Quality Management Plan

INTERSTATE ENVIRONMENTAL COMMISSION

Organization Title:	Interstate Environmental Commission c/o BioBAT
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COVERAGE: This Quality Management Plan shall apply to all technical and analytical work of the Interstate Environmental Commission.

APPROVAL FOR IMPLEMENTATION:

Evelyn Powers Digitally signed by Evelyn Powers Date: 2023.03.08 16:37:33 -05'00' _____

Evelyn Powers — Date
IEC Executive Director

CONCURRANCE:

NORA CONLON Digitally signed by NORA CONLON Date: 2023.03.08 14:37:06 -05'00' _____

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Emily Nering 3/8/2023

Emily Nering, Quality Assurance Officer — Date
EPA Region 2

Annual Review (The review is to be document if the Quality Management Plan has not been revised in the past 12 months)

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1.1 Background

The US Environmental Protection Agency (EPA) has developed a mandatory Agency-wide Quality Assurance Program that requires all organizations performing work for EPA to develop and operate management processes for assuring that data or information collected are of the needed and expected quality for their intended use. It also requires that environmental technology used for pollution control or waste remediation is designed, constructed, and operated according to defined specifications and protocols. These requirements apply to all organizations that conduct environmental data operations on behalf of EPA through contracts, financial assistance agreements, and interagency agreements (https://www.epa.gov/sites/default/files/2016-06/documents/r2-final.pdf).
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This document outlines the quality management system of the Interstate Environmental Commission (IEC) and has been prepared for approval by EPA Region 1 and EPA Region 2. IEC's quality management system is based on the principles and required elements stipulated by EPA, which are then applied to all environmental data collection and manipulation activities conducted by or on behalf of the Commission – regardless of geographic location, EPA region, or source of funds. In all data collection activities, it is the Commission's intent to provide procedures that ensure the highest level of quality assurance that is appropriate to the intended use of the data.

2.1 IEC Mission

Established in 1936, the Interstate Environmental Commission is a tri-state water pollution control agency serving the states of New York, New Jersey, and Connecticut and the waters they share. IEC's mission is to protect and enhance environmental quality in the Interstate Environmental District (IED) through monitoring, cooperation, regulation, coordination and mutual dialogue between government agencies and citizens.

2.2 IEC Strategies for Achieving Mission

IEC strives to fulfill its mission through strategies that are designed to meet regional water quality needs of the states and EPA. These strategies are developed into specific grant workplan tasks with input from federal, regional, state and local partners. All environmental data collections efforts associated with these tasks are detailed in project-specific Quality Assurance Project Plans (QAPPs) that are approved by IEC QA Management and the appropriate EPA region. Currently, IEC activities are designed to support the following three strategies:

- Fill geographical, temporal, or analytical gaps in regional monitoring programs in coordination with the states, EPA, and regional partners.
- Perform coordinated, tailored inspections and projects designed to assist efforts of state and regulatory authorities.
- Facilitate, coordinate, and participate in workgroups and projects with regional partners; participate in existing and coordinate and support new citizen science monitoring efforts.

All of these tasks require application of comprehensive, outlined quality management practices.

2.3 Quality Policy

It is the policy of the Interstate Environmental Commission to produce environmental data of known and acceptable quality to achieve the Commission's mission. The IEC performs extensive field and laboratory data collection and generation activities that measure water quality. The Commission is committed to applying good field and laboratory practices to all aspects of its sampling and analytical work. To ensure that state, federal and local agencies have full confidence in data collected and analyzed by IEC, the Commission maintains laboratory accreditation through the National Environmental Laboratory Accreditation Program (NELAP). IEC holds primary NELAP accreditation through New York State Department of Health's Environmental Laboratory Approval Program (NYSDOH ELAP) and secondary accreditation through the New Jersey Department of Environmental Protection's Environmental Laboratory Certification Program (NJDEP ELCP). The Commission's laboratory also holds environmental laboratory approval from the Connecticut Department of Public Health (CTDPH). The Quality Assurance (QA) activities of the Commission's Laboratory shall comply with the EPA, the National Environmental Laboratory Accreditation Conference (NELAC), NYS ELAP, NJDEP's ELCP, and CTDPH requirements with respect to their planning, implementation and assessment. Where certification programs differ in adopted regulations or standards, the laboratory shall comply with the strictest standard. More information about IEC's laboratory accreditations and copies of the current laboratory accreditations are in Appendix A.

2.3.1 Laboratory Competency Requirement

On December 12, 2012, the EPA Science and Technology Policy Council (STPC) approved Agency Policy Directive Number FEM-2012-01, "Policy to Assure the Competency of Organizations Generating Environmental Measurement Data Under Agency-Funded Assistance Agreements" with implementation criteria approved on March 13, 2013, and updated December 21, 2016. The policy requires "organizations generating or using environmental data under certain Agency-funded assistance agreements (in excess of $200,000) to submit documentation of their competency prior to award of the agreement or if that is not practicable, prior to beginning any work involving the generation or use of environmental data under the agreement. This includes organizations performing environmental sampling, field measurements, and/or laboratory analyses under Agency-funded agreements." IEC meets this grant condition through development and approval of this quality management plan as well as through environmental laboratory accreditation programs. The IEC District Laboratory holds National Environmental Laboratory Approval Program (NELAP) accreditation granted through both the New York State Department of Health and the New Jersey Department of Environmental Protection. Both the NYSDOH ELAP and NJDEP Office of Quality Assurance perform bi-ennial on-site assessments of laboratory and field operations. The laboratory is also certified by the Connecticut Department of Public Health as an approved environmental laboratory. Copies of current certificates are included in Appendix A, and updated certification will be forwarded to EPA annually upon request. Current certifications are also listed on the IEC website at https://www.iec-nynjct.org/certified-parameters.

To further ensure that all aspects of environmental data collection projects are of known, documented, and acceptable quality, all work that involves the acquisition of environmental data generated from direct measurement activities, collected from other sources, or compiled from computerized databases and information systems (such as geographic information systems) will be conducted according to project-specific Quality Assurance Project Plans (QAPPs). The QAPP is a "blueprint" for the project which details the "who, what, when, where, how and why" of the project.

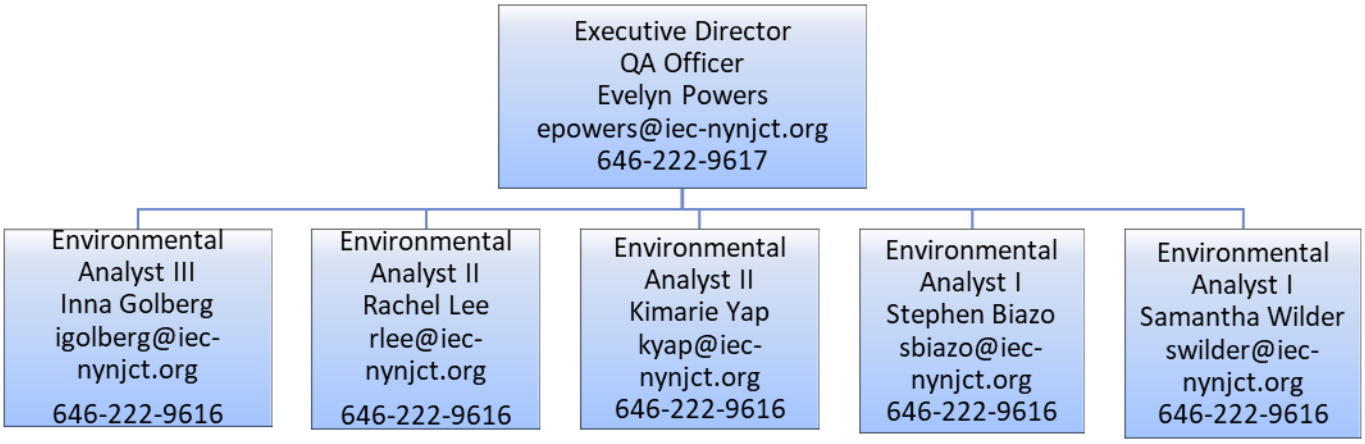
QAPPs outline the background of each project, the problem to be addressed by the project, the sample process design, sampling and analytical techniques, quality control measures, performance measures, acceptance criteria and reporting procedures. QAPPs are produced by staff according the *EPA's Requirements for QA Project Plans (QA/R5) EPA 2001a* https://www.epa.gov/sites/production/files/2015-06/documents/g5-final.pdf and additional EPA guidance documents, when applicable (https://www.epa.gov/quality/agency-wide-quality-program-documents). More detail on QAPP requirements and production is provided in Section 3.3.3. No work covered by this requirement shall be implemented without an approved QAPP available prior to the start of work. QAPP approval requirements depends on the funding authority and use of data. All work funded by EPA must have QAPPs approved by the QA Manager (or designee) of the EPA Region (typically EPA Region 1 or 2) which is funding the work, as well as the EPA Project Officer overseeing the grant or funding assistance agreement that is funding the project. In some cases, the authority to review and approve QAPPs may be delegated in writing by EPA to another organization. The IEC Executive Director approves all QAPPS on behalf of IEC. The Executive Director may designate an IEC staff member to sign a signature page behalf of the Executive Director in order to expedite the distribution process in the event of the absence of the Executive Director. Additional approvals from project partners may be required for specific projects.

2.4 IEC Management and Organization

Pursuant to the IEC bylaws and regulations, the IEC employs an Executive Director who is administratively in charge of the IEC. IEC's Executive Director shall ensure that adequate and acceptable resources, planning, implementation, and assessment procedures are utilized through all phases of its projects/tasks requiring the generation of environmental data and/or the use of environmental technology. It is the policy of IEC that all decisions made to safeguard the environment and protect public health will include a consideration of such environmental data and/or environmental technology.

The staff of the IEC is currently composed of six experienced professionals capable of planning, coordinating, and completing the Commission's water quality projects. The staff is based at its permanent facility at the Brooklyn Army Terminal. Staff currently includes a full time Executive Director who serves as the Technical Director and Quality Assurance Officer, an Environmental Analyst (Level III) who coordinates and oversees day to day laboratory analyses and three Environmental Analysts (Level I and II), who support laboratory, field, data management and reporting activities. Environmental Analysts typically are assigned to serve as project managers for specific projects. Part-time Environmental Analysts or seasonal interns may also be hired to support specific projects as resources allow.

Figure 1. Interstate Environmental Commission Organizational Chart



The Executive Director, in addition to managing and overseeing all commission staff, serves as the laboratory's Quality Assurance Officer (QAO). The QAO's responsibility is to produce and maintain the Quality Management Plan and Laboratory Quality Control Manual current and to successfully implement a NELAC compliant quality system. IEC's QAO reviews the effectiveness and suitability of the quality system at least annually through internal lab audits, field audits and annual management reviews, which are submitted to NYSDOH and NJDEP as per certification requirements NYSDOH ELAP, IEC's primary accrediting authority, has allowed this dual role in instances where available resources make the staffing of a completely independent Quality Assurance Officer impossible or impractical. The QAO has overall responsibility for the technical operation of the lab. The QAO, or designee, is also responsible for arranging and overseeing all support services including instrument service contracts, subcontracting sample analyses, and physical maintenance of the laboratory. The QAO (Executive Director) reports directly to the IEC Executive Committee. The QAO is responsible for providing supervision to all IEC personnel to ensure adherence to documented procedures. When the Executive Director is not present, the most senior Environmental Analyst will be appointed to supervise. The Executive Director shall certify that personnel with appropriate educational and/or technical background perform all tests for which the lab is accredited.

The Commission's Environmental Analyst III (Chemist) performs chemistry analyses, microbiological analyses, metal analyses, QA/QC tests and proficiency tests as required, to maintain the laboratory's certifications with the respective state governments and the federal government. The Chemist is also responsible for assisting with the maintenance of laboratory instruments and overseeing routine laboratory operations.

The Commission staff includes four additional Environmental Analysts who are responsible for sample collection and field analyses at wastewater treatment plants, industrial facilities and ambient water quality surveys in the Interstate Environmental District (IED). The Environmental Analysts may also assist with media and reagent prep, and microbiology and chemistry analyses in the laboratory after completing the appropriate demonstration of capability studies.

The laboratory's accommodations, test areas, energy sources, lighting, heating and ventilation facilitate proper performance of tests. Work spaces and entryways to the laboratory, sample receipt areas, sample storage areas, chemical and waste storage areas and data handling and storage areas are made available and known to the laboratory's personnel. Effective separation is provided between neighboring areas in which incompatible activities are taking place in order to prevent cross contamination. Environmental conditions that have an effect on test results shall be monitored and documented.

The commitment of the IEC's management to compliance with quality goals assures an adequately staffed and equipped laboratory facility; successful participation in proficiency testing program managed by the NYS ELAP, the NJ DEP or any other accredited provider; successful implementation of a NELAC compliant quality system; annual documented internal audits and management reviews; successful biennial assessments by its Primary Accrediting Authority and Secondary Accrediting Authority; timely reporting of laboratory test results to the regulating authorities/clients; and laboratory test results that are supported by quality control data and documented laboratory testing procedures.

This Quality Management Plan must be communicated to, understood, and implemented by all personnel concerned. The quality policy is communicated to employees and documented during the training of new hires. The Quality Management Plan must also be read by each member of the laboratory staff annually or more often if warranted by the revision of the manual. Documentation includes signed statements in each analyst's training file. The quality policy must be understood, implemented, and maintained by employees at all levels. All members of IEC staff are responsible for the quality of their own work. Management, through the employee evaluation process, the training procedure, the internal audit process, and the document control process ensures this.

Through adherence to, and improvement of, its quality system, IEC will continuously strive to provide quality services. Quality objectives are established throughout this manual. IEC's management is committed to reviewing the effectiveness and suitability of quality objectives, and of the quality system at least annually.

3.0 Quality System

The quality system defined in this Quality Management Plan is a comprehensive and detailed system appropriate for the extensive data collection activities performed by IEC. This Quality Management Plan is largely based on the IEC laboratory's more detailed Quality Control Manual, which is reviewed at least annually and updated as needed. The system applies to all IEC personnel who perform, plan or review data collection activities. All employees are responsible for the quality system. The individual documents define specific employee responsibilities.

Through a formal documented system of planned activities, the quality system meets the relevant requirements of ISO guide 17025, NELAC Chapter 5, July 2003, NELAC Volume 1, Module 2 Section 1.1, July 2011, the New York State Department of Health, Environmental Laboratory Approval Program, N.J.A.C 7:18, and the 2009 TNI Laboratory Accreditation Standards (where applicable). The Quality Control Manual is maintained current and up-to-date by the Executive Director, who also serves as the Quality Assurance Officer, to reflect changes to the system. The

laboratory defines its policy for each applicable element in the Quality Control Manual. For each element, as appropriate, the laboratory has documented procedures (e.g. analytical SOPs) that further describe how the specific policy objectives and goals are met. The Quality Control Manual references these documented procedures.

Quality procedures and instructions are implemented as written. Procedures, SOPs or other documents either outlined or referenced in this manual explain how the laboratory implements the standard requirements in accordance with its quality policy. They are revised, as necessary, to reflect the actual objectives, flow of tasks, and staff responsibilities. Analytical protocols are maintained in the laboratory methods manual (SOP Manual). As per NELAP-developed format, each analytical SOP contains 23 sections explaining every step of the analytical process from sampling to data acceptance criteria. They specify the equipment and reagents required, quality control checks, calibration requirements and detailed, step-wise procedures. SOP's are approved by managerial staff and are maintained in the document control system.

3.1 Accredited Test Methods

TEST	METHOD
Biochemical Oxygen Demand	SM 5210B-2016
Alkalinity	SM 2320B- -11
Hardness, Total	SM 2340C-97,-11
Residue, Settleable	SM 2540F-15
Solids, Total	SM 2540B-15
Solids, Total Dissolved	SM 2540C-15
Solids, Total Suspended	SM 2540D-15
Coliform, Fecal (MF)	SM 9222D-2015
Coliform, Fecal (MPN)	SM 9221 E-2014
Fecal Coliform (MPN)	Colilert-18
Coliform, Total (MPN)	SM 9221B-2014
Coliform, Total (MF)	SM 9222B-2014
E.Coli (Enumeration) 06 (MPN)	SM 9221B-2014/9221F-2014
Enterococci	EPA 1600
Enterococci	SM 9230D-2013 (Enterolert)
Heterotrophic Plate Count	SM 18-21 9215B

Hydrogen Ion, pH*(NJ)	SM 4500-H-B-11
Specific Conductance	EPA 120.1 Rev. 1982
Temperature (NJ)	SM 2550 B-10
Turbidity	EPA 180.1 Rev. 2.0
Chlorine* (NJ)	SM 4500-Cl-G-11
Ammonia (a N)	EPA 350.1, Rev. 2.0 (1993)
Nitrate (as N)	EPA 353.2, Rev. 2.0 (1993)
Nitrate-Nitrite (as N)	EPA 353.2, Rev 2.0 (1993)
Nitrite (as N)	EPA 353.2, Rev. 2.0 (1993)
Orthophosphate (as P)	EPA 365.1, Rev. 2.0 (1993)
Phosphorus, Total	EPA 365.1, Rev. 2.0 (1993)
Dissolved Oxygen-Winkler* (NJ)	SM 4500-O C-16
Dissolved Oxygen*-Luminescence BasedSensor	Other HACH 10360
Chlorophyll (NJ)	EPA 445.0

*Effective March 2011 NYSDOH ELAP dropped these "analyze immediately" field parameters from their certification program. In March 2013, the laboratory applied for NELAP certification for pH, temperature, and residual chlorine through NJDEP's Environmental Laboratory Certification Program. This certification was granted and has been maintained since January 2015.

3.2. Quality System Components

3.2.1 Documentation and Procedures

3.2.1.1 Traceability of Measurements

The Commission's laboratory has an established program for ensuring the traceability of measurements through the calibration and verification of its measuring and test equipment including balances, thermometers and control standards. Verification and/or validation of equipment, such as, balances, thermometers, and spectrophotometers, shall be performed with National Institute of Standards and Technology (NIST) traceable standards. Calibration certificates must indicate NIST traceability along with measurement results and the associated uncertainty and/or a statement of compliance with an identified metrological specification, such as tolerance. Reference standards, such as Class S weights and NIST traceable thermometers, are used for calibration only and shall be calibrated by an organization that can provide traceability to NIST. Volumetric glassware, if not serialized and calibrated by the manufacturer or Class A, is checked quarterly in house using a documented gravimetric technique. This includes Eppendorf™ pipets. Membrane filtration funnels, if used to prepare dilutions, are checked quarterly for accuracy using graduated cylinders. Disposable pipets are checked for accuracy once per lot using gravimetric technique. Imhoff cones must also be checked quarterly by adding a volumetrically measured amount of water to the cone and recording the reading. More information of calibration requirements and routine equipment checks and documentation requirements is provided in section 3.3.1.2, Laboratory Environment, in the Laboratory Quality Control Manual (Revision 16, Effective Date 08/24/2022) and in individual

analytical SOPs. Analytical SOPs may be reviewed and/or revised more frequently than the Quality Control Manual due to changes in method or regulatory requirements. When the QCM and SOPs differ, and the SOP has a more recent effective date than the QCM, the SOP quality control requirements shall be met.

All equipment used shall provide the uncertainty of measurement needed. The laboratory shall provide satisfactory evidence of correlation of results in those cases where traceability to national standards of measurement is not applicable.

Calibration and/or verification procedures are designed to ensure that the data will be of known quality and be appropriate for a given regulation or decision. Details of instrument calibration and/or test verification procedures including calibration range, standardizations, calculations and acceptance criteria are included or referenced in each analytical SOP.

Sufficient raw data are retained to document and reconstruct the calibration used to calculate the sample result.

Where specified by the method, all calibrations are verified with a second source standard which is traceable to a national standard, when available. Calibration standards include a concentration at or below the regulatory/decision level but above the laboratory's detection limit.

Results of samples must be within the calibration range (bracketed by standards) or the results must be flagged as having less certainty.

Limit of Detection (LOD) and Limit of Quantitation (LOQ) – Limit of Detection (Also referred to as Minimum Detection Level) studies are performed annually, or more frequently if there is a significant change in personnel, facilities or equipment. The validity of the LOD is confirmed by the analysis of a QC sample, in the approved matrix, containing the analyte at no more than 5X the LOD for single analyte tests, and 5X the LOD for multiple analyte tests. The LOQ (also referred to as the Reporting Limit, RL) is verified annually, or more frequently if required by the method (typically with each analytical run), by analyzing a QC sample containing the analytes of concern in the approved matrix, at 1-2X the claimed LOQ.

3.2.1.2 Laboratory Environment

Testing occurs only within the laboratory except for "analyze immediately" parameters such as temperature, pH and total residual chlorine, which are analyzed in the field, or filtration steps for certain procedures, which must be done in the field immediately upon sample collection. The IEC's laboratory shall furnish all items of equipment, including reference materials, required for the correct performance of tests for which accreditation has been received or is sought. IEC's equipment and associated software used for testing, calibration and sampling must achieve the accuracy required and comply with specifications relevant to the tests concerned. Equipment outside the permanent control of the IEC laboratory is handled so as to ensure that requirements of the NELAC standard are met.

Before being placed into service, all equipment purchased is calibrated and checked to establish that it meets the laboratory's requirements and relevant standard specifications. Calibration is checked for key quantities or values of the instruments where these properties have a significant effect on the

results.

Prior to use on each working day, balances, pH meters, and ovens must be checked with NIST traceable references, where available, in the expected use range. Refrigerators, incubators and waterbaths are checked twice a day, at least four hours apart, and temperatures recorded, taking into account any applicable correction factors, in the temperature logbook. Ovens, which may not be regularly used, are checked at least weekly to ensure that they are in the appropriate range. Log sheets for ovens are posted on each oven door. All mechanical volumetric devices, including Eppendorf ™pipets, must be checked for accuracy on a quarterly basis. The temperature, cycle time, total time and pressure of each autoclave run must be documented. Use of bacteriological indicators with each run demonstrates sterilization. Autoclave tape is only used to indicate that each item has been exposed to the sterilization process. A maximum registering thermometer accompanies each autoclave batch and the thermometer reading at the end of the sterilization cycle is recorded. The autoclave timing device is checked monthly. The incubator humidity is monitored by monitoring plates for weight loss (moisture loss). Microbiological analyses require extensive quality control checks that are outlined in tables in each analytical SOP. Tables in analyte-specific laboratory SOPS outline analyte-specific QC checks. In addition, the laboratory utilizes posted checklists and calendars to ensure timely completion of general laboratory calibrations and QC measures.

All equipment shall be properly maintained, inspected, and cleaned according to documented procedures or the manufacturer's specifications by authorized personnel to ensure proper functioning and to prevent contamination or deterioration. The NIST thermometer used for in-house thermometer calibrations, is sent to Kessler Thermometer, Inc., or other suitable service provide, annually for calibration at temperatures of use. The solids oven thermometer, and the autoclave thermometer, which are not practical to calibrate in-house, are sent to Kessler Thermometers, Inc. or other suitable service provider annually for calibration at temperature of use. The balances are serviced and calibrated on-site annually by Accurate Balance and Calibration Services, Inc. or other suitable service provider. Support equipment, such as working thermometers, have to be calibrated annually, using NIST traceable references (NIST thermometer) in house over the entire range in which the equipment is used. Field temperature sensors, such as the conductivity/temperature sensors used in association with multi-parameter sondes, must be calibrated quarterly, using NIST Traceable references (NIST thermometer). Results of support equipment calibration shall be checked against the specifications required by the application for which it is used. All raw data records, including correction factors to correct measurements, shall be retained in laboratory files to document equipment performance. All equipment, including reference materials, shall be labeled, marked or otherwise identified to indicate its calibration status, including the date when last calibrated and the date or expiration criteria when recalibration is due.

Any defective item of equipment is clearly marked and taken out of service until it has been shown to perform satisfactorily.

Each item of equipment or reference material must have a record to show its calibration status.

Equipment and reference material records include:

1. Name of item of equipment or reference material
2. Manufacturer, identification, serial number

3. Date received and placed in service
4. Current location
5. Condition when received
6. Copy of manufacturer's instructions or manuals or location of manual.
7. Dates and results of calibrations/verifications and date of next calibration/verification or reference to log
8. Details of maintenance carried out to date and planned for the future
9. History of any damage, malfunction, modification, or repair

Service of equipment is performed by qualified service organizations. All records and certificates from service calls are retained. Additional monitoring as prescribed by the test method SOP is recorded.

The following is a master inventory list of equipment currently used in the IEC laboratory for analytical work.

Figure 2. Interstate Environmental Commission Laboratory Equipment List: updated 1/20/2023

Instrument	**Manufacturer**	**Model #**	**Serial #**	**IEC inventory number**	**Analyses Performed**
TOC Analyzer	Shimadzu	TOC-L	H544259 30057	N/A	TOC, DOC, DIC
ASI-L (TOC Autosampler)	Shimadzu	ASI-L	H574160 04429	N/A	TOC, DOC, DIC
Nutrient	Seal	Quattro39	8051778	N/A	Nutrients
ICP	Agilent	5100 ICP-OES	MY16231010	1232	Metals
Microscope		56-K-1		496C	Microbiology
BOD/DO Meter	HACH	HQ440D	170600003855		BOD
Turbidimeter	HACH	2100N	08120C024762	1207	Turbidity
pH/Conductivity Meter	Thermo Scientific	Orion Star A215	X39418		pH/Conductivity
pH Meter (Field)	Fisher Scientific	Accumet AP61	312272	N/A	pH, Temperature
pH Meter (Field)	Fisher Scientific	Accumet AP115	2529547	N/A	pH, Temperature
Chlorine Meter	HACH	58700-00	106050E302083	N/A	Residual Chlorine
Chlorine Meter	HACH	58700-00	16030E297244	N/A	Residual Chlorine
Chlorine Meter	HACH	58700-00	08080E107800	N/A	Residual Chlorine
Chlorine Meter	HACH	58700-00	07060E73764	N/A	Residual Chlorine
Incubator	Boekel Scientific	132000	094116194	1218	Microbiology
Water Bath	Fisher Scientific	Isotemp 120	407N0119	1219	Microbiology

Analytical Balance	Sartorius	Secura 225D	0042007715	N/A	TSS, TDS, TS, Wet Chemistry, Mic
Top Loading	Mettler Toledo	PB303	SNR1114173843	1057	Wet Chemistry, Microbiology
Refrigerator	Avanti	18CYW.11CWB.1	0096753	686	QC/Standard Storage
Refrigerator	Danby	DPF073C2BSLDB	5018103077111	N/A	Micro Media Storage
Refrigerator	Kenmore	353.60722012	WA23601909	N/A	Sample Storage
Standing Freezer	Frigidaire	FFFU12F2VW	8A03671524	N/A	Sample Storage
Chest Freezer	Frigidaire	FFFC25M4TW	AA02760509	N/A	Sample Storage
Chest Freezer Small	RCA	RFRF450-AM2	A1703196600001741	N/A	Sample Storage
Nutrient Analyzer	Lachat	8500 Series 2	1511000010	122	Nutrients
Lachat Mico Dist	LACHAT	A1702	180400002319	N/A	Ammonia Distillation
EXO1 Sonde	YSI	EXO1	16B102447	N/A	Field
EXO1 Sonde	YSI	EXO1	16B102573	N/A	Field
EXO1 Sonde	YSI	EXO1	21E101948	N/A	Field
EXO1 Sonde	YSI	EXO1	21E101949	N/A	Field
EXO 2 Sonde	YSI	EXO2	22E105882	N/A	Field
BOD Incubator	Fisher Scientific	97990E	300088512	1226	BOD
ProDSS	YSI	ProDSS	20F161184	N/A	Field
ProDSS	YSI	ProDSS	20F161186	N/A	Field
ProDSS	YSI	ProDSS	17C104452	N/A	Field
ProDSS	YSI	ProDSS	20F161185	N/A	Field
ProDSS	YSI	ProDSS	17C104453	N/A	Field
Autoclave	Tuttanuer	3870ELP	21020849	N/A	Media

Autoclave	Tuttanuer	2540E	15070633	1230	Media Sterilizatio
Fluorometer	Turner Designs	7200-000	720001342	1231	Chlorophyll a
Centrifuge	IEC	41498 (Cat# 809)	42837041	N/A	Chlorophyll a
UV Sterilizer	Millipore	XX6370000	136703	N/A	Microbiology
Quanti-Tray Sealer Plus	IDEXX	890000393600	QTP13190504839	N/A	Enterococcus/ Colilert18
Iso Temp Incubator	Fisher Scientific	151030513	42761977	N/A	Microbiology (35.0°C)
Iso Temp Incubator	Fisher Scientific	151030513	42624144	N/A	Microbiology (41.5º)
Iso Temp Oven	Fisher Scientific	151030503	422620891	N/A	TSS/TDS
ELISA 4303 Microplate	Eurofius/ Abraxis	4300	4303-1206	N/A	Cyanotoxins
Precision Balance	Mettler Toledo	PL1502E	C119744640	N/A	Chemistry, Microbiology
Light Box IDEXX	Spectroline	CM-104	N/A	N/A	Enterolert/Coliler t-18
Quanti-Tray Sealer	IDEXX	89000039360	1320701364	N/A	Enterolert/Coliler t-18

3.2.1.3 Sample Handling

The IEC carries out all sampling according to documented procedures and, where applicable, EPA-approved Quality Assurance Project Plan (QAPP). Both shall be available at the sampling location and at the laboratory. The QAPP shall address the factors to be controlled to ensure the validity of the test results. Required deviations, additions, or exclusions from the sampling procedure during a project must be communicated to appropriate personnel via a QAPP addendum and recorded in detail in all documents containing test results.

The records of the IEC laboratory contain a documented system for uniquely identifying the items to be tested, in order to ensure that there can be no confusion regarding the identity of such items at any time. The Commission's system includes identification requirements for all samples, subsamples and subsequent extracts and/or digestates. Proficiency Test (PT) samples from the NYSDOH and other agencies, as well as samples brought in to the laboratory but sent out to an outside laboratory for testing shall also be identified. The laboratory ID code shall be placed on the sample container as a durable label and entered into the laboratory records. The label shall also bear the collector's initials,

date and time of the collection and IEC's investigation number. The ID code and IEC's investigation number serve as the link that associates the sample with related laboratory activities such as sample preparation or calibration, COC, as outlined in sample acceptance criteria below.

The Commission's field technicians assign a predetermined unique identification code to each sample in the field or the plant site. The sample ID consists of the investigation number- followed by a number indicating the sequence that that sample was taken during the course of the investigation. For example, a sample with the identification code 12345-1 indicates that it is the first sample taken during investigation # 12345. In addition to the identification code, a sample needs to be accompanied by a chain of custody sheet that includes information as to the location, date and time of the collection, the collector's name, the preservation type, the sample type, the analysis or analyses to be performed on that sample and any special remarks concerning the sample. Collection is performed using approved plastic or glass containers of sufficient volume containing the necessary preservatives and chlorine neutralizing agents as specified in the method. Bacteriology samples are collected directly into sterile containers. All samples are transported in a cooler containing sufficient ice and a cooler thermometer or temperature blank. When a sample arrives at the laboratory the sample ID, and associated information, is entered into laboratory records.

The IEC laboratory follows a sample acceptance policy that clearly outlines the circumstances under which samples will be accepted or rejected. The sample acceptance policy is made available to all sample collecting personnel. Data from any sample that does not meet the policy criteria is flagged in an unambiguous manner clearly defining the nature and substance of the variation. Samples that have not been properly stored during transport to the laboratory shall not be accepted. Containers that are found at receipt to be compromised, cracked or leaking, will not be accepted. The laboratory shall retain correspondence and/or records of conversations concerning the final disposition of rejected samples.

Sample acceptance criteria include the following:

a. proper, full, and complete documentation, which includes:
    1. sample identification,
    2. the location,
    3. date and time of collection,
    4. collector's name,
    5. preservation type,
    6. sample type and
    7. any special remarks concerning the sample;
b. proper sample labeling to include unique identification and a labeling system for the samples with requirements concerning the durability of the labels (water resistant) and the use of indelible ink;
c. use of appropriate containers;
d. adherence to specified holding times;
e. adequate sample volume to perform the necessary tests; and
f. procedures to be used if sample shows signs of damage or contamination.
g. Use of appropriate preservation techniques (e.g. ice or acid as specified by the method)

Upon receipt, the condition of the sample is recorded, as well as any abnormalities or departures from

standard condition as prescribed in the relevant test method. All samples, which require thermal preservation, are considered acceptable if the arrival temperature is between just above freezing to 4°C +/-2°C of the required temperature or within the method or QAPP-specified range. For samples with a specified temperature of 4°C, samples must be maintained within a temperature of just above freezing to 6°C. In cases where samples are hand delivered to the laboratory immediately after collection and thus have not yet met the temperature criteria considered acceptable, there shall be evidence that the chilling process has begun, such as arrival on ice. When applicable, upon arrival at the laboratory, or as specified in the method, the chemical preservation of all samples must be checked using readily available techniques, such as pH, residual chlorine or temperature. Bacteriology samples from chlorinated water systems shall be checked in the laboratory for residual chlorine. Care must be taken not to contaminate the sample when checking preservation. A small aliquot (5 ml) should be removed from the sample bottle into a small beaker to check pH or residual chlorine if required by the method.

The results of all checks must be recorded. Where there is any doubt as to the item's suitability for testing, where the sample does not conform to the description provided, or where the test required is not fully specified, the analyst needs to consult with the Executive Director for further instruction before proceeding. The Executive Director, in consultation with project management will establish whether the sample has received all necessary preparation, whether preparation to be undertaken or arranged by the laboratory is required, or if the sample needs to be disregarded and not analyzed.

The IEC's laboratory documents receipt of all sample containers in a logbook*. The following information is recorded in the laboratory logbook:

1. investigation number;
2. total number of bottles;
3. date and time of laboratory receipt of sample;
4. unique laboratory ID code;
5. signature or initials of the person making the entries;
6. parameters to be analyzed;
7. temperature in degrees Celsius, if necessary;
8. site name; and
9. comments resulting from the inspection (were sample acceptance criteria met?).

*The laboratory anticipates implementation of a laboratory information management system (LIMS) in FY 2023. When implemented, it is anticipated that sample login information will be entered directly into the LIMS. A LIMS procedure will be developed and included as an addendum or revision to this Quality Management Plan upon implementation.

A complete chain of custody record accompanies samples at all times until their disposal after which time the chain of custody record is filed and maintained at the laboratory. In the event that samples need to be stored, they are handled with care and stored in a refrigerator maintained at 4±2°C or as specified by the method, away from all standards, reagents, food and other potentially contaminating sources, in order to avoid deterioration or damage to the sample and to prevent cross contamination during storage. When samples are stored or conditioned under specific environmental conditions, these conditions shall be maintained, monitored and recorded and in agreement with the conditions specified by preservation protocols or the test method. Disposal of samples occurs according to standard operating procedures.

3.2.1.4 Records

The IEC's laboratory shall maintain a record keeping system that produces unequivocal, accurate records, which document and allow historical reconstruction of all laboratory activities, including those that produced analytical data. This system must comply with all applicable certification requirements.

The Commission's laboratory has established procedures for the identification, collection, access, filing, storage, maintenance and disposal of quality and technical records that include reports from internal audits and management reviews, as well as records of corrective and preventive actions.

It is the IEC's policy that its laboratory retains records of all procedures to which a sample is subjected while it is in the laboratory's possession. Such records shall include: a) the identity of personnel involved in sampling, preparation, calibration or testing; b) the sample preservation, appropriateness of sample container and compliance with holding time requirements; c) sample identification, receipt, acceptance or rejection and log-in; d) sample storage and tracking including shipping receipts, transmittal forms, internal routings; e) documented procedures for receipt, retention, or safe disposal of test items that include all provisions necessary to protect the integrity of the laboratory; f) all information relating to the laboratory facilities, equipment and analytical methods; and g) procedures to ensure that generated data have to be recorded directly, promptly and legibly in permanent ink.

All laboratory and field documents are to be filled out in black ink immediately when the information becomes available, which may be either in the field or the laboratory. Nothing on laboratory or field documents is to be erased. If an error is discovered, it is to be crossed out with a **single** line, signed or initialed and dated by the person making the correction, and the correct information is to be written in ink next to the incorrect information. When field personnel return to the laboratory after an investigation or sampling, they are to bring all paperwork with them and that paperwork is to remain in the laboratory while the investigation is being conducted. At no time is any paperwork to be taken home or outside of the laboratory for completion.

The Commission's laboratory shall retain for a minimum of five years from sample analysis: a) all original raw data, whether hard copy or electronic for calibrations, sample analyses and quality control measures; b) a written description or reference to the specific test method used; c) copies of final reports; d) archived standard operating procedures; e) correspondence relating to its activities for a specific project; f) all corrective action reports, audits and audit responses; g) proficiency test results and raw data; and h) records of data review and cross checking.

Strip charts, tabular printouts, computer data files, analytical logbooks, and run logs shall include, or reference (e.g. through SOPs) or the laboratory shall make available upon request: a) a Laboratory sample ID code; b) the date of analysis and time of analysis if the hold time is 72 hours or less or when time critical steps are included in the analysis; c) instrumentation identification and instrument operating conditions (or reference to such data); d) analysis type (method or technique); e) all calculations (automated and manual); f) analyst's or operator's initials/signature; g) sample preparation including cleanup & separation protocols, ID codes, volumes, weights, instrument printouts, meter readings, calculations, and reagents used; h) sample analysis; i) standard & reagent

origin, receipt, preparation, and use; j) calibration criteria, frequency, & acceptance criteria; k) any applicable data & statistical calculations, review, confirmation, interpretation, assessment and reporting conventions; l) quality control protocols and assessment; m) electronic data security, backups of automated data entries, records of any changes to automated data entries; and n) method performance criteria including expected quality control requirements.

The following administrative records shall also be maintained: a) personnel qualifications, experience and training records; b) initial and continuing demonstration of proficiency for each analyst; and c) a log of names, initials and signatures for all individuals who are responsible for signing or initialing any laboratory record.

All original observations, calculations and derived data, calibration records and a copy of the test report are to be retained on record in a legible condition for a minimum of five years, unless otherwise designated to be retained for a longer period. Through this documentation, the history of a sample, including inter-laboratory transfers of samples and/or extracts, shall be readily understood, in order to enable the test to be repeated under conditions as close as possible to the original. Records that are stored or generated by computers shall have printed hard copies in the project file.

Documentation resides within the laboratory and every effort is made to protect against fire, flood, theft, loss, environmental deterioration, and vermin. All information is kept secure and in confidence to the client. IEC's record keeping system facilitates the retrieval of all working files for inspection and verification purposes. NELAP related records are also available to the accrediting authority.

3.2.1.5 Laboratory Logs and Records

The laboratory logbook and log sheets are the primary source for documentation of all activities of IEC's analysts. Laboratory logs are used for recording all experimental, testing, QC and analytical notes and data. Exceptions include analyses which have specific data sheets designed for these analyses. These sheets reside within the investigation folder for that sampling event, labeled with a unique investigation number for that event. Logbooks and logsheets are maintained for a minimum of five years from date of generation. Scans may be retained in lieu of physical documents, provided the scans are legible and maintained electronically in password-protected files which are backed up regularly.

Laboratory logbooks establishes a permanent technical and scientific record which can be referred to in the future to demonstrate what was done during the course of a particular project. Analysts are made aware that other people eventually will need to read and understand their logs. Analysts are also made aware that others must be able to find specific laboratory experiments, instrumentation, description, experimental conditions, sources of reagents and supplies, and a usable table of contents to ease searching the logbook contents in the analyst's absence. Thus, it is imperative that logbooks are readable, searchable, indexed, referenced, clear, concise, easy to follow, and detailed enough to reproduce both the experiments and the results. Without clear and complete records analyses performed in the laboratory will not be completely understandable, reproducible or defendable.

For the above stated reasons, it is critically important that laboratory logbooks and records be handled and maintained properly.

The specific literature citation (method reference) of the experimental procedures also must go into the logbook. The logbook must be signed each and every day by both the originator and a senior colleague who assumes responsibility and liability. In summary, what should be in the log is the following:

1. all detailed methodology (references to approved methods);
2. all raw data;
3. final results, and if necessary, conclusions generated from the experimental work;
4. formulas, calculations, plans for the future if the experiment is interrupted;
5. descriptions, diagrams (if applicable), identification numbers and specifications of equipment;
6. identification data (can be found on certificate of analysis) of the chemicals used such as concentration, manufacturer and lot number;
7. data and test results to characterize condition, reliability, precision of equipment; and
8. the first three pages of a logbook are reserved for a table of contents to provide a quick and informative overview of the material contained in the logbook.

Each page of the logbook must be numbered consecutively, and all writing must be done in black ink (never pencil). Each page should be used in sequence, and, in the case of a bound logbook, pages not fully used should be crossed out (not torn out). Each page must be dated and include pertinent information such as the title of the experiments being described and data obtained. The pages of the log should be numbered and dated and any entries made by an individual other than the person to whom the book was assigned to should be initialed. Logbooks must have a well-maintained table of contents with a brief description of what can be found and where in that logbook. The logbooks and logsheets should be considered to be the property of the laboratory and are retained as part of the laboratory's files.

Deletion of errors should be made by drawing a single line through the error. The line drawn should not render the original entry illegible. At a minimum, the date of the correction and initials of the person who made the correction should be noted. If space permits, a notation stating the reason for the deletion should be added and initialed by the person who made the deletion. The recording of data on loose sheets for later entry into the bound logbook is a poor procedure and, because of the possibility of transcription errors, should be avoided.

General rules:

1. Write always in black ink and never use correction fluid;
2. When corrections are necessary, cross out the original entry with a single line (leaving the original entry visible), enter the correction alongside and initial it. If the reason for the correction is not obvious, enter an explanation;
3. Each page should be numbered and carry the date of the work performed;
4. Do not skip pages. Partially blank pages must have blank space crossed out and initialed;
5. Each entry should be understandable by a person who has some general knowledge in relevant science and technology without additional explanation by the authors; and
6. Each logbook gets a number, that is written on the cover of the book with an alcohol marker.

Items or areas in a typical laboratory logbook/logsheets are:

1. the title of that day's analyses, copied into the table of contents (if bound), which includes the analysis to be done, investigation number or the sample identification (quality control sample,

initial demonstration of capability, etc.) and page number. Each day's work starts off with a new page and title or continuation of the previous day's description and title, as appropriate;
2. the date of the studies being described;
3. thorough descriptions of all instrumentation, materials, expendables, supplies, chemicals, reagents, standard reference materials, and so forth with full names of manufacturers, vendors, suppliers, batch numbers, part numbers and catalog numbers;
4. complete descriptions of any laboratory procedures performed, weights of reagents prepared, actual balance readings, pH readings, temperature readings, dilutions performed, code numbers of samples prepared or analyzed, standards, and actual conditions used for those experiments;
5. all raw data and experimental results obtained, readings taken, and observations made without bias or interpretation at the time obtained. Any calculations involved to obtain the analytical results; and
6. the dated signatures of those who performed the experiments, those who may have assisted with aspects of these studies, and those who witnessed the data and results.

The Executive Director or designee is responsible for controlling the circulation of logbooks, according to established policies governing the distribution of laboratory logbooks to staff as outlined in the laboratory's Quality Control Manual (Document 001, Revision No 11, June 30th, 2017).

Quality records include reports from internal audits and management reviews as well as records of corrective and preventive actions. All records are retained for at least five years.

3.2.2 Reporting Analytical Results

The results of each test carried out by the laboratory are reported accurately, clearly, unambiguously, and objectively. The following information shall be included for the client in the report of laboratory analysis, except where report format modification is requested by the client and/or outlined in project-specific QAPPs.

1. Title;
2. Name and address of laboratory, and location where the test was carried out if different from the address of the laboratory and phone number with name of contact person for questions;
3. Unique identification of report and each page, including the total number of pages;
4. Name and address of client, where appropriate and project name, if applicable;
5. Description and unambiguous identification of the tested sample including the sample identification code;
6. Identification of results derived from any sample that did not meet sample acceptance requirements, such as, improper container, holding time, or temperature;
7. Date of receipt of sample, date and time of sample collection, date(s) of performance test, and time of sample preparation and/or analysis if the required holding time for either activity is less than or equal to 72 hours;

8. Identification of test method used, or unambiguous description of any non-standard method used;

9. If the laboratory collected the sample, reference to the sampling procedure;

10. Any deviations from (such as failed QC), additions to or exclusions from the test method (such as environmental conditions), and any non-standard conditions that may have affected the quality of the results, including the use and definitions of data qualifiers;

11. Measurements, examinations and derived results, supported by tables, graphs, sketches and photographs as appropriate, and any failures identified; reporting units on a wet or dry basis;

12. When required a statement of the estimated uncertainty of the result;

13. A signature and title, or an equivalent electronic identification of the person(s) accepting responsibility for the content of the of the report, and date of issue;

14. Clear indication of data provided by outside sources, such as subcontracted laboratories, clients etc; and,

15. Clear identification of numerical results with values outside of quantitation limits.

Subcontracted laboratories are identified by name and/or accreditation number on the report.

If errors are detected in the report, a subsequent revised report will be issued. The updated report will be titled "Revised Report".

If the laboratory discovers equipment used to derive results in any report casts doubt on the validity of the result it shall notify the client(s) in writing.

The laboratory shall, where clients require transmission of test results by telephone, telex, facsimile or other electronic or electromagnetic means, follow documented procedures that ensure that the above requirements are met and that confidentiality is preserved.

*The laboratory anticipates implementation of a laboratory information management system (LIMS) in 2023. When implemented, it is anticipated that analytical result information will be entered directly into the LIMS. A LIMS procedure will be developed and included as an addendum or revision to this Quality Management Plan upon implementation.

3.2.3 Quality Assurance Project Plans (QAPPS)

QAPPs are project-specific plans that establish the method by which the quality objectives will be met. A QAPP dictates the minimum requirements for project management, data measurement, data acquisition, assessment, oversight, data validation and data usability. The QAPP should include the main elements listed in EPA's guidance documents including, but not limited to: *EPA Requirements for Quality Assurance Project Plans QA/R-5:* https://www.epa.gov/sites/production/files/2015-06/documents/g5-final.pdf , *EPA New England Quality Assurance Project Plan Guidance for Environmental Projects Using Only Existing (Secondary) Data,* Revision 2, October 2009; *US EPA*

Region 2 Quality Assurance Project Plan (QAPP) Guidance for Environmental Projects Using Only Existing Data, Revision 1, March 2014.

Project-specific QAPPs will outline the data quality objectives of a project to determine the level of data quality necessary to meet the objectives. Each QAPP will outline the data assessment procedures to verify that the data was collected and analyzed in a way which meets the data quality objectives of the projects. More information about data assessment and response in provided in section 3.10.

3.2.4 Annual Internal Audits

The laboratory shall arrange for annual internal audits to verify that its operations continue to comply with the requirements of the quality system. There shall be at least one laboratory audit and one field inspection every year. Details of the annual internal audits are outlined in section 3.10.8

3.2.5 Management Reviews

The Executive Director, or designee, shall review the laboratory's quality system and its testing and calibration activities annually, in order to introduce any necessary changes or improvements, and assist with the systematic planning of projects. Details of the annual management review is outlined in section 3.10.9.

3.3 Personnel Hiring, Qualifications and Training

The IEC has set up a protocol for a comprehensive staff training program. All staff involved with technical work shall undergo this program to ensure that the data quality and the reports generated are of the highest level of accuracy and free from any error. IEC has set up its own stringent Quality Assurance/Quality Control (QA/QC) protocol for this purpose, an important component of which is its staff-training program. The following are detailed components that relate to IEC's training program:

1. Policy of Hiring

Whenever a position becomes available or a new position is created, IEC makes every effort to hire the most talented and competent person. The opening, with a detailed job description, is advertised on the Commission's website, and other available regional resources. The Executive Director screens the resumes. The Executive Director narrows down the search to three to six individuals who are invited for a final round of interviews with the Executive Director. The Executive Director may invite current staff members to participate in the interview process (interview committee). Every effort is made to hold interviews on site, in person. Interviews maybe held virtually in response to health advisories, local or regional extreme weather events or other extenuating circumstance. The Executive Director and interview committee decide on the top candidate and references are checked. After getting satisfactory professional referrals, and conferring with the Executive Committee, the Executive Director makes an offer of employment. It is not only the educational credentials and professional experience, but also the candidate's attitude, enthusiasm and integrity that play a vital role in the process of hiring.

1.Training Policy

The Executive Director, or designee, is responsible for the training of all laboratory personnel, including the environmental analysts who work in the laboratory in accordance with the laboratory's training manual, quality control manual and applicable SOPs.

One of the IEC's fundamental philosophies is that the process of staff training is as important as the process of staff hiring.

The Executive Director, or experienced Environmental Analyst, spends several days with the new employee under an orientation and training program, demonstrating and familiarizing him/her with the operation and use of laboratory instruments that are required to carry out the tasks and their calibrations. This includes small equipment, such as: pH meters, chlorine meters, conductivity meters and turbidity meters. IEC's Executive Director or experienced environmental analyst trains the new employee to all aspects of microbial analyses including preparations of media, inoculation and QC requirements and sterilization techniques. The trainee reads the IEC's Standard Operating Procedures Manual, Quality Control Manual, Training Manual, Health & Safety Manual and completes initial data integrity/ethics training. The trainee also observes the experienced environmental analysts perform the analyses. All steps in the training process are documented either by signed statements or demonstrations of capability (DOC's). DOC's are described in more detail below.

The Executive Director, or designee, explains in detail the IEC's QA/QC program, monthly requirements, all necessary calculations, record keeping and good housekeeping practices. The Executive Director, or designee, closely observes the performance of the new employee during this period and tests the knowledge and skills of the employee by asking questions, watching him/her perform the analysis and giving unknown QC samples(also referred to as laboratory control samples) to the employee to determine the true values and reproducibility of data, in order to assess his/her precision and accuracy in measurements. All these tasks are documented in the employee's laboratory logbooks.

For the employees hired to carry out field sampling, field trips are arranged for observation of sampling and on-site training. IEC's Executive Director, or designee, accompanies the new Environmental Analysts on the first day of sampling after the observation period and closely monitors his/her performance.

The Executive Director at this point, fully reviews the employee's understanding and performance of assigned tasks, including laboratory analyses and field sampling, as well as QA/QC measures, ethics and proper behavior principles. If a deficiency is noted, all attempts are taken to rectify the problem and if needed, additional training is given. In addition, annual evaluations of all IEC's employees are carried out. At the end of the training period, each analyst performs an Initial Demonstration of Capability on analyses they will be required to perform. The Initial Demonstration of Capability is a procedure performed by all of IEC's analysts to confirm their ability to generate acceptable accuracy and precision in their performance. The procedure follows NYSDOH's ELAP Certification Manual and NELAC guidelines and the Demonstration of Capability certificate included therein is completed for each analyst and each accredited method. IEC's analysts must demonstrate capability in practicing all test methods prior to using them to analyze environmental samples. IEC's analysts must also demonstrate ongoing, continuing demonstrations of capability annually or when there is a significant change in either the method or in the instrument type. In general, the procedure includes the addition

of a specified concentration of each analyte in each of four aliquots of laboratory pure water or the procurement of a quality control sample for a particular analyte by a certified provider. The volume of the quality control sample should be adequate for four replicate analyses. The analysis is carried out and the average is compared to the true value and the upper and lower acceptance limits of the control sample. As the laboratory workload changes, or personnel responsibilities change, analysts may be required to be trained to do additional analyses. In such a case, the analyst must successfully complete an Initial Demonstration of Capability for all additional analyses.

For each employee, the laboratory will maintain a training file that should contain:

1. a statement from each employee stating that he/she has read, understood, and is using the latest version of the laboratory Quality Management Plan, Quality Control Manual, and SOPs. The statement must be signed and dated;
2. a statement from each employee stating that he/she has read, acknowledged and understood their personal ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions. The statement must be signed and dated;
3. a Demonstration of Capability (DOC) for each employee for each accredited method;
4. documentation of any training courses, seminars, and/or workshops; and
5. documentation of each employee's continued proficiency to perform each test method by one of the following annually: acceptable performance of a blind sample (single blind to the analyst) for each accredited method; another DOC; at least four consecutive Laboratory Control Samples with acceptable levels of precision and accuracy; analysis of authentic samples that have been analyzed by another trained analyst with statistically indistinguishable results.

3.3.1 Data Integrity/Ethics

Consistent with NELAC standards, each employee who is required to perform laboratory analyses or review results, must receive Data Integrity/Ethics training, either at the initial hiring orientation or within two weeks after assignment to laboratory functions. Annual refresher training is also required for all employees. Training may be conducted in-house or externally. A record of training and a signed attestation by the trained employee shall be placed in the employee's training file. This manual, as well as specific analytical SOPs, outlines the Commission's data integrity procedures

Data integrity/Ethics training shall include:

1. a description of IEC's organizational mission and its relationship to the critical need for honesty and full disclosure in all analytical reporting;
2. description of how and when to report data integrity issues;
3. a description of IEC's record keeping system;
4. an explanation that any infractions of lab data integrity procedures will result in a detailed investigation that could lead to very serious consequences including immediate termination, or civil/criminal prosecution;
5. specific examples of breaches of ethical behavior
6. a description of all data integrity procedures, documentation, in-depth data and monitoring;
7. a requirement for emphasis on the importance of proper written narration on the part of the analyst with respect to those cases where analytical data may be useful, but are in some way partially deficient; and

8. documentation of topics covered in writing and provided to all trainees.

Reviews shall be conducted with respect to any evidence of inappropriate actions or vulnerabilities related to data integrity. Discovery of potential issues shall be handled in a confidential manner until such time as a follow-up evaluation, full investigation, or other appropriate actions have been completed and the issues clarified. All investigations that result in findings of inappropriate activity shall be documented and maintained for five years including any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients. The data integrity procedures will be annually reviewed and updated by management.

3.4 Procurement of Items and Services

IEC primarily performs data collection in-house, utilizing IEC staff. Occasionally, IEC needs to procure services to assist with data collection efforts (i.e. charter boat) or data analysis. The procurement of services is controlled and documented to assure conformance with quality management requirements.

All procurements are defined in writing in one or more procurement documents in accordance with policies outlined in IEC's administrative SOPs (purchase orders, requests for proposals, requests for qualifications, contracts or other agreement documents) and administrative conditions outlined in applicable grants or assistance agreements. Routine commodity purchases are made through the use of a purchase order. A Request for Proposals (RFP) may be developed for procurement of services. The nature of work, the location, and the anticipated cost are factors that contribute to the determination of when an RFP is necessary. Quality assurance requirements and applicable administrative conditions of all potential contractors will clearly be identified within the RFP and are a requirement of all contract documents.

The selection and purchasing of supplies, consumable materials and services that influence the quality of environmental testing operations of the laboratory shall be based upon a list, prepared and maintained by the Executive Director or designee, displaying all suppliers from whom the laboratory obtains materials or services required for tests. To maintain consistency, facilitate ordering and to ensure correct reagents are used in analyses, individual analytical standard operating procedures (SOP)s state manufacturer and catalog numbers of reagents related to that analysis that have been evaluated. These reagents should be the primary, first choice for reagents ordered and used. It may be necessary, due to the unavailability of reagents, or for budgetary reasons, to periodically evaluate alternate suppliers of reagents. Every effort is made to rotate procurement of routine consumable ("micro purchases") across all evaluated suppliers, and to periodically evaluate new suppliers, to ensure equitable and competitive procurement of consumables, consistent with EPA procurement guidance. If a new supplier, or an alternate reagent from a current supplier is being considered for use, the analytical SOP, method reference and current NELAC standard must first be reviewed to ensure that the specifications of the reagent meets the requirement of the method and the standard. This information may not be described in the item description and the manufacturer may need to be contacted to verify specifications and formulation. Purchasing documents containing information describing the materials ordered are prepared by the Executive Director who verifies that materials used comply with specified requirements. Purchased consumable materials are not to be used until they have been inspected, calibrated or otherwise verified as complying with any standard

specifications relevant to the calibrations or tests concerned. Upon receipt of a new, previously unused reagent, the certificate of analysis must be reviewed (procured from manufacturer before use if not automatically supplied) for conformance to the specifications stated by the catalog or manufacturer, as well as the method and NELAC standard. Ideally, evaluation of the reagent should be evaluated by performing parallel analyses of quality control samples (laboratory control samples) using the newly procured reagent along with a reagent with an established history of quality. For calibration standards for example, this can be performed by using the new standard to calibrate, and using a standard that has been evaluated as a mid-point calibration check. The mid-point check should yield a result not greater than 5% difference from the its certified value. If this is not possible (i.e. due to the lack of an evaluated standard in stock) at a minimum an initial evaluation of the reagent will consist of cross-checking the certificate of analysis with the specifications in the method. A list of suppliers that have been evaluated, along with a description of the reagents evaluated from each supplier, is maintained in the purchase order book and below. More details on specific reagents can be found in the "Reagents" section of individual analytical SOPs.

Reception and storage of consumable materials used for the technical operations of the laboratory should occur according to the following procedures. Upon receipt of any order, the staff member signing for the order must open, or if they are in the middle of analysis, request someone to open all cartons. Cartons must be opened immediately upon receipt because there may be items that require special storage (i.e. refrigeration). Personal protective apparel including gloves, labcoat and goggles should be worn as protection in case there is any leakage from bottles that may have been broken or damaged during shipment. The laboratory documents records for all reagents or consumables that may affect the quality of the analysis in the chemical inventory logbook located in the laboratory upon receipt. This includes not only chemicals and reagents, but also filters, sterile pipettes, syringes, probes, and other consumables. In general, anything that is assigned a specific lot number by the manufacturer should be logged into the chemical inventory book. If there is doubt as to whether an item must be logged the Executive Director will be consulted, or if (s)he is not available, the item will be logged in as a precaution with as much of the indicated information as possible. Information recorded includes manufacturer/vendor, description of reagent/consumable, catalog number, lot number, number of containers received, date of receipt, recommended storage conditions, whether the packaging was received intact, whether the manufacturers Certificate of Analysis (COA) or purity for that lot number is on file (procure if not on file), an expiration date after which the laboratory shall not use the material. All original reagent containers shall be labeled with the date received and initials. Date opened and initials should also be noted on the reagent bottle or container as well as the chemical inventory logbook. If the manufacturer does not supply the COA automatically, one must be requested from the manufacturer, reviewed and filed before the reagent is used. Many COA's are available from manufacturer's websites. Alternatively, call the manufacturer to procure the COA. The Quality Assurance Officer may designate a member of the staff to procure COA's and maintain the COA file. However, the Quality Assurance Officer reviews each COA as part of in-depth data integrity monitoring. Upon opening the container, the log should indicate date opened and initials. COA's are filed according to the use and manufacturer in the Certificate of Analysis log, which is currently maintained as a physical log. It is anticipated that COAs (as well as the chemical inventory) will transition to an electronic log as a LIMS is implemented. When a reagent is discarded (either because it has been consumed or it expired), the chemical inventory log for that item shall be updated to indicate date discarded and initials. Columns for all of these updates are provided in the log.

The Executive Director or designee shall maintain detailed records on reagent and standard

preparation. Those records shall indicate traceability to purchased stocks or neat compounds, reference to method of preparation, date of preparation, expiration date, and preparer's initials. Prepared reagents must meet the requirements of the test method. All containers of prepared reagents and standards shall bear a unique identifier and an expiration date that link it to the documentation of its preparation.

The evaluation of suppliers of consumables other than reagents occurs through a similar process as the evaluation of suppliers of reagents. Individual analytical SOPs state primary, evaluated source of consumables (such as test tubes or pipets) necessary for that method. In the event an alternate source of supplier is necessary or desired due to discontinued or backordered items or budgetary reasons, the SOP, published method reference and NELAC standard must first be referred to in order to ascertain the necessary specifications of the consumable. This information may not be described in the item description and the manufacturer may need to be contacted to verify specifications and formulation. Purchasing documents containing information describing the materials ordered are prepared by the Executive Director who verify that materials used comply with specified requirements. Purchased consumable materials are not to be used until they have been inspected, calibrated or otherwise verified as complying with any specifications of the method. Whenever possible, purchase consumables that are supplied with a manufacturer supplied initial certificate of calibration, conformance or accuracy. Such certificates are frequently available for items such as pipets, inoculating loops, timers and thermometers. Volumetric glassware including reusable glass pipets, burets and flasks must be class A. Each lot of disposable, serological pipets used for microbiology must be evaluated by gravimetric evaluation of dispensed volume. To do this, pipet a volume of reagent water similar to the typical volume used in the analysis into a tared weighing boat on the top-loading PB303 balance. Typically a 1 ml volume is weighed for 5 mL pipets, and a 10 mL volume weighed for 10 mL pipets. The weight of volume dispensed must be no more than ±2.5% of the expected weight, given 1 mL of water should equal 1g.

Suppliers of services must verify that they will be able to provide documentation certifying their calibration, maintenance performed or testing meets the requirement of the method and NELAC standard. Services procured include, but are not limited to: annual testing of NIST thermometer and autoclave thermometer at all points of use, annual calibration of laboratory balances, annual preventive maintenance and temperature check of autoclaves, use of subcontracted analyses for parameters outside the scope of the laboratory’s certification and QC requirements, maintenance and repair of ICP and other instruments as needed.

Current Evaluated Suppliers of Reagents, Standards, Media, Consumables

Below is a summary of suppliers that are currently used for reagents, standards and media routinely used in the IEC District Laboratory. These suppliers have been evaluated for conformance with applicable SOPs, methods and standards and have an established history of satisfactory performance for all reagents supplied.

Fisher Scientific is the distributor *through* which most consumables are ordered. They also manufacture many of the calibration standards including pH buffers, BOD buffers, acids, neat (solid) chemicals and consumables such as diposable serological pipets, culture tubes, petri dishes, and inoculating loops.

Difco (BD Company) manufactures all dehydrated microbiology media in routine use.

Microbiologics manufactures microorganisms for use as positive and negative controls.

Ricca Chemical manufactures many titrants, buffers and standards in routine use for analyses

including BOD, COD, Chlorides, Fluorides, Conductivity, Hardness, nutrients
Environmental Resources Associates manufactures QC (LCS) samples for chemistry and microbiology. It is also a PT provider for those analyses for which state certification programs do not provide PTs (e.g. Fecal Streptcocci, Residual Chlorine, pH)
RTC (a subsidiary of Sigma-Aldrich) manufactures QC (LCS) samples for chemistry and microbiology
Spex/Certiprep manufactures calibration standards, continuing calibration verification standards, and other standards used in metals analyses by ICP-OES.
InterLab manufactures polyseed, used as seed in BOD analysis.
Hach Company manufactures calibration standards used for turbidity, residual chlorine, DPD packets used for residual chlorine
La-Mar-Ka provides standards used in total nitrogen analysis.
Thermco Products, Inc. provides thermometers for monitoring cooler and incubator performance.
Mesa Labs Manufactures prospore ampoules, used in autoclave performance checks
Millipore manufactures membrane filters used in microbiology membrane filtration.
Nasco manufactures whirlpak bags for fecal coliform and e.coli membrane filtration plate incubation in waterbath
Falcon manufactures dilution tubes used for microbiogy dilutions
Eppendorf maufacturers tips for Eppendorf pipettes
Turner manufactures chlorophyll standards
GTS-Welco provides argon cylinders for ICP analysis
HF Scientific provides DPD total chlorine reagent dispenser
Aqua Solutions, Inc. provides chlorine standards (used for LOQ)
Alconox Laboratory Detergent
MP Biomedicals
Cytiva provides filters (for Silica analysis)
Agilent ICP standards
Eurofins Abraxis manufactures microcystin standards
Acros
Honeywell manufacturers some reagents and chemicals (e.g. magnesium chloride) for microbiological analyses (procured through Fisher Scientific
YSI pH, conductivity buffers
Labchem provides Gluocose-Glutamic Acid standard for BOD analysis.
Whatman provides filters for total suspended solids (TSS) and oil and grease analyses.
Aquaplates provides Fecal Coliform agar (mFC) plates for fecal coliform analyses.
Remel provides microbiological media
TCI- provides microbiological media additives

Current Evaluated Suppliers of Services

Accredited Analytical performs subcontracted analytical work for those parameters outside the laboratory's current scope of accreditation
Garden State Laboratories performs monthly external lab evaluation of IEC laboratory's reagent grade water
Sani-Pure Food Laboratories performs annual suitability test on laboratory water and inhibitory residue test on detergent
Kessler Thermometer performs annual calibration of NIST thermometer and autoclave maximum-registering thermometer
Buxton Medical provides annual preventive maintenance and service as needed for autoclave
Environmental Products and Services of Linden provides chemical and hazardous waste disposal services.
Stericycle provides biohazard waste removal services.
ALS Environmental Laboratory, Rochester, NY
Triumverate Environmental provides chemical and hazardous waste disposal
Accurate Balance and Calibration Services, Inc. performs annual calibration of the laboratory balances
Agilent Technologies provides technical support for ICP
Lachat provides technical support for Lachat QuikChem 8500 Series 2, reagents for nutrients analyses
Chesapeake Biological Laboratories (University of Maryland) performs subcontracted analyses and split samples for Long Island Sound samples

3.5 Document Control

The following documents establish the quality system of the IEC laboratory. These uniquely identified documents were generated, reviewed and approved for use by the Executive Director. The list identifies the latest document revisions at the time of preparation of this document. Prior revisions are invalid and shall be properly marked to assure against unintended use.

These documents shall reside in designated areas within the laboratory. The revision numbers listed are current as of the preparation of this Quality Management Plan. However, they shall be annually reviewed and, if necessary, revised to ensure continuing suitability and compliance with applicable requirements. The most current, approved revision of controlled documents should always be referred to when planning or performing environmental data collection activities. Existing text may be altered or added by hand by the Executive Director. Amendments must be clearly marked, initialed and dated and revised documents reissued as soon as possible.

1. The Quality Control Manual states the IEC's quality policy and describes its laboratory quality control system. Latest Revision: 16, Issued on August 24th, 2022.

2. The Commission's Standard Operating Procedures for chemical and microbial testing are

presented separately in IEC's Standard Operating Procedure (SOP) manual. Latest Comprehensive Revision: 12, Issued on February 4th, 2022. (Individual SOPs reviewed at least annually, and updated as needed, with IDs identifying the revision number and effective date).

3. The procedures for staff training, the requirements and records of demonstration of capabilities of laboratory and field staff and all certification statements are compiled separately in the Commission's staff Training Manual. Latest Revision: 4, Issued on May 5th 2017.

4. The Commission's health and safety program is outlined in IEC's Health and Safety manual. The Health and Safety Manual has been developed to prevent and minimize risks to the health, safety, and well being of Commission staff and visitors while at the Commission's laboratory and while performing environmental data collection activities in the field and to ensure that the Commission meets the requirements of health, safety and environmental regulations issued by Federal, State and local agencies. Latest Revision: 3 Issued on 5/23/2014.

The purpose of the document control system is to ensure that only the most recent revisions are available to the appropriate personnel, revisions are timely, and receive the required approvals. The Quality Assurance Officer (Executive Director) is responsible for the document control system and keeps a master list of the location of all documents and their current revision. The Executive Director approves all newly released documents and revised documents. Any employee can request a change to a document. Obsolete documents may be retained for legal reasons or for knowledge preservation. The QAO stores retained obsolete documents outside of work areas. All documents produced by the laboratory will contain the following information: effective date, revision number, document number, page numbers (including total number of pages), and document title.

Controlled documents will also include an approval signature page, a revision (change record) history page, and distribution list.

All SOPs and internal controlled documents are reviewed once per year. If a document is revised during the year, the revision record in the document shall demonstrate review. If a document has not been revised during the year, the review record shall be the signature of the person responsible for the document and the date of the review.

Amendment of documents is allowed. The document control system allows for amendment of documents by hand by the Executive Director, pending re-issue. Such amendments are clearly marked, initialed and dated. A revised document is formally re-issued as soon as practically possible.

All data, including original observations, calculations and derived data, calibration records, QC records, and copies of the test reports, resulting from the analyses of samples are recorded and kept for five years to allow historical reconstruction of the final result.

3.6 Confidentiality and Proprietary Rights

Reports of laboratory analysis will only be released to the named contact person on the sample submittal form or job contract. Proprietary information, if provided by the client, will be protected as Confidential Business Information in accordance with Title 40, Code of Federal Regulations, Part 2, Subpart B.

3.7 Computer Hardware and Software

Each analyst is assigned a computer for conducting IEC business. Computers, hardware and software is procured and installed only upon the approval of the Executive Director. IT support is contracted for on an as-needed basis. The Executive Director works with staff to ensure that all computers and hardware is maintained, upgraded and replaced on a reasonable schedule. All computers are backed up to Carbonite as well as an external hard-drive weekly. The Executive Director works closely with the staff to ensure that staff has the proper computer tools to perform their work. When certain specialized software (e.g. Accounting or GIS software) is obtained, a staff member that is proficient in the use of the software will be designated to be responsible for assessing the impact the software will have on computer performance. IT support may be contracted as needed to assess suitability of software and hardware for planned use. All staff members that use the software are responsible for maintaining and updating the software and supporting documentation. The Executive Director will review and approve any purchase requests for computer equipment, IT support, or software based upon a review of the available resources in the budget and in accordance with applicable EPA administrative conditions and guidance. Individual workstations are protected with virus, SPAM, and anti-spyware software. The anti-virus licenses are kept current and virus definitions automatically updated daily. Publically available anti-spyware software is installed on each computer and it is up to the individual staff members to regularly run this program and maintain a clean computer.

Server hardware and software is evaluated annually by the Executive Director with the support of staff. The technical specifications of all software purchased for use in environmental data operations will be reviewed by the Executive Director and staff to ensure that the requirements of projects are met.

3.8 Planning: Review of All Requests, Tenders and Contracts

The Commission's Executive Director or their designee delegate responsibilities for new work according to available resources, and initiates all new project work in accordance with EPA approved QAPP's and annual workplans.

Prior to initiation of new work, project requirements shall be reviewed and approved by a group of staff members that should include the Executive Director, and client or agency requesting the work. Staff meets in order to determine if:

1. project requirements, including the methods and QAPPs to be used or produced, are adequately defined, documented, understood and approved;

2. IEC has the capability and appropriate facilities and resources available to meet the requirements, including subcontracted work;

3. the appropriate environmental test method is selected and capable of meeting the client's requirements; and

4. the laboratory staff has the skills and expertise necessary for the performance of the environmental tests in question.

If the review uncovers any potential conflicts, deficiencies, inappropriate accreditation status, and/or inability to perform the work, the laboratory shall notify the Executive Director. In cases where differences exist between the request/tender or contract and capabilities, they shall be resolved prior to starting work. Clients are notified immediately in situations where the laboratory can no longer perform the contract work and if there is a change in laboratory accreditation status.

The process of planning includes an appropriately written and approved QAPP describing the project's requirements. For any new testing requirements, the designated official shall ensure that standard operating procedures and demonstrations of capability to perform those tests prior to performing analyses are available. The QAPP, SOP(s) and Demonstrations of Capability statement(s) are available upon request.

A list of the currently-approved QAPPs being used under this QMP and their revision number and effective dates are listed below:

Quality Assurance Project Plan: Lower Raritan/Perth Amboy Pathogen Trackdown Project, May 18, 2022, Revised September 21, 2022

Quality Assurance Project Plan: Ambient Water Quality Monitoring in the Far Western Long Island Sound. Revision 6, Effective Date March 22nd, 2022. Addendum: Long Island Sound Ocean and Coastal Acidification. Effective Date: October 18th, 2022. This addendum outlines IEC's sample collection, processing, and analysis plan for the Long Island Sound Study Ocean and Coastal Acidification program, as mentioned in the accompanying QAPP.

Quality Assurance Project Plan: Long Island Sound Embayments Water Quality Monitoring QAPP: For monitoring activities conducted in the Unified Water Study: Long Island Sound Embayment Research (Prepared by Save the Sound), Version Date March 4th, 2022, Approval Date March 15th, 2022.

Quality Assurance Project Plan: Water Quality Monitoring and Analyses to Support Public Access along the Harlem River Shoreline, Version 1.0, Effective date May 5th, 2022.

Quality Assurance Project Plan: Interstate Environmental Commission (IEC) Coordinated Volunteer Pathogen Monitoring Program, Version 4.0, Effective Date March 29th, 2022.

Quality Assurance Project Plan: 2021 NJDEP/IEC Harbor Monitoring Network, Version 1.0, Effective Date April 27th, 2021.

Quality Assurance Project Plan: Rotating Integrated Basin Sampling Assistance to NYSDEC in the Far Western Long Island Sound, Version 4.0, Effective Date June 5th, 2019.

Quality Assurance Project Plan: Combined Sewer System (CSS) and Municipal Separate Storm Sewer System (MS4) inspections, Version 4.0, Effective date November 29, 2018

Quality Assurance Project Plan: Pump Station Inspections by Interstate Environmental Commission, Version 4.0 , Effective Date November 29th, 2018.

Quality Assurance Project Plan: Short Notice Water Quality Monitoring for the IEC, Version 3.0, effective Date November 21st, 2018.

Quality Assurance Project Plan: NPDES and SPDES Compliance Inspections for the Interstate Environmental Commission, Version 4.0, Effective Date November 16, 2018.

QAPP's will be revised and additional QAPP's developed and forwarded to EPA Region 1 and/or EPA Region 2, as applicable, upon approval of the QMP.

Additional guidance can be obtained from *EPA's Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4, February 2006.

3.9 Implementation of Work Processes

All analytical work, whether occurring in the laboratory or field, is performed according to procedures established in project-specific QAPPs. The production of QAPPs and other planning documents such as sampling plans and standard operating procedures is the responsibility of the Executive Director. As described in Section 2.4, IEC Management and Organization, the Executive Director serves as the laboratory's Quality Assurance Officer (QAO). The QAO's responsibility is to produce and maintain the Quality Management Plan and Laboratory Quality Control Manual current and to ensure that work processes are based on a NELAC compliant quality system. IEC's QAO reviews the effectiveness and suitability of the quality system at least annually through internal lab audits, field audits and annual management reviews.

As described in Section 3.6 Document Control, all documents shall reside in designated areas within the laboratory or LIMS, as applicable. The revision numbers listed are current as of the preparation of this Quality Management Plan. However, they shall be annually reviewed and, if necessary, revised to ensure continuing suitability and compliance with applicable requirements. The most current, approved, revision of controlled documents should always be referred to when planning or performing environmental data collection activities. Existing text may be altered or added by hand by the Executive Director. Amendments must be clearly marked, initialed and dated and revised documents reissued as soon as possible. The document control system ensures that only the most recent revisions are available to the appropriate personnel, revisions are timely, and receive the required approvals.

Controlled documents will also include an approval signature page, a revision (change record) history page, and distribution list.

All SOPs and internal controlled documents are reviewed once per year. If a document is revised during the year, the revision record in the document shall demonstrate review. If a document has not been revised during the year, the review record shall be the signature of the person responsible for the document and the date of the review.

As part of the annual data integrity and ethics training described in section 3.4.1, all staff sign annual statements that they have read, understand and are using the most current version of the quality control manual, quality management plan, and standard operating procedures applicable to their work assignments. This statement for each analyst includes a list of all applicable SOPs and documents, including revision numbers.

3.10 Assessment and Response

The quality of all data must be assessed after they are generated and before they are reported in order to ensure that they are satisfying the data user's needs and project requirements. This assessment should focus on the following five basic aspects of the data, as per approved QAPPs and analyte-specific standard operating procedures:

1. Accuracy-Does the data's accuracy meet or exceed acceptance criteria as specified in the QAPP and analyte-specific standard operating procedures?
2. Precision- Do the data's precision measures meet or exceed acceptance criteria as specified in the QAPP and analyte-specific standard operating procedures?
3. Completeness-Is there a sufficient amount of data available for the planned use? Has the data completeness goal, as defined in the QAPP, been met or exceeded?
4. Representativeness- Do the data represent actual conditions at the sampling location, considering the original study design, sampling methods, etc. which were used?
5. Comparability-How comparable is the group of data with respect to several factors, including:
    a. Consistency of reporting units?
    b. Standardized siting, sampling, and methods of analysis?
    c. Standardized data format?

All of these factors will initially be considered when designing a study and will be addressed in all QAPPs. Additional guidance on the preparation and approval process for QAPPs is provided in section 3.3.3.

3.10.1 On-site Assessments by Accrediting Authorities

The IEC laboratory is a nationally certified environmental testing laboratory. The laboratory is accredited by the National Environmental Laboratory Accreditation Program, known as NELAP. The New York State Department of Health (NYS DOH) Environmental Laboratory Approval Program (ELAP) is the primary accrediting authority for the majority of the laboratory's certified parameters. The laboratory also holds primary NELAP certification from the New Jersey Department of Environmental Protection (NJDEP) for certain parameters for which New York State does not offer certification. Furthermore, the laboratory also holds secondary NELAP certification through the NJDEP for those parameters that it already holds primary certification from the NYS DOH. The Laboratory is also a State of Connecticut Department of Public Health

Approved Environmental Laboratory (Connecticut does not participate in the NELAP).

As part of its NELAP requirements, biennial on-site assessments are conducted by both agencies. On-site assessment reports outlining any deficiencies found, are forwarded to the Executive Director (Technical Director), who generates a corrective action report, which is forwarded to the assessment agency. Corrective actions are monitored and reviewed during annual internal audits and managerial reviews (see sections 3.10.9 and 3.10.10, below) to ensure implemented corrective actions are adhered to.

3.10.2 Proficiency Studies

The IEC's laboratory participates in an accredited proficiency testing program for each category of NYSDOH's ELAP or NJDEP's approval semi- annually. The results are used to evaluate the ability of the laboratory to produce accurate data. Proficiency test reports along with all raw data necessary to reconstruct the analyses are retained at the laboratory. The laboratory may also participate in inter laboratory comparisons for parameters for which formal proficiency test programs are not available. The Commission's laboratory periodically purchases external reference samples from a NELAP accredited provider and retains the manufacturer's Certificate of Analysis.

3.10.3 Internal Quality Control Procedures

The data acquired from quality control (QC) procedures are used to estimate the quality of analytical data, to determine the need for corrective actions, and to interpret results after corrective actions are implemented. Each method's Standard Operating Procedure (SOP) includes detailed QC procedures and QC limits. QC limits are generated where no method-specified limits exist limits.

All quality control measures are assessed and evaluated on an on-going basis. Analytical data generated with QC samples that fall within prescribed acceptance limits indicate the test method was in control. Data generated with QC samples that fall outside QC limits indicate the test method was out of control. These data are considered suspect and the corresponding samples are reanalyzed or reported with qualifiers if reanalysis is not possible.

Method Blanks are performed at a frequency of one per batch of twenty or fewer samples, as specified by the analytical method. The results are used to determine batch acceptance. When blanks exceed the method SOP limits, the source of the contamination is investigated and measures are taken to correct, minimize and eliminate the problem. Laboratory control samples (LCS) are performed at a frequency of one per batch of twenty or fewer samples, or as per SOPs. The results are used to determine batch acceptance. Method specific matrix spikes are performed at a frequency specified by the method. The results are used to determine the existence of matrix effects in the spike sample. A matrix effect is indicated if the LCS data are within QC limits but the matrix spike data exceed QC limits. Laboratory duplicates are performed at a frequency of one per twenty or fewer samples, as specified by the analytical method Duplicates are a measure of precision. Duplicate results should fall within method or QAPP-specified limits. If the method or QAPP does not specify a limit, the laboratory must define acceptance limits, typically 15% of their average. If a duplicate result falls outside QC limits the original sample and the duplicate sample data is regarded as unreliable, and results must be flagged with a QC note.

3.10.4 Control of Non-Conforming Environmental Testing

When any aspect of the IEC's environmental testing work, or the result of this work, does not conform to the Commission's own procedures or to the agreed requirements of the client, then:

a. As specified in data integrity training, all employees have the authority to stop work on samples when any aspect of the testing and reporting process does not conform to the laboratory's SOP or the client's requirements. The employee who stopped work shall immediately notify the Executive Director.
b. the responsibilities and authorities for the management of nonconforming work are designated;
c. an evaluation of the nonconforming work is made. The Commission's QAO evaluates the significance of nonconforming Quality Control data;
d. corrective actions are defined and taken immediately when nonconforming work is identified, together with any decision about the acceptability of nonconforming work, when the evaluation indicates that the nonconforming work could recur or that there is doubt about the compliance of the laboratory's operations with its own policies and procedures;
e. if necessary, the client is notified and work is recalled or the investigation repeated; and Executive Director authorizes resumption of work.

In addition, specific corrective action protocols for handling nonconforming Quality Control data may be in each method SOP. Because of the sampling requirements and the time frame of the analysis (holding times), it is not always possible to repeat the analysis when all quality control measures are not found acceptable. Therefore, if a quality control measure is found to be out-of-control, and the data is to be reported, all samples associated with the failed quality control measure are reported with the appropriate data qualifier.

3.10.5 Corrective Action Procedure

Corrective action is the process of investigating, approving, implementing and validating measures to counter nonconforming work or departures from policies and procedures in the quality system or technical operations that have been identified.

Deficiencies cited in the external assessment, internal audit, complaints, and annual management reviews are documented. The Executive Director shall determine the cause of any failure. Records shall be available to show that the root cause(s) of the deficiencies are investigated, including the results of the investigation. Records shall be available to document the intended corrective action and to show that the implemented corrective action is monitored for effectiveness. The Executive Director maintains these records. The deficiencies found and the corrective actions necessary to rectify all problems shall be documented along with the dates of implementation of such actions. The Executive Director will ensure that the corrective actions are discharged within the agreed upon time frame. When non-conformances and departures from policies and procedures in the quality system or technical operations cause doubt about the laboratory's operations, the Executive Director shall promptly audit the affected areas.

Method Standard Operating Procedures provide Quality Control acceptance criteria. Any Quality Control measure result that falls outside of its acceptance limits requires corrective action. When testing discrepancies are detected such as out-of-control QC, the analyst shall follow the corrective action procedure as stated in the "Control of Non-Conforming Environmental Work" section of this Quality Management Plan. The discrepancy will be identified, and the sample data associated with the discrepancy will be flagged. The Executive Director will recommend corrective actions to be initiated by the analyst and ensure implementation and documentation of the corrective actions.

3.10.6 Exceptionally Permitted Departures from Documented Policies and Procedures or from Standard Specifications

The Executive Director has responsibility for ensuring that all policies and procedures of the laboratory are adhered to. Arrangements for known and controlled departures from documented policies and procedures may be necessary. However, the departure, along with the reason for the departure, the effected SOP(s), the intended results and the actual results, will be fully documented by the Executive Director. If the procedure is part of a QAPP approved project, a QAPP addendum may be necessary. If the data to be reported either to the management, or an accredited authority or a client is affected adversely, then they will be notified in writing.

3.10.7 Preventive Action

Preventive action is the pro-active process to identify opportunities for improvement rather than a reaction to the identification of problems or complaints.

All employees have the authority to recommend preventive action. Recommendations are made to the QAO. If warranted, the QAO develops an action plan to develop, implement and monitor the action. The plan must include controls that will enable objective evaluation of its suitability. The preventive action is audited under the direction of the QAO.

3.10.8 Complaints and Feedback

It is the IEC's policy that its services are of the highest standard and consistency. However, from time to time a person or an organization might have a valid reason to complain about the quantity or quality of a service provided by the Commission's laboratory.

Along with a range of other mechanisms, complaints form a valid part of any continuous improvement process within a quality management system. As such, the Commission views complaints as an opportunity to identify unrecognized issues; potentially affecting the quality of its services, and attempts to resolve them in a timely manner. The IEC always investigates and resolves complaints relating to the services that its laboratory provides. The Commission has adopted the following procedure for complaints:

1. What must be included in a complaint.

   A complaint relating to the services that the IEC's laboratory provides must be submitted

in writing or via email to the Executive Director. The complaint must include the individual's name, the organization he or she represents (if any), the address of that organization or individual submitting the complaint, and a detailed description of the complaint. The complaint may also include the remedy being sought.

The laboratory may also initially accept complaints by telephone; however, a written or email follow-up should be requested. If the complainant communicates a complaint through the telephone or email, the person who receives the complaint must gather complete information about the problem, and instruct the complainant to mail or email a written complaint to the Executive Director.

2. Where should complaints be directed.

If one of the laboratory's personnel receives a complaint by phone, then he or she should transfer, as soon as possible, all the information available to the Executive Director.

The Executive Director shall acknowledge the complaint. They will review the complaint, and then the Executive Director will conduct a thorough investigation and promptly audit all areas of activity and responsibility involved.

With a written response to the complainant, the laboratory's Executive Director will report the findings of the initial and further investigations. The results of the investigation are signed and dated by the Executive Director.

3. Complaint Receipt

A log shall be maintained of all complaints submitted. The log shall contain sufficient information to monitor the status of each complaint, such as the date received, date assigned, date acknowledged, and final disposition.

Annual management reviews of the Quality Assurance program shall take into consideration the statistics and continuous improvement of the complaint process.

All complaints about the laboratory’s activities received from clients or other parties will be documented in a complaint file maintained in the laboratory. The file will contain the date and name of the person receiving the complaint, a description of the complaint, source of the complaint, the resolution, and any written material accompanying the complaint.

The QAO investigates complaints and promptly audits all areas of activity and responsibility involved. The written results of the investigation including actions taken by the laboratory are reviewed by the Technical Director. The results of the investigation are signed and dated by the Executive Director

Feedback from clients will be solicited and recorded in a manner appropriate for the laboratory.

3.10.9 Internal Audit and Data Review

The laboratory shall arrange for annual internal audits to verify that its operations continue to comply with the requirements of the quality system and NELAC standards. There shall be at least one laboratory audit and one field inspection every year.

The internal audit program must address all elements of the quality system, including testing activities. The Quality Assurance Officer will review the requirements of the New York State Department of Health's Environmental Laboratory Accreditation Program (ELAP) manual and NELAC standard against laboratory operations, and laboratory operations against the laboratory Quality Management Plan and SOPs. It is the responsibility of the Executive Director to plan and organize audits. The Executive Director or designee shall carry out the audit. Such audits shall include examination of laboratory records of precision and accuracy of tests carried out by laboratory personnel, review of the proficiency tests and appropriate implementation of any corrective action steps. In addition, records of sample collections, chain of custody, sample storage and disposal, calibration data and instrument maintenance shall be checked and reviewed. The Executive Director or designee shall prepare a report of the laboratory audit for the record. Each method reviewed should be listed in the internal audit report. All findings must be itemized with a specific deficiency or suggestion number. Corrective actions must be reviewed as part of the next successive internal audit to ensure continued implementation. The Executive Director shall inform all staff in the laboratory appraising the deficiencies noted. The Executive Director shall also notify clients within 30 days, in writing, when their work is affected by the findings from an internal audit or data integrity review. The Executive Director shall initiate corrective actions immediately to rectify the problem. Follow-up audit activities shall verify and record the implementation and effectiveness of the corrective action taken.

All original observations and calculations are reviewed and evaluated by a second analyst or the Executive Director before it is reported. The data is reviewed, per the relevant SOPs, to ensure that calculations are correct and to detect possible transcription errors. The second analyst reviewer will sign and date the raw data. The results of all quality control measures are reviewed and evaluated by the Executive Director before data is reported. Errors detected in the review process are referred to the analyst for corrective action. All errors found in the review process are documented along with the corrective action. Each calendar quarter, the Quality Assurance Officer shall perform an in-depth data review of 5% or 5 data packages, whichever is more. The purpose of the review is to verify that all data integrity requirements are met.

The Executive Director shall carry out a field inspection annually with each environmental analyst. They will visit various sampling sites to inspect the activities of IEC's Environmental Field Technicians/Analysts. Inspections will examine instrument calibration procedures; sampling; storage, preservation and transport conditions; pH, temperature and chlorine measurements; and field sampling logbooks. A field inspection report will be prepared and filed in the laboratory. Corrective actions will be taken for any deficiency observed.

The Executive Director shall determine the cause of any failure in NELAP's proficiency tests and the internal Quality Assurance tests. The deficiencies found and the corrective actions necessary to rectify the problems shall be documented along with the dates of implementation of such actions. The laboratory shall notify the respective national or state program which carried

out such performance evaluation tests, if required, giving details of all the corrective measures that the laboratory would adopt to eliminate the problem and their completion dates.

3.10.10 Managerial Reviews and Quality Improvement

The Executive Director, or designee, shall review the laboratory's quality system and its testing and calibration activities annually, in order to introduce any necessary changes or improvements. The findings and any corrective actions from this review will be documented. The review will take into account:

a. the suitability of policies and procedures;
b. reports from managerial and supervisorial personnel;
c. the outcome of recent internal audits;
d. corrective and preventive actions;
e. assessment by external bodies (NYSDOH, NJ DEP, CT DEP, NYS DEC, USEPA, or clients);
f. the results of interlaboratory comparisons or proficiency tests;
g. any changes in the volume and type of work undertaken;
h. feedback from clients;
i. complaints; and
j. other relevant factors, such as quality control activities, resources and staff training.

As with External Assessments and Internal Audits, findings from Managerial Reviews are to be itemized, and corrective actions reviewed in the next successive Managerial Review to ensure continued implementation.

4.0 References

EPA's Requirements for QA Project Plans (QA/R5) EPA December 2002
https://nepis.epa.gov/Exe/ZyPDF.cgi/20011HPE.PDF?Dockey=20011HPE.PDF

EPA Requirements for Quality Management Plans EPA QA/R-2. EPA/240/B-01/002 March 2001.
https://nepis.epa.gov/Exe/ZyPDF.cgi/20011HJI.PDF?Dockey=20011HJI.PDF

EPA's Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4, February 2006.
https://www.epa.gov/sites/default/files/documents/guidance_systematic_planning_dqo_process.pdf

Quality Control Manual for the Interstate Environmental Commission, Revision: 16, Issued on August 24th, 2022.

IEC's Standard Operating Procedure (SOP) manual. Latest Comprehensive Revision: 12, Issued on February 4th, 2022. (Individual SOPs reviewed at least annually, and updated as needed, with IDs identifying the revision number and effective date).

3. The procedures for staff training, the requirements and records of demonstration of capabilities of laboratory and field staff and all certification statements are compiled separately in the Commission's staff Training Manual. Latest Revision: 4, Issued on May 5th 2017.

4. The Commission's health and safety program is outlined in IEC's Health and Safety manual. The Health and Safety Manual has been developed to prevent and minimize risks to the health, safety, and well being of Commission staff and visitors while at the Commission's laboratory and while performing environmental data collection activities in the field and to ensure that the Commission meets the requirements of health, safety and environmental regulations issued by Federal, State and local agencies. Latest Revision: 3 Issued on 5/23/2014.

Interstate Environmental Commission Training Manual, Revision 4, May 01, 2017.

National Environmental Laboratory Accreditation Conference (NELAC), 2003 NELAC Standard, Approved June 5, 2003, Effective July 1, 2003, 324 pp (EPA/600/R-04/003).

National Environmental Laboratory Accreditation Conference (NELAC), 2009 NELAC Standard, Approved August 24, 2009, Effective July 1, 2011.

New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP), Certification Manual (http://www.wadsworth.org/labcert/elapcert/certmanual/index.html

APPENDIX A

ENVIRONMENTAL LABORATORY ACCREDITATIONS

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2023
Issued April 01, 2022
Revised November 17, 2022

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. EVELYN POWERS
INTERSTATE ENVIRONMENTAL COMMISSION
C/O BIO BAT, BROOKLYN ARMY TERMINAL 140 58TH
STREET, BLDG A, 2ND FL
BROOKLYN, NY 11220

NY Lab Id No: 10437

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Bacteriology	
Coliform, Fecal	SM 9221 E-2014
	SM 9222D-2015
	Colilert-18
Coliform, Total	SM 9221B-2014
	SM 9222B-2015
E. coli (Enumeration)	SM 9221B-2014/SM 9221F-2014
	EPA 1103.1
Enterococci	SM 9230D-2013 (Enterolert)
	EPA 1600
Heterotrophic Plate Count	SM 18-21 9215B
Demand	
Biochemical Oxygen Demand	SM 5210B-2016
Mineral	
Alkalinity	SM 2320B-2011
Hardness, Total	SM 2340C-2011
Miscellaneous	
Specific Conductance	EPA 120.1 (Rev. 1982)
Turbidity	EPA 180.1, Rev. 2.0 (1993)
Nutrient	
Ammonia (as N)	EPA 350.1, Rev. 2.0 (1993)
Nitrate (as N)	EPA 353.2, Rev. 2.0 (1993)

Serial No.: 65605

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2023
Issued April 01, 2022
Revised November 17, 2022

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE
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is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2016) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Nutrient	
Nitrate-Nitrite (as N)	EPA 353.2, Rev. 2.0 (1993)
Nitrite (as N)	EPA 353.2, Rev. 2.0 (1993)
Orthophosphate (as P)	EPA 365.1, Rev. 2.0 (1993)
Phosphorus, Total	EPA 365.1, Rev. 2.0 (1993)
Residue	
Settleable Solids	SM 2540 F-2015
Solids, Total	SM 2540 B-2015
Solids, Total Dissolved	SM 2540 C-2015
Solids, Total Suspended	SM 2540 D-2015

Serial No.: 65605

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

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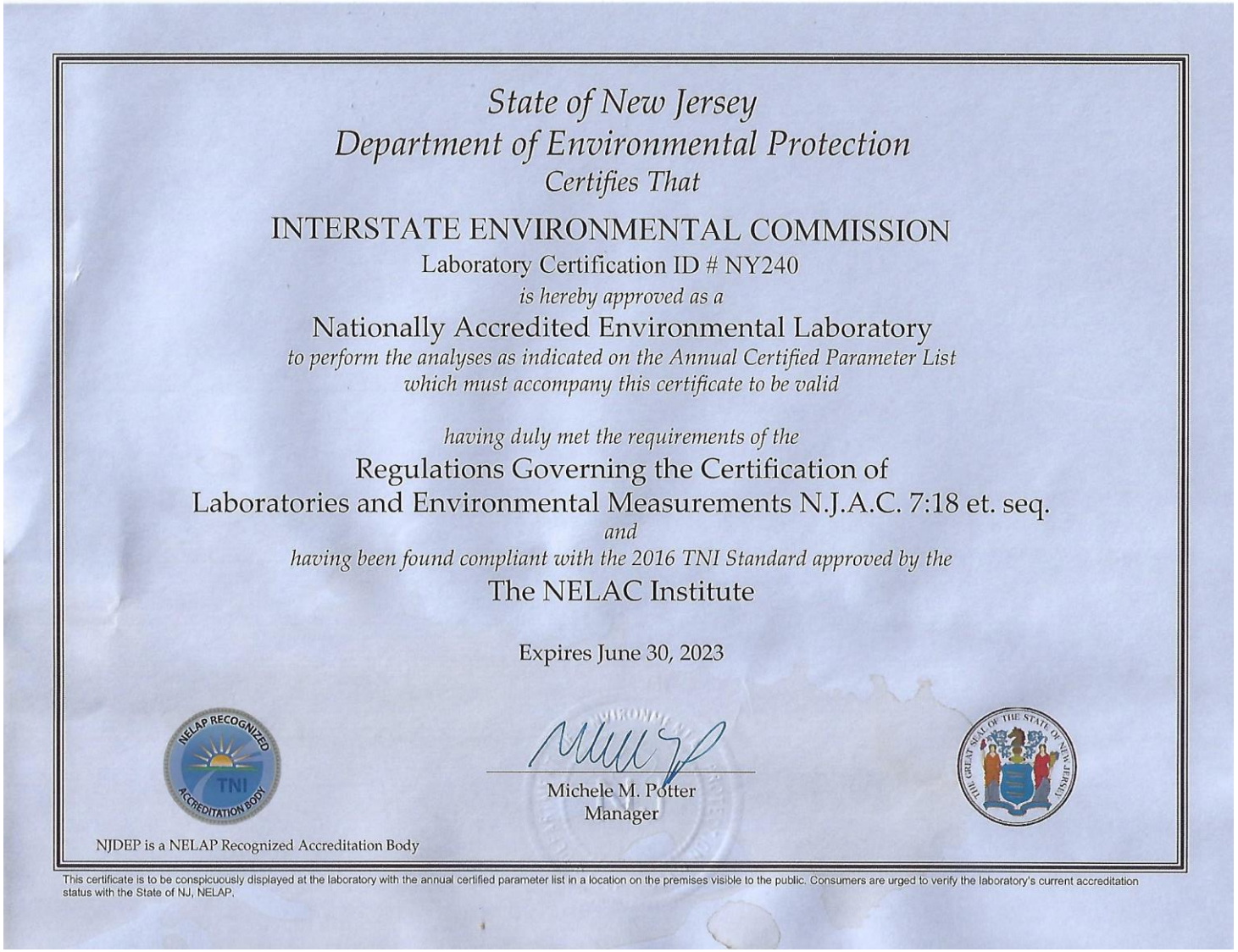

State of New Jersey
Department of Environmental Protection
Certifies That

INTERSTATE ENVIRONMENTAL COMMISSION

Laboratory Certification ID # NY240

is hereby approved as a

Nationally Accredited Environmental Laboratory

to perform the analyses as indicated on the Annual Certified Parameter List
which must accompany this certificate to be valid

having duly met the requirements of the

Regulations Governing the Certification of
Laboratories and Environmental Measurements N.J.A.C. 7:18 et. seq.

and

having been found compliant with the 2016 TNI Standard approved by the

The NELAC Institute

Expires June 30, 2023

Michele M. Potter
Manager

NJDEP is a NELAP Recognized Accreditation Body

This certificate is to be conspicuously displayed at the laboratory with the annual certified parameter list in a location on the premises visible to the public. Consumers are urged to verify the laboratory's current accreditation status with the State of NJ, NELAP.

New Jersey Department of Environment Protection
Environmental Laboratory Certification Program

Annual Certified Parameter List and Current Status

Effective as of 10/17/2022 until 6/30/2023

Laboratory Name: INTERSTATE ENVIRONMENTAL COMMISSION Laboratory Number: NY240 Activity ID: NLC 220002
710 PARKSIDE AVE
BROOKLYN NY 11226

Category: NPW01--Microbiology

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW01.00100	Enterococci	Membrane Filter	EPA 1600	NY
Certified	Yes	NPW01.00250	Enterococci	Multiple Tube/Mutiple Well - Enterolert	SM 9230 D-13	NY
Certified	Yes	NPW01.00900	Escherichia coli (E coli)	MPN	SM 9221 B.2-14/9221 F-14	NY
Certified	Yes	NPW01.01300	Fecal coliform	Multiple Tube/Mutiple Well	Other Colilert 18	NY
Certified	Yes	NPW01.01550	Fecal coliform	MPN, Dilution	SM 9221 E-14	NY
Certified	Yes	NPW01.01650	Fecal coliform	Membrane Filter (MF), Single Step	SM 9222 D-15	NY
Certified	Yes	NPW01.02100	Heterotrophic plate count	Pour Plate	SM 9215 B-04	NY
Certified	Yes	NPW01.02650	Total coliform	MPN, Dilution	SM 9221 B-14	NY
Certified	Yes	NPW01.02800	Total coliform	MF Single Step or Two Step	SM 9222 B-15	NY

Category: NPW03--Inorganic Parameters

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW03.00350	Alkalinity as CaCO3	Electrometric Titration	SM 2320 B-11	NY
Certified	Yes	NPW03.01100	Ammonia	Distillation or Gas Diffusion, Semi-automated Phenate	EPA 350.1	NY
Certified	Yes	NPW03.01550	Biochemical oxygen demand	Dissolved Oxygen Depletion - Membrane Electrode	SM 5210 B-16	NY
Certified	Yes	NPW03.05800	Chlorophyll	Fluorometric	EPA 445.0	NJ
Certified	Yes	NPW03.09200	Hardness - total as CaCO3	Titrimetric, EDTA	SM 2340 C-11	NY
Certified	Yes	NPW03.11950	Nitrate - nitrite	Cadmium Reduction, Automated	EPA 353.2	NY
Certified	Yes	NPW03.13100	Nitrite	Auto, bypass Cd reduction	EPA 353.2	NY
Certified	Yes	NPW03.14100	Oil & grease - hem-LL	Gravimetric, Hexane Extractable Material-LL	EPA 1664A	NY
Certified	Yes	NPW03.15000	Orthophosphate	Ascorbic Acid, Automated	EPA 365.1	NY
Certified	Yes	NPW03.17350	Phosphorus (total)	Auto Ascorbic Acid Reduction	EPA 365.1	NY

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environment Protection
Environmental Laboratory Certification Program

Annual Certified Parameter List and Current Status

Effective as of 10/17/2022 until 6/30/2023

Laboratory Name: INTERSTATE ENVIRONMENTAL COMMISSION Laboratory Number: NY240 Activity ID: NLC 220002
710 PARKSIDE AVE
BROOKLYN NY 11226

Category: NPW03--Inorganic Parameters

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW03.17850	Residue - filterable (TDS)	Gravimetric, 180 Degrees C	SM 2540 C-15	NY
Certified	Yes	NPW03.18000	Residue - nonfilterable (TSS)	Gravimetric, 103-105 Degrees C, Post Washing	SM 2540 D-15	NY
Certified	Yes	NPW03.18100	Residue - settleable	Volumetric (Imhoff Cone) or Gravimetric	SM 2540 F-15	NY
Certified	Yes	NPW03.18150	Residue - total	Gravimetric, 103-105 Degrees C	SM 2540 B-15	NY
Certified	Yes	NPW03.18750	Specific conductance	Wheatstone Bridge	EPA 120.1	NY
Certified	Yes	NPW03.22100	Turbidity	Nephelometric	EPA 180.1	NY

Category: NPW04--Analyze-Immed. and Continuous Monitoring

Status	Eligible to Report NJ Data	Code	Parameter	Technique	Approved Methods	Primary State
Certified	Yes	NPW04.00400	Chlorine	Spectrophotometric, DPD	SM 4500-Cl G-11	NJ
Certified	Yes	NPW04.00800	Oxygen (dissolved)	Luminescence Based Sensor	Other HACH 10360 (10-2011 Rev 1.2)	NJ
Certified	Yes	NPW04.01300	Oxygen (dissolved)	Winkler, Azide Modification	SM 4500-O C-16	NJ
Certified	Yes	NPW04.01650	pH	Electrometric	SM 4500-H B-11	NJ
Certified	Yes	NPW04.01950	Temperature	Thermometric	SM 2550 B-10	NJ

Paula Blaze for M.M.P.
Michele M. Potter, Manager

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

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State of Connecticut, Department of Public Health

Approved Environmental Laboratory

THIS IS TO CERTIFY THAT THE LABORATORY DESCRIBED BELOW HAS BEEN APPROVED BY THE STATE DEPARTMENT OF PUBLIC HEALTH PURSUANT TO APPLICABLE PROVISIONS OF THE PUBLIC HEALTH CODE AND GENERAL STATUTES OF CONNECTICUT, FOR MAKING THE EXAMINATIONS, DETERMINATIONS OR TESTS SPECIFIED BELOW WHICH HAVE BEEN AUTHORIZED IN WRITING BY THAT DEPARTMENT.

INTERSTATE ENVIRONMENTAL COMMISSION

LOCATED AT 710 Parkside Avenue IN Brooklyn, NY 11226

AND REGISTERED IN THE NAME OF Evelyn Powers

THIS CERTIFICATE IS ISSUED IN THE NAME OF Evelyn Powers WHO HAS BEEN DESIGNATED BY THE REGISTERED OWNER/AUTHORIZED AGENT TO BE IN CHARGE OF THE LABORATORY WORK COVERED BY THIS CERTIFICATE OF APPROVAL AS FOLLOWS:

NON-POTABLE WATER/WASTEWATER
Examination For
BACTERIA
INORGANIC CHEMICALS
SEE COMPUTER PRINT-OUT FOR SPECIFIC TESTS APPROVED

EFFECTIVE RENEWAL DATE April 1, 2021

THIS CERTIFICATE EXPIRES March 31, 2023 AND IS REVOCABLE FOR CAUSE BY THE STATE DEPARTMENT OF PUBLIC HEALTH

DATED AT HARTFORD, CONNECTICUT, THIS 2nd DAY OF August, 2022

Registration No.
PH – 0320

Lori J. Mathieu '22

Lori J. Mathieu
Public Health Branch Chief

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH
Environmental Health and Drinking Water Branch

ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM
CERTIFIED ANALYTES REPORT FOR ALL MATRICES

Interstate Environmental Commission

710 PARKSIDE AVENUE
BROOKLYN, NY 11226

CT REGISTRATION NUMBER :	**PH-0320**
REGISTERED OWNER / AUTHORIZED AGENT :	**Evelyn Powers**
DIRECTOR :	**Evelyn Powers**
CO DIRECTOR(S) :	
PHONE :	**(718) 982-3792**
LABORATORY REGISTRATION EFFECTIVE DATE :	**04/01/2021**
LABORATORY REGISTRATION EXPIRATION DATE :	**03/31/2023**
LABORATORY STATUS :	**APPROVED**

APPROVED BY Lori J. Mathieu '22
Lori J Mathieu
Public Health Branch Chief
Environmental Health & Drinking Water Branch

REVIEWED BY Dawn E. Shaban 8/2/2022 9:46:57 AM
Dawn Shaban
Laboratory Consultant/Certification Officer

ANY QUESTIONS CONCERNING THIS DOCUMENT SHOULD BE ADDRESSED TO THE ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM AT (860) 509-7389

NON-POTABLE WATER/ WASTEWATER (CWA)

STATUS REPORTED ON 8/2/2022

ANALYTE NAME	
MICROBIOLOGY/BACTERIA	
E. COLI - EC MEDIUM + MUG (SM9221B/F)	
ENTEROCOCCUS - ENTEROLERT	ENTEROCOCCUS - MF mEI Agar (EPA1600)
FECAL COLIFORM - COLILERT-18 (Enumeration)	FECAL COLIFORM - MF m-FC (SM9222D)
FECAL COLIFORM- EC Medium(SM9221E)	HPC - POUR PLATE (SM9215B)
TOT COLIFORM - MTF (SM9221B)	TOT. COLIFORM - MF mENDO (SM9222B)
PHYSICALS	
CONDUCTIVITY	
pH	TEMPERATURE
TURBIDITY	
MINERALS	
ALKALINITY	CHLORIDE
CHLORINE, TOTAL RESIDUAL	HARDNESS, TOTAL
SULFATE	
NUTRIENTS	
AMMONIA	
NITRATE	NITRITE
O-PHOSPHATE	ORGANIC NITROGEN
TOTAL PHOSPHOROUS	
METALS	
ALUMINUM	
ANTIMONY	ARSENIC
BERYLLIUM	CADMIUM
CHROMIUM	COBALT
COPPER	IRON
LEAD	MANGANESE
MOLYBDENUM	NICKEL
SELENIUM	SILVER
THALLIUM	VANADIUM
ZINC	
RESIDUE	
TOTAL DISSOLVED SOLIDS	
TOTAL RESIDUE (SOLIDS)	TOTAL SUSPENDED SOLIDS

DEMANDS
BOD
SOLVENTS
OIL & GREASE

Report Profile:	Lab Name : Interstate Environmental Commission
	Test Name : *
	Matrix Name : *
	Matrix Selection = ALL OR SOME MATRICES SELECTED
	Certifications approved or provisional on 8/2/2022

THIS IS THE LAST PAGE OF THE REPORT