 Quality Control section and Table 3).

Any Town Utilities' and its contracted laboratories (per their QMPs) ensure laboratory precision by measuring Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples and by the analysis of laboratory duplicate samples. The laboratory usually performs the analysis of one set of MS/MSD and duplicate samples per matrix measured. RPD is usually <20% but can vary widely depending on the analytical method. Control charts are a graphical representation showing the limits of acceptable data.

Charts are produced by analysts to document accuracy and precision in their testing. These charts are kept in the laboratory for data validation purposes. Any Town Utilities will provide accuracy and precision records to DEC if requested.

**Representativeness**

Representativeness is the extent to which measurements actually represent the true environmental condition. Representativeness of data collected was considered in the permit development process. This included the Any Town Utilities' wastewater treatment facility sampling locations, the delineation of the mixing zone and ambient sampling water quality site selections. (See current permit and/or certification for details.)

**Comparability**

Comparability is the degree to which data can be compared directly to similar studies. Using standardized sampling and analytical methods and units of reporting with comparable sensitivity ensures comparability. Any Town Utilities will use EPA-approved methods as listed in 40 CFR 136.6 for effluent standard measurements. Ambient water quality measurements will be done by a contracted laboratory, which also follow EPA-approved analytical methods.

**Completeness**

Completeness is the comparison between the amount of usable data collected versus the amount of data called for in the permit and/or certification. Any Town Utilities will determine completeness by comparing sampling and analyses completed with the requirements in the permit. Any Town Utilities' goal is to complete 100% of required monitoring. The permit and/or certification will set reporting requirements for non-compliance.

## A8. Training and Certifications

Any Town Utilities laboratory personnel will be trained in sampling methods, sample handling, chain-of-custody, sample transport, and field and laboratory measurements. The Any Town Utilities Project Manager and/or the Any Town Utilities Quality Assurance Officer are responsible for the training of staff who perform sampling, sample handling, and analyses activities. Records will be kept on file of these training activities and may be reviewed by DEC.

Resumes of the Any Town Utilities Project Manager and Quality Assurance Officer are found in the Appendices.

## A9. Documents and Records

Field logbooks, notebooks and/or data sheets will be filled out using "write in the rain" ink or pencil, and should not be erased. Changes are made by crossing out errors and adding correct information. Logbooks should be bound with numbered pages.

Laboratory data results are recorded on laboratory data sheets, bench sheets and/or in laboratory logbooks for each sampling event. These records as well as control charts, logbook records of equipment maintenance records, calibration and quality control checks, such as preparation and use of standard solutions, inventory of supplies and consumables, check in of equipment, equipment parts, and chemicals are kept on file at the laboratory.

Examples of these field and laboratory data sheets and logbooks are included in the Appendices.

Any procedural or equipment problems are recorded along with data results. Any deviation from this Quality Assurance Project Plan is noted. Additional sampling and analyses will be performed when results fall outside the specified range and when DQOs are not met. Data results returned to DEC will include information on field and/or laboratory QA/QC problems and corrective actions.

Chain-of-Custody and/or Transmission forms will be kept with the sample transport, and will accompany data results back to DEC.

Training records and data review records will be kept on file in Any Town Utilities' laboratory and will be available on request by DEC.

All records and documents are kept at least 3 years at the Any Town Utilities laboratory and are available to EPA and DEC for inspection at any time.

# B. Data Generation and Acquisition

## B1. Sampling Process Design

**Influent and Effluent** – Standard tests to be performed according to the requirements of the NPDES and state permit include: Biochemical Oxygen Demand ($BOD_5$), Total Suspended Solids (TSS), Fecal Coliform Bacteria, total residual Chlorine, pH, total Ammonia, temperature, Dissolved Oxygen and total flow. Whole Effluent Toxicity analysis will be performed by a contracted laboratory. Methods for these analyses are EPA-approved and are found in 40 CFR 136.6. (See Table 3)

**Ambient Water Monitoring** will be performed twice yearly for Fecal Coliform bacteria outside the mixing zone and along the shoreline in the mixing zone. Methods will be according to 40 CFR 136.3 (See Tables 3). Sampling and analyses will be performed by an outside independent laboratory, contracted by Any Town Utilities. Contracted laboratories' Quality Management Plans (QMPs) and Standard Operating Procedures (SOPs) become additions to this QAPP.

**Sludge** metals analysis will be performed yearly. See Table 3 for EPA-approved methods.

## B2. Sampling Methods

Samples and measurements taken as required by permit must be representative of the volume and nature of the monitored discharge.

When a sample taken at a discharge line, a volume of water equal to at least ten times the volume of the sample discharge line will first be discharged into a bucket or similar container, to clear the line of standing water and possible contamination.

Samples will be identified as "composite" or "grab" on Chain-of-Custody and/or Transmission forms and in field logbooks and field data sheets.

**Grab Samples**

Bottles will normally be filled to the shoulder of the bottle, leaving a small space for expansion and mixing.

**Composite Samples**

Composite samples must consist of at least four equal volume grab samples, two of which must be taken during periods of peak flow (7-9 a.m. and 6-8 p.m.). Samples will be composited directly into the sample bottles. Between composite aliquots, bottles will be kept at a temperature of +4/-2$^{o}$ C.

The time of the initial portion of the composite, composite intervals, and the final compositing time will be noted on the field data sheets and/or in logbooks. Sample time listed on the Chain-Of-Custody and/or Transmission form and sample bottle will be the time of the final sample composite portion.

**Cleaning**

All sampling equipment and sample containers will be cleaned according to the equipment specifications or the analytical laboratory.

All glassware and plasticware will be cleaned in Any Town Utilities' laboratory will use the following procedure unless otherwise noted.

1. Wash glassware and plasticware with phosphate-free detergent and rinse with tap water.
2. Rinse with 10% hydrochloric acid (HCl).
3. Rinse four times with deionized water.
4. Most sampling collection and analyses procedures will be performed by Any Town Utilities laboratory staff. *Method 1060, Collection and Preservation of Samples (Standard Methods, 19$^{th}$ Edition* will be followed for sample collections and preservation.

## B3. Sample Handling and Custody

Sample handling, preservation, and holding times will follow those approved by EPA in 40 CFR 136.3 as described in *Standard Methods for the Examination of Water and Wastewater, 19th Edition, 1995.* Sample container, minimum sample volume, preservation, and maximum storage requirements for each parameter are listed in **Table 2** below.

| **Parameter** | **Container[1]** | **Minimum Sample volume** | **Preservation[2]** | **Maximum Holding Time[3]** |
|---|---|---|---|---|
| $BOD_5$ | P, G | 2.5 L | Cool, 4ºC | 48 Hours |
| TSS | P, G | ---[4] | Cool, 4ºC | 7 days |
| Total Chlorine (residual) | NA | NA | NA | Analyze immediately |
| Fecal Coliform Bacteria | Sterile Plastic | 500 ml | Cool, 4ºC, $Na_2S_2O_3$[5] | 6 Hours |
| pH | P, G | NA | NA | Analyze immediately |
| Temperature | P, G | NA | NA | Analyze immediately |
| Total Ammonia | P, G | 500 ml | Cool, 4ºC, $H_2SO_4$ to pH<2 | 28 days |
| Dissolved Oxygen | P, G | 300 ml | None Required | Analyze immediately |
| Total Metals (sludge) | P, G | 250 | Cool, 4ºC | Analyze as soon as possible[6] |
| Whole Effluent Toxicity (WET) | Plastic | 4 L | Cool, 4ºC | 36 hours |

Superscripts:
1. Polyethylene (P) or Glass (G). Samples are normally collected in polyethylene containers to prevent breakage.
2. Sample preservation should be performed immediately upon collection. For composite chemical samples, each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4ºC until composite sample splitting is completed.
3. Sample should be analyzed as soon as possible after collection. The times listed are maximum times that samples may be held before analysis and still be considered valid. The term "analyze immediately" usually means within 15 minutes or less of sample collection.
4. $BOD_5$ and TSS are tested on the same sample. 2500 mL is sufficient for both tests.
5. Should only be used in presence of residual chlorine.
6. "As soon as possible" is not in the EPA guidance.

When samples are transferred from Any Town Utilities to an outside contracted laboratory, Chain-of-Custody and/or Transmission Forms will be filled out. (See example in Appendix). When samples are transferred between personnel, such transfer will be indicated on the form with signature, date and time of transfer. The Chain-of-Custody and/or Transmission Form will remain with the samples, sealed inside the cooler, until

receipt by the contracted laboratory. Samples and sample containers will be maintained in a secure environment, from the time the bottles leave the Any Town Utilities until the time the samples are received at the contracted laboratory. Contracted laboratories will maintain custody of bottles and samples using their normal custody procedures, as described in their QMPs.

## B4. Analytical Methods

Any Town Utilities will use EPA-approved methods as found in *40 CFR Part 136.3* or its updates. See Table 3 below. Any modifications will be discussed with DEC and will be described in an addendum to this QAPP.

Any Town Laboratory Standard Operating Procedures (SOPs) will be available to DEC upon request.

Laboratories contracted by Any Town Utilities will follow test procedures for the analysis of pollutants which are EPA-approved methods as cited in 40 CFR Part 136.3 or as such regulations are amended. Sludge methods are specified in 40 CFR Part 503.8.

Contracted laboratories will provide copies of their Standard Operating Procedures (SOPs) to DEC as requested. As previously stated, DEC drinking-water certified laboratory QMPs are kept on file at the office of the DEC Water Quality Assurance Officer. Parameters, approved methods, Precision and Accuracy values are shown below in **Table 3**.

| **Parameter** | **Approved Test Procedures[1]** | **Precision (RPD)** | **Accuracy (% R)** |
|---|---|---|---|
| $BOD_5$ | SM18 5210B | <30 | 80 - 120 |
| TSS | SM18 2540 D | <20 | 85 - 115 |
| Fecal Coliform Bacteria | SM18 9222 D | NA | NA |
| pH | EPA 150.1 | 0. 1 pH units | 0. 1 pH units |
| Temperature | EPA 170.1 | <10 | 90 – 110 |
| Total Ammonia | Hach method 8038 | <30 | 70-130 |
| Total Chlorine (residual) | EPA 330.1-.5 or SM4500 series | <30 | NA |
| Dissolved Oxygen | EPA 360.2 or SM4500 series | <30 | 85-115 |
| Total Recoverable Metals (wastewater) | EPA 200 series or SM310 series | See specific metal | See specific metal |
| Sample Preparation | EPA 200.2 | NA | NA |
| Total Metals (sludge) Sample Preparation | EPA SW-846 3050A | NA | NA |
| Total Metals (sludge) Arsenic | EPA SW-846 7060 | <20 | See control chart |
| Total Metals (sludge) Chromium | EPA SW-846 7190 | <20 | See control chart |
| Total Metals (sludge) Nickel | EPA SW-846 7520 | <20 | See control chart |
| Whole Effluent Toxicity (WET) | EPA/ 600/4-91/002 | <20 | >90 (Control survival) |

Footnotes: 1. "SM18" means Standard Methods for Examination of Water and Wastewater, 19th Edition, 1995.
"EPA" means Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983.
"EPA SW-846" means Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition.
"EPA/600/4-91/002" means Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, 2nd edition, Environmental Monitoring Systems Laboratory, U.S. EPA, Cincinnati, Ohio (July 1994)

## B5. Quality Control

Blind duplicate samples from the effluent and edge of mixing zone will be taken 2 times per year and the splits will be sent to an EPA-approved laboratory for replicate analysis of total suspended solids, fecal coliform and residual chlorine.

Every quarter, the Any Town Utilities QA Officer will perform replicate analysis of all parameters. Variation of duplicate values for each parameter must not exceed the range of precision and accuracy discussed in the A.7 Data Quality Objectives and Criteria for Measurement of Data, and Table 3 above. Any problems found with data collected are noted on the data sheets and in laboratory logbooks. Any changes to data are initialed by the Project Quality Assurance Officer.

Additionally, each year Any Town Utilities analyzes an unknown sample from an EPA-approved laboratory. EPA performance evaluation results are kept on file at Any Town Utilities' laboratory

## B6. Instrument/Equipment Testing, Inspection and Maintenance

Before each sampling and analysis event, all instruments and equipment will be inspected prior to use. All testing instruments and equipment will be clean and in good working order before it is used for monitoring.

Routine maintenance for all meters will be conducted according to schedules and procedures described in manuals provided by the manufacturers and a maintenance log will be kept for each instrument.

A supply of replacement equipment and reagents is kept in the laboratory. This supply includes extras of commonly lost or broken equipment and enough reagents to perform all scheduled analysis procedures for at least 3 months. Reagent stocks are rotated out every four to six months or according the manufacturer's recommendation.

This information will be recorded on data sheets and in laboratory logbooks and will be available to DEC for review upon request.

## B7. Instrument/Equipment Calibration and Frequency

All field and laboratory instruments and equipment will be calibrated according to the manufacturers' instructions. Records of calibration dates will be kept on calibration log sheets, and will be available for review by DEC upon request.

## B8. Inspection/Acceptance of Supplies and Consumables

Chemicals will be checked for expiration date, sufficient quantity and discoloration.

All equipment, meters, kits and supplies will be checked upon receipt at Any Town Utilities Laboratory by the Quality Assurance Officer or his/her designee to ensure that they are within technical specifications before use. Each reagent will be dated with the expiration date. An Equipment/Supply Inspection Form (see Appendices) which includes reagent expiration dates will be completed and kept on file in the laboratory. This form will be updated each time new or replacement equipment or reagents are received, and will be available to DEC for review upon request.

## B9. Non-Direct Measurements - Not Applicable.

## B10. Data Management

Data will be entered onto field data sheets and into laboratory logbooks and bench sheets. The Quality Assurance Officer or his designee will enter data into the EPA Discharge Monitoring Report (DMR) form each month.

The following is a list of possible data information records which are kept available at Any Town Utilities' laboratory for DEC review upon request:

- Training Records
- Field equipment and chemicals maintenance, cleaning and calibration records
- Field logbooks and/or field data sheets
- Chain-Of-Custody and/or Transmission forms
- Laboratory equipment and reagents maintenance, cleaning and calibration records
- Laboratory bench sheets, control charts, SOPs
- Records of QA/QC problems and corrective actions (field and/or laboratory)
- Laboratory data QC records
- Records of Data review sheets
- Duplicate, split sample, performance evaluation records and other QA/QC control records (field and laboratory)
- Assessment records
- Data review, verification and validation records

Whenever possible data results will be entered electronically and transferred electronically to avoid transcription errors.

## C. Assessment and Oversight

### C1. Assessments and Response Actions

The Quality Assurance Officer will ensure that the field and laboratory forms are complete when he checks for any errors. He will compare approximately 10% of the data sheets or logbook entries with the DMR entries. If any errors are found the Quality Assurance Officer will verify correct entry by comparing another 10% of the sheets.

Should the sampling staff, laboratory personnel or Quality Assurance Officer find errors in sampling or analysis, the Quality Assurance Officer will notify the Project Manager and the party responsible for the error or deficiency, and will recommend methods of correcting the deficiency. The responsible party will then take action to correct the problem and will report corrections to the QA Officer and Project Manager. See above for how this information is recorded and reported.

An EPA-approved laboratory sends Any Town Utilities a water sample once a year, which Any Town Utilities laboratory analyzes for the standard required effluent parameters. These results are sent to EPA where a performance evaluation takes place. Any Town Utilities is notified whether it meets accuracy and precision requirements.

The Quality Assurance Officer will monitor the quarterly blind duplicate sampling and analysis activities and will review these results. The Quality Assurance Officer will keep these assessment records available for review by DEC.

Additionally, Any Town Utilities is inspected and/or audited regularly by EPA and DEC.

### C2. Reports to Management

Monitoring results are summarized on the Discharge Monitoring Report (DMRs) and are submitted to EPA and DEC each month. (An example DMR form is found in the Appendices.)

Ambient water quality results are reported along with the DMR the month following data collection and analysis.

Quarterly and Annual Assessment Reports will be submitted by the Project Quality Assurance Officer to the Project Manager. Any improvements to Quality Assurance and/or Quality Control will be implemented as necessary. Records of changes will be

available for DEC review. DEC will be notified if changes/improvements require an amended QAPP.

## D. Data Validation and Usability

## D1. Data Review, Validation & Verification Requirements

The Quality Assurance Officer will perform at least quarterly quality checks of data packages to detect correctable problems. Any problems noted will be immediately brought to the attention of the Project Manager. Items to be checked include data sheets, logbooks, data entry, Discharge Monitoring Reports (DMRs), calibration logs, and custody/transmission forms.

Questions to be considered during these quality checks include:

- Were correct methods used?
- Were holding times met?
- Were accuracy and precision within data quality objectives?
- Were reporting limits correct?
- Were lab qualifiers provided and explanations and corrective actions taken if there were anomalies in the data?
- Was the data package as a whole for each sampling event complete?

## D2. Validation and Verification Methods

The Quality Assurance Officer will check the accuracy and precision of data to ensure that data quality objectives are being met.

Data sheets and/or logbooks must be completely filled out and signed at the time of sampling and analysis. The Quality Assurance Officer will review data sheets and/or logbooks for accuracy, precision, missing or illegible information, errors in calculation and values outside the expected range. The Quality Assurance Officer or his designee will initial each data package upon completing this review. Any questionable data will be brought to the attention of the field and/or laboratory personnel for resolution. Any changes made to the data will be initialed by the Quality Assurance Officer, and any action taken as a result of the data review will be specifically recorded on the data sheet. Data will then be entered into the monitoring data system, which is designed to flag any values which fall outside of the expected range for each parameter.

The Quality Assurance Officer or his designee will review and initial equipment maintenance logs, sample custody forms and equipment/supply inventory and inspection forms on a quarterly basis.

Verification of data accuracy will be made by the Quality Assurance Officer during quarterly quality control checks, replicate analysis and split sampling checks.

Calculations and determinations for precision and completeness will be made by the Quality Assurance Officer during the quarterly review process. Results of accuracy, precision, and completeness calculations will be kept on file at the laboratory.

If data quality indicators do not meet specifications (see A7. Data Quality Objectives and Crieteria for Measurement of Data and Table 3), the cause of the failure will be evaluated. If the cause is found to be equipment failure, calibration and maintenance procedures will be reassessed and improved. If the problem is found to be procedural error, the Quality Assurance Officer will review methods used. If accuracy and precision goals are frequently not being met, Quality Control procedures will be reviewed and, subject to EPA and DEC approval, may be revised.

## D3. Reconciliation with User Requirements

The Project Manager and Quality Assurance Officer will review the permit monitoring requirements on an annual basis. If there are any problems with quality sampling and analysis, these issues will be discussed with DEC, to ensure that permit requirements and QAPP data quality objectives are being met. Modifications to monitoring required by permit, will require modifications to the approved QAPP.