license shall be not transferable. Provided that any person with a provisional license shall only be able to practice as an operator of a systems and/or plant for the type and category for which the license was issued and under the direct supervision of a licensed operator.

Provisional licenses will be in force for a one-year period unless revoke or suspended by the Board in accordance to or as disposed by Act No. 53, as amended. These licenses can be renewed for an additional year and not to exceed a total of two (2) years in between both periods of time.

H. Types of Licenses

Licenses for Operator I, II, III, and IV shall be granted, both for drinking water as well as for wastewater treatment systems and/or plants. These licenses shall be granted to those persons that have approved the corresponding examination and requirements of probity and competence as well as continued education. The operator shall be able to operate a treatment systems and/or plant for the corresponding type and category, according to their knowledge, experience and education, with the understanding that an:

1. Operator I: Shall be able to operate a Category I treatment systems and /or plant.
2. Operator II: Shall be able to operate a Category I or Category II treatment systems and /or plant.
3. Operator III: Shall be able to operate a Category I Category II or Category III treatment systems and /or plant.

4. Operator IV: Shall be able to operate a Category I, Category II. Category III or Category IV treatment systems and /or plant.

I. License Renewal

Any person who posses a permanent license, shall be able to request with at least thirty (30) days of due notice before its expiration, its renewal before the Board, through the payment of the relevant fees as established in the Regulation of Rights and Fees to be paid for the Services of the Examining Boards ascribed to the Department of State.

In addition, applicants shall present supporting prove that they have complied with the continued education requirements established by the Department of Health pertaining drinking water treatment systems and/or plants and by the Environmental Quality Board pertaining to wastewater treatment systems and/or plants.

Any person who possesses an expired permanent license shall be able to request its renewal within a period of no less than at least one (1) year after its expiration. Any person whose permanent license has been expired for a period exceeding one (1) year shall undergo certification once again.

The Board may deny the renewal of a permanent license, after due notice and hearing following the established adjudicative procedure (Adjudicative Procedure established in Article VI of this Regulation) to any person who does not comply with the established requirements of Act Number 53, as amended, and this regulation.

J. License Denial

The Board shall will have the power to deny a license to any person who:

1. Does not fulfill the requirements established in Act Number 53, as amended, or in this Regulation;
2. Has attempted to obtain or help someone else to obtain a license through fraud or deceit;
3. Has been declared mentally unable by a competent court of justice.
4. Is an addict to narcotic drugs or habitual drunk.

K. License Suspension

After due written notice of the violations and hearing, the Board may suspend the period of time deems appropriate, a license of any operator who:

1. Has committed fraud, deceit or negligence in the performance of his/her duties.
2. Has attempted to help someone else to obtain a license through fraud or deceit.
3. Has incurred in violations of Act Number 53, as amended, or of this Regulation;
4. Temporarily becomes mentally or physically unable to perform his/her duties, as long as his/her handicap persists.
5. Is an addict to narcotic drugs or a habitual drunk in accordance with the limits provided for these purposes by the agreement between the agency or enterprise where the services are rendered.

L. License Revocation

After due written notice of the violations and hearing, the Board may revoke the license, when:

1. The operator is mentally or physically disabled, and his disability is established through medical expertise before the Board;
2. The operator has incurred in persistent violations of Act Number 53, as amended, or this Regulation.
3. The operator has incurred in gross negligence while performing his work in the judgment of' the Board,
4. The license would have been obtained through fraudulent means or granted by mistake.
5. The operator is an addict to narcotic drugs or habitual drunk in accordance with the limits provided for these purposes by the agreement between the agency or enterprise where the services are rendered.

M. Reciprocity

The Board shall be authorized to establish, by means of the conditions and requirements it deems necessary, reciprocity for the granting of licenses without examination directly with the states of the United States or any other country in which similar requirements are established in each law to obtain an operator's license, and similar concessions are provided for those who are granted licenses by this Board.

Article V

Examination Procedure

A. Applications

Every examination application shall be done by using the form provided by the Board, thereof. Said application shall be completed in all of its parts, be issued with not less than sixty (60) days prior to the examination date and be submitted along with the following documents:

1. Voucher from the Puerto Rico Treasury Department on behalf of the Secretary of State, Board of Examiners for Operators of Treatment Plants for Drinking Water and Used Water Plants, for the license's fees, as established in Act Number 53, as amended, and Article 4 of the Rights Regulation.
2. Two photos (size 2" x 2").
3. Evidence of the continued education, if applicable.

B. Applications Filing

Every examination application shall be issued in person or mailed to the Department of State.

If the application is not complete, or one or more of the required documents was not included, the official from the Department of State receiving the application shall return it to the applicant with all the documents included, indicating the information or documents needed to continue the application process.

C. Devolution of Incomplete Applications

Incomplete applications shall be returned to the applicant, by hand, if

application was submitted in person, and by regular mail, if application was submitted by mail.

D. Objection to Filing Requirements

If a person who applies for an examination in compliance with the provisions of this Regulation considers that a complimentary document that was requested to him/her is not necessary for his/her particular case, this applicant shall submit a sworn statement stating the reason(s) why he/she understands that he/she does not need to submit said document. The Board shall conditionally accept the application and shall decide about the statement of the applicant during the Board's next regular session. If the Board understands that the statement is not in compliance with the law, it shall return the application with a copy of the decision of the statement made and the corresponding checklist.

E. Evaluation of Applications

Received applications shall be studied and classified by the Board, as soon as possible, during regular or special sessions, no later than thirty (30) days prior to the examination date. The decision taken by the Board shall be notified to the applicant. If the examination application is approved, the Board shall send the notification with the instructions for the examination, including the date, time and location of the examinations.

If it is rejected, a written notification shall be sent to the applicant containing the reasons for the rejection. The applicant may request. in writing, a reconsideration to the rejection and the reasons, thereof, under

the terms established for reconsiderations in Article VI on Adjudicative Procedure.

F. Examination Approval

The Board shall confer the examination approval grade taking into account the validation methods and psychometry available for this purpose, thereof.

G. Results Notification

The Department of State's Board of Examiners Assistant Secretary shall notify each applicant, by mail, the examination's grade within a fifteen (15) day period.

Article VI

Adjudicative Procedure

A. Every adjudicative procedure followed by the Board shall be ruled by the Adjudicative Procedure Regulation.

Any other matter not contemplated by said Regulation shall be ruled by Act Number 170.

Any person who does not agree with a decision of the Board shall have the right to object said decision through the procedures established in the above-mentioned Regulation.

B. It is provided, in addition, to grant to the affected party a twenty (20) day term from the filing of said Board's determination notification to the affected party to request an Administrative Hearing.

The terms to reconsider and revise a determination from the Board on any Administrative Hearing shall be those established in the Adjudicative

Procedure Regulation.

Article VII

Fees for Services

A. The fees for the examinations, re-examinations and evaluation services are those provided in Article 4 of the Fees Regulation.

B. The fees for licenses, provisional licenses, certifications, permits, renovations and other documents shall be provided in Article *5* of the Fees Regulation.

C. Besides the above-mentioned fees, every candidate taking an examination or re-examination shall pay any other fee or expense required by any applicable law or regulation.

CERTIFICATION

In accordance with the Law for the Certification of Drinking Water and Wastewater Treatment Systems and/or Plants Operators (Act Number 53 of July 13, 1978, as amended) this

REGULATION FOR THE CERTIFICATION OF DRINKING WATER AND WASTEWATER TREATMENT SYSTEMS AND/OR PLANTS OPERATORS

Has been promulgated by Resolution R-_____ to establish the necessary parameters to fully comply with Act Number 53, as amended, according with the provisions of Act Number 170 of August 12, 1988, as amended.

August __, 2002

_____
David Soto
Authorized Representative of the Secretary of' the
P. R. Natural and Environmental Resources Department

_____
Olga I. Rivera
Authorized Representative of the Secretary of the
P. R. Department of Health

_____
Samuel Rosario
Authorized Representative of the
Executive Director of the
P. R. Aqueduct and Sewer Authority

_____
José Santiago Rodriguez
The people's Representative

_____
Rubén González
President and Authorized Representative
of the President of the
P. R. Environmental Quality Board

Puerto Rico Principal State Laboratory Certficiation Status for 2002

LABORATORY	ANALYTE	METHOD	STATUS
MICROBIOLOGY			
PR00908 (San Juan Micro./PRDOH)	TOTAL COLIFORM	SM9221D/E	CERTIFIED
PR00908 (San Juan Micro./PRDOH)	FECAL COLIFORM/E.COLI	SM9221D/E	CERTIFIED
PR00008 (Arecibo Micro./PRDOH)	TOTAL COLIFORM	SM9221B/E, SM9223B	CERTIFIED
PR00008 (Arecibo Micro./PRDOH)	FECAL COLIFORM	SM9221B/E, SM9223B	CERTIFIED
PR00018 (Mayaguez Micro./PRDOH)	TOTAL COLIFORM	SM9221D/E, SM9223B	CERTIFIED
PR00018 (Mayaguez Micro./PRDOH)	FECAL COLIFORM/E.COLI	SM9221D/E, SM9223B	CERTIFIED
PR00022 (Ponce Micro./Chem PRDOH)	TOTAL COLIFORM	SM9223B, SM9221B/E	CERTIFIED
PR00022 (Ponce Micro./Chem PRDOH)	FECAL COLIFORM/E.COLI	SM9223B, SM9221B/E	CERTIFIED
CHEMISTRY			
PR00022 (Ponce Micro./Chem PRDOH)	ALKALINITY	2320B	CERTIFIED *
PR00022 (Ponce Micro./Chem PRDOH)	FLUORIDE	4500-F,C	CERTIFIED *
PR00022 (Ponce Micro./Chem PRDOH)	NITRATE	4500-NO3,D	CERTIFIED *
PR00022 (Ponce Micro./Chem PRDOH)	NITRITE	4500-NO2,B	PROVISIONALLY CERTIFIED*
PR00022 (Ponce Micro./Chem PRDOH)	pH	4500-H+,B	CERTIFIED *
PR00022 (Ponce Micro./Chem PRDOH)	RESIDUAL CHLORINE	4500-Cl, G	CERTIFIED *
PR00022 (Ponce Micro./Chem PRDOH)	TOTAL DISSOLVED SOLIDS	2540C	CERTIFIED *
PR00022 (Ponce Micro./Chem PRDOH)	SULFATE	4500-SO4,B	PROVISIONALLY CERTIFIED*
METALS			
PR00023 (San Juan Chem PRDOH)	ALUMINUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ANTIMONY		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ARSENIC		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	BARIUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	BERYLLIUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CADMIUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CHROMIUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	COPPER		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	IRON		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	LEAD		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	MANGANESE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	MERCURY		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	SELENIUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	SILVER		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	THALLIUM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ZINC		NOT CERTIFIED

Puerto Rico Principal State Laboratory Certficiation Status for 2002

LABORATORY	ANALYTE	METHOD	STATUS
INORGANICS			
	ASBESTOS		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	NITRATE AS N		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	NITRITE AS N		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	FLUORIDE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CYANIDE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ALKALINITY (as CaCO3)		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TURBIDITY		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	RESIDUAL CHLORINE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	o-PHOSPHATE		NOT CERTIFIED
INSECTICIDES/PESTICIDES			
PR00023 (San Juan Chem PRDOH)	ALACHLOR		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ATRAZINE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CHLORDANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	DIBROMOCHLOROPROPANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ENDRIN		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ETHYLENE DIBROMIDE (EDB)		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	HEPTACHLOR		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	HEPTACHLOR EPOXIDE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	HEXACHLOROBENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	HEXACHLOROCYCLOPENTADIENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	LINDANE (gamma-BHC)		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	METHOXYCHLOR		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	SIMAZINE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TOXAPHENE		NOT CERTIFIED
CABAMATES			
PR00023 (San Juan Chem PRDOH)	CARBOFURAN		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	OXAMYL (VYDATE)		NOT CERTIFIED
HERBICIDES			
PR00023 (San Juan Chem PRDOH)	2,4-D		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	2,4,5-TP (SILVEX)		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	DALAPON		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	DINOSEB		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	PENTACHLOROPHENOL		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	PICLORAM		NOT CERTIFIED

Puerto Rico Principal State Laboratory Certficiation Status for 2002

LABORATORY	ANALYTE	METHOD	STATUS
PCB'S			
PR00023 (San Juan Chem PRDOH)	As DECACHLOROBIPHENYL		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	As AROCLORS		NOT CERTIFIED
REGULATED SEMI-VOAS			
PR00023 (San Juan Chem PRDOH)	BENZO (A) PYRENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	BIS(2ETHYLHEXYL) ADIPATE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	BIS(2Ethylhexyl)PHTHALATE		NOT CERTIFIED
	DIOXIN (2,3,7,8 TCDD)		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	DIQUAT		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ENDOTHALL		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	GLYPHOSATE		NOT CERTIFIED
VOLATILE ORGANICS			
PR00023 (San Juan Chem PRDOH)	BENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CARBON TETRACHLORIDE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CHLOROBENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,2- DICHLOROBENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,4- DICHLOROBENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,2-DICHLOROETHANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,1-DICHLOROETHYLENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CIS 1,2-DICHLOROETHYLENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	T 1,2 DICHLOROETHYLENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	DICHLOROMETHANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,2 DICHLOROPROPANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	ETHYLBENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	STYRENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TETRACHLOROETHYLENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TOLUENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,2,4-TRICHLOROBENZENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,1,1-TRICHLOROETHANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	1,1,2-TRICHLOROETHANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TRICHLOROETHYLENE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	VINYL CHLORIDE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TOTAL XYLENES		NOT CERTIFIED
TRIHALOMETHANES			
PR00023 (San Juan Chem PRDOH)	BROMODICHLOROMETHANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	BROMOFORM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CHLOROFORM		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	CHLORODIBROMOMETHANE		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	TOTAL TRIHALOMETHANE		NOT CERTIFIED

Puerto Rico Principal State Laboratory Certficiation Status for 2002

LABORATORY	ANALYTE	METHOD	STATUS
HALOACETIC ACIDS			
PR00023 (San Juan Chem PRDOH)	**BROMOACETIC ACID**		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	**CHLOROACETIC ACID**		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	**DIBROMOACETIC ACID**		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	**DICHLOROACETIC ACID**		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	**TRICHLOROACETIC ACID**		NOT CERTIFIED
ING. DISINF. BY-PROD			
PR00023 (San Juan Chem PRDOH)	**BROMATE**		NOT CERTIFIED
PR00023 (San Juan Chem PRDOH)	**CHLORITE**		NOT CERTIFIED
***NOTE: Intent to downgrade due to lack of successful PT results.**			

Estado Libre Asociado de Puerto Rico
Departamento de Salud
Instituto de laboratorios
Dr. O. Costa Mandry

February 6, 2002

LABORATORY ADDRESS AND CERTIFIED STATUS		
ADDRES	**STATUS**	**TELEPHONE**
Ms. Sandra Acosta Sanchez Operations Director Clendo Industrial Laboratory, Inc., **PR0001** P O Box 549 Bayamon Puerto Rico 00960	**PROVISIONALLY CERTIFIED** **Total Coliforms:** [MTF, MMO-MUG (Colilert)] **Fecal Coliforms:** (EC) **E. Coli:** [MMO-MUG (Colilert)]	(787) 779-8486 398-9095 **FAX** 269-9115
Ms. Maribel Troche Echevarria Laboratory Director c/o Lic. Jorge Flechas Clemente Director, Laboratory Department PRASA's Arecibo Drinking Water Microbiology Lab., **PR00004** Laboratory Area P O Box 5789 Caguas Puerto Rico 00726-5789	**CERTIFIED** **Heterotrophic Bacteria:** [HPC (Pour Plate)] [MTF, MMO-MUG (Colilert)] **Fecal Coliforms:** (EC) **E. Coli:** [MMO-MUG (Colilert)] Quanty-Tray 2000] **Heterotrophic Bacteria:** [HPC (Pour Plate)]	(787) 745-4767 745-4630 745-4690 **FAX** **745-4707** **878-5758**
Mrs. Carmen Ruiz Gonzalez, MT Laboratory Director PRDOH's Arecibo Drinking Water Microbiology Lab., **PR00008** San Luis Avenue State Road #129 District Hospital Arecibo Puerto Rico 00612	**Certified by EPA**	(787) 878-3535 Ext. 518 519 879-1898 **FAX** **879-3168**
Mrs. Carmen W. Quiñonez, MT Laboratory Director c/o Lic. Jorge Flechas Clemente Director, Laboratory Department PRASA's Mayaguez Drinking Water Microbiology Lab., **PR00010** Laboratory Area P O Box 5789 Caguas Puerto Rico 00726-5789	**CERTIFIED** **Total Coliforms:** [MTF, MMO-MUG (Colilert)] **Fecal Coliforms:** (EC) **E. Coli:** [MMO-MUG (Colilert)] Quanty-Tray 2000] **Heterotrophic Bacteria:** [HPC (Pour Plate)]	(787) 745-4767 745-4630 745-4690 **FAX** **745-4707** **265-2450**

February 6, 2002

LABORATORY ADDRESS AND CERTIFIED STATUS		
ADDRES	**STATUS**	**TELEPHONE**
Lic. Cruz Minerva Ortiz, MT Laboratory Director c/o Lic. Jorge Flechas Clemente Director, Laboratory Department PRASA's Ponce Drinking Water Microbiology Lab., **PR00011** #602 3rd. Floor Barreras Building	**CERTIFIED** **Total Coliforms:** [MTF, MMO-MUG (Colilert)] **Fecal Coliforms:** (EC) **Heterotrophic Bacteria:** [HPC (Pour Plate)]	(787) 745-4767 745-4630 745-4690 **FAX** **745-4707** **841-7871**
Sr. Rafael Infante Laboratory Director Beckton Environmental Laboratories, Inc., **PR00012** 192 Villa Street Ponce Puerto Rico 00731	**CERTIFIED** **Chemistry** **(See Enclosure)**	(787) 841-7373 **FAX** **841-7313**
Mr. Gerardo Sarriera, P.E., M.E. Environmental Quality Laboratories, Inc., **PR00014** 1397 Feria St., Box 8723 Santurce Puerto Rico 00910	[MF, MTF, MMO-MUG (Colilert), **Fecal Coliforms:** (EC) **E. Coli:** [MMO-MUG (Colilert), Quanty-Tray 2000] **Heterotrophic Bacteria:** [HPC (Pour Plate)]	725-5333 724-5566 **FAX** **722-0380** **724-3110**
Lic. Betty Muriel Figueroa, MT Laboratory Director ACUALAB de Puerto Rico, **PR00015** State Road #924 K.M. 2.8 Barrio Collores Box 625 Humacao Puerto Rico 00792	**CERTIFIED** **Total Coliforms:** [MTF, MMO-MUG (Colilert)] **Fecal Coliforms:** (EC) **E. Coli:** [MMO-MUG (Colilert)] **Heterotrophic Bacteria:** [HPC (Pour Plate)]	(787) 852-5957 **FAX** **850-4840**
Lic. Jorge Flechas Clemente Laboratory Director Director, Laboratory Department PRASA's Central Drinking Water Chemistry Lab., **PR00017** Laboratory Area P O Box 5789 Caguas Puerto Rico 00726-5789	**CERTIFIED** **Total Coliforms:** [MMO-MUG (Colilert), (MTF), Quanty-Tray 2000] **Fecal Coliforms:** (EC) **E. Coli:** [MMO-MUG (Colilert), (Quanty-Tray 2000)] **Heterotrophic Bacteria:** [HPC (Pour Plate)] **Chemistry** **(See Enclosure)**	(787) 745-4767 745-4630 745-4690 **FAX** **745-4707** **841-7893**

February 6, 2002

LABORATORY ADDRESS AND CERTIFIED STATUS		
ADDRES	**STATUS**	**TELEPHONE**
Ms. Angelica Gonzalez Pacheco Laboratory Acting Director PRDOH's Mayaguez Drinking Water Microbiology Lab., **PR00018** Environmental Health Office Mayaguez Medical Center	**Certified by EPA**	(787) **TEL. / FAX** 834-4825
Ms. Antonia Arroyo Percy, MT PRDOH's Ponce Drinking Water Microbiology Lab., **PR00022** Environmental Health Office Ponce District Hospital Mayaguez Puerto Rico 00731	**Certified by EPA**	(787) 290-0597
Jose Luis Molinaris, M.D. Director Department of Health Institute of Health Lab., **PR00023** Building A Psychiatric Hospital P O Box 70184 San Juan Puerto Rico 00936-8184	**Certified by EPA**	(787) 274-5721 274-6814 **FAX** **274-6804** **759-6210**
Ms. Alma Carrasquillo, MT Laboratory Director Lab. Clinico Analitico Inc., **PR00025** 3rd. Floor El Señorial Building 309-310 Office #10 Salud Street Ponce Puerto Rico 00731	**CERTIFIED** **Total Coliforms:** (MF, MTF) **Fecal Coliforms:** (EC) **Heterotrophic Bacteria:** [HPC (Pour Plate)]	(787) 842-5327 **FAX** **842-5327**
Mr. Ady Padan, Ph.D Owner Analytical Environmental Services, Inc., **PR00933** #1004 Labra Street 2nd. Floor Santurce Puerto Rico 00907	**Chemistry** **(See Enclosure)**	(787) 722-0220 **FAX** **724-5788**
Mr. Henry N. Ashby President ELAB, Inc., **FL00020** P O Box 468 - 8 East Tower Circle Ormond Beach Florida 32175-0468	**Certified by Reciprocity** **(See Enclosure)**	(386) 672-5668 **FAX** **673-4001**

February 6, 2002

LABORATORY ADDRESS AND CERTIFIED STATUS		
ADDRES	**STATUS**	**TELEPHONE**
Mrs. Janet Pruitt Laboratory Director Severn Trent Laboratories Tallahassee , **FL00241** Post Office Box #13056 Tallahassee Florida 32317-3056	**Certified by Reciprocity** **(See Enclosure)**	(850) 878-3994 **FAX** **878-9504**
Mr. Michael A. Spitzer Laboratory Director Precision Environmental Laboratory, **FL00535** 10200 USA Today Way	**Certified by Reciprocity** **(See Enclosure)**	(954) 431-4550 **FAX** **431-1959**
Mr. Richard Radcliff Project Manager Environmental Health Laboratories, Inc., **IN00035** 110 S. Hill Street South Bend Indiana 46617	**Certified by Reciprocity** **(See Enclosure)**	(219) 233-4777 **FAX** **233-8207** 800-332-4345

5. Analytical Methods

5.1 General

A list of approved methods for inorganic and organic contaminants can be found in Tables IV-2 and IV-3, respectively. Methods manuals should be available in-house. Allowed modification to the methods should be documented. All procedural steps in these methods are considered requirements. Other methods cannot be used for compliance samples unless approval has been granted by the Agency. Contact the appropriate certifying authority for an alternate test procedure application. Application for the use of an alternate method may require acceptable comparability data. Table IV-4 lists the methods which must be used for contaminants which are regulated for monitoring only (have no MCLs). Table IV-5 lists the methods which must be used for the analysis of disinfectants. Recommended methods for Secondary contaminants are listed in Table IV-6. For more information, see Appendix H, section 2.1

5.2 Analyses approved by the State

Measurements for turbidity, pH, temperature, residual disinfectant, calcium, orthophosphate, silica, alkalinity, and conductivity need not be made in certified laboratories, but may be performed by any persons acceptable to the State. However, approved methodology must be used (Tables IV-2-5). The State should institute a quality assurance program to assure validity of data from these measurements.

5.2.1 Turbidity standards: Sealed liquid turbidity standards purchased from the instrument manufacturer should be calibrated against properly prepared and diluted formazin or styrene divinylbenzene polymer standards at least every four months in order to monitor for any eventual deterioration. This calibration should be documented. These standards should be replaced when they do not fall within 15% of the concentration of the standard. Solid turbidity standards composed of plastic, glass, or other materials are not reliable and should not be used.

5.2.2 Residual chlorine standards: If visual comparison devices such as color wheels or sealed ampules are used for determining free chlorine residual, the standards incorporated into such devices should be calibrated at least every six months. These calibrations should be documented. Directions for preparing temporary and permanent type visual standards can be found in Method 4500-Cl-G, of *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, 1992. By comparing standards and plotting such a comparison on graph paper, a corrective factor can be derived and applied to future results obtained on the now calibrated apparatus.

6. Sample Collection, Handling, and Preservation

The manner in which samples are collected and handled is critical to obtaining valid data. It is important that a written sampling protocol with specific sampling instructions be available to and used by sample collectors and available for inspection by the certification officer. (Appendix A, Chain-of-Custody).

6.1 Rejection of Samples

The laboratory must reject any sample taken for compliance purposes which does not meet the criteria in 6.2 through 6.6 and notify the authority requesting the analyses. See Appendix H section 1.3.

6.2 Sample Containers and Preservation

The type of sample container and the required preservative for each inorganic and organic chemical contaminant are listed in Table IV-7. The use of "blue ice" is discouraged because it generally does not maintain the temperature of the sample at 4C or less. If blue ice is used, it should be frozen at the time of sampling, the sample should be chilled before packing, and special notice must be taken at sample receipt to be certain the required temperature (4C) has been maintained.

6.3 Maximum Holding Times

Samples must be analyzed within the maximum holding times listed in Table IV-7.

6.4 Sample Collection and Transport

There must be strict adherence to correct sampling procedures, complete identification of the sample, and prompt transfer of the sample to the laboratory. When the laboratory is not responsible for sample collection and transport, it must verify that the paperwork, preservatives, containers and holding times are correct or reject the sample. For more information, see Appendix H, section 1.0.

6.5 Sample Collector

The sample collector should be trained in sampling procedures and have complete written sampling instructions (SOPs) for each type of sample to be collected. The sampler should be able to demonstrate proper sampling technique.

6.6 Sample Report Form

The sample report form should contain the ID, location, date and time of collection, collector's name, preservative added and shipping requirements, container and volume, sample type, analysis, and any special remarks concerning the sample. Indelible ink should be used. See Appendix H, section 1.1.

6.7 Sample Compositing

Compositing of samples for inorganic and organic analyses must be done in the laboratory. Samples should only be composited if the laboratory detection limit is adequate for the number of samples being composited (up to a maximum of five) and the holding times will not be exceeded.

7. Quality Control

Additional information is contained in Appendix H. Specific items are referenced throughout.

7.1 General Requirements

7.1.1 Availability of QC Information: All quality control information should be available for inspection by the certification officer.

7.1.2 Standard Operating Procedures: A manual of analytical methods and the laboratory's QA plan and Standard Operating Procedures (SOPs) should be readily available to the analysts (see Chapter III's discussion of Quality Assurance).

7.1.3 Balances and Weights: Balance range should be appropriate for the application for which it is to be used. Drinking water chemistry laboratories should use balances that weigh to at least 0.0001 g. The balances should be calibrated at least annually with ASTM Type I, Class 1 or 2 weights. (ASTM, 1916 Race St.., Philadelphia, PA 19103) This may be done by laboratory personnel or under contract by a manufacturer's representative. We strongly recommend laboratories have a contract to calibrate balances due to the expense of the weights and to serve as an outside QC check of the weights and balances. Weights meeting ASTM Type I, Class 1 or 2 specifications should be recertified if there is reason to believe damage (corrosion, nicks) has occurred or at least every five years.

Laboratory personnel should perform at least weekly checks of the balance. Weights meeting ASTM Type 1 specifications may be used but should be calibrated annually against the reference weights at time of balance calibration. A record of all checks should be available for inspection. The checks and their frequency should be as prescribed in the laboratory's QA Plan.

7.1.4 Color Standards: Wavelength settings on spectrophotometers should be verified each day they are used with color standards. A record of these checks should be available for inspection. The specific checks and their frequency should be as prescribed in the SOPs.

7.1.5 Thermometers: Thermometers should be traceable to ASTM calibration and recertified whenever the thermometer has been exposed to temperature extremes.

7.1.6 Traceability of Calibration: Calibrations of all measurement devices should be traceable to national standards whenever applicable.

7.2 Specific Requirements: The following are required for each analyte for which a laboratory is certified:

7.2.1 Performance Evaluation Samples: The laboratory must analyze performance evaluation samples (if available) acceptable to the Certifying Authority at least once per year in order to receive and maintain full certification for an analyte. Results from analysis of the performance evaluation sample must be within the

i. Thioacetamide solution: Dissolve 250 mg CH_3CSNH_2 in 100 mL distilled water. (CAUTION: *Cancer suspect agent. Take care to avoid skin contact or ingestion.*)

j. Chlorine-demand-free water: See C.3*m*.

k. Glycine solution: Dissolve 20 g glycine (aminoacetic acid) in sufficient chlorine-demand-free water to bring to 100 mL total volume. Store under refrigerated conditions and discard if cloudiness develops.

l. Barium chloride crystals, $BaCl_2 \cdot 2H_2O$.

3. Procedure

The quantities given below are suitable for concentrations of total chlorine up to 5 mg/L. If total chlorine exceeds 5 mg/L, use a smaller sample and dilute to a total volume of 100 mL. Mix usual volumes of buffer reagent and DPD indicator solution, or usual amount of DPD powder, with distilled water *before* adding sufficient sample to bring total volume to 100 mL. (If sample is added before buffer, test does not work.)

If chromate is present (>2 mg/L) add and mix 0.2 g $BaCl_2 \cdot 2H_2O$/100 mL sample before adding other reagents. If, in addition, sulfate is >500 mg/L, use 0.4 g $BaCl_2 \cdot 2H_2O$/100 mL sample.

a. Free chlorine or chloramine: Place 5 mL each of buffer reagent and DPD indicator solution in titration flask and mix (or use about 500 mg DPD powder). Add 100 mL sample, or diluted sample, and mix.

1) Free chlorine—Titrate rapidly with standard FAS titrant until red color is discharged (Reading *A*).

2) Monochloramine—Add one very small crystal of KI (about 0.5 mg) or 0.1 mL (2 drops) KI solution and mix. Continue titrating until red color is discharged again (Reading *B*).

3) Dichloramine—Add several crystals KI (about 1 g) and mix to dissolve. Let stand for 2 min and continue titrating until red color is discharged (Reading *C*). For dichloramine concentrations greater than 1 mg/L, let stand 2 min more if color driftback indicates slightly incomplete reaction. When dichloramine concentrations are not expected to be high, use half the specified amount of KI.

4) Simplified procedure for free and combined chlorine or total chlorine—Omit 2) above to obtain monochloramine and dichloramine together as combined chlorine. To obtain total chlorine in one reading, add full amount of KI at the start, with the specified amounts of buffer reagent and DPD indicator, and titrate after 2 min standing.

b. Nitrogen trichloride: Place one very small crystal of KI (about 0.5 mg) or 0.1 mL KI solution in a titration flask. Add 100 mL sample and mix. Add contents to a second flask containing 5 mL each of buffer reagent and DPD indicator solution (or add about 500 mg DPD powder direct to the first flask). Titrate rapidly with standard FAS titrant until red color is discharged (Reading *N*).

c. Free chlorine in presence of bromine or iodine: Determine free chlorine as in ¶ 3*a*1). To a second 100-mL sample, add 1 mL glycine solution before adding DPD and buffer. Titrate according to ¶ 3*a*1). Subtract the second reading from the first to obtain Reading A.

4. Calculation

For a 100-mL sample, 1.00 mL standard FAS titrant = 1.00 mg Cl as Cl_2/L.

Reading	NCl_3 Absent	NCl_3 Present
A	Free Cl	Free Cl
$B - A$	NH_2Cl	NH_2Cl
$C - B$	$NHCl_2$	$NHCl_2 + \frac{1}{2}NCl_3$
N	—	Free Cl $+ \frac{1}{2}NCl_3$
$2(N - A)$	—	NCl_3
$C - N$	—	$NHCl_2$

In the event that monochloramine is present with NCl_3, it will be included in *N*, in which case obtain NCl_3 from $2(N-B)$.

Chlorine dioxide, if present, is included in *A* to the extent of one-fifth of its total chlorine content.

In the simplified procedure for free and combined chlorine, only *A* (free Cl) and *C* (total Cl) are required. Obtain combined chlorine from $C-A$.

The result obtained in the simplified total chlorine procedure corresponds to *C*.

5. Precision and Bias

See B.5.

6. Bibliography

PALIN, A.T. 1957. The determination of free and combined chlorine in water by the use of diethyl-p-phenylene diamine. *J. Amer. Water Works Assoc.* 49:873.

PALIN, A.T. 1960. Colorimetric determination of chlorine dioxide in water. *Water Sewage Works* 107:457.

PALIN, A.T. 1961. The determination of free residual bromine in water. *Water Sewage Works* 108:461.

NICOLSON, N.J. 1963, 1965, 1966. Determination of chlorine in water, Parts 1, 2, and 3. Water Res. Assoc. Tech. Pap. Nos. 29, 47, and 53.

PALIN, A.T. 1967. Methods for determination, in water, of free and combined available chlorine, chlorine dioxide and chlorite, bromine, iodine, and ozone using diethyl-p-phenylenediamine (DPD). *J. Inst. Water Eng.* 21:537.

PALIN, A.T. 1968. Determination of nitrogen trichloride in water. *J. Amer. Water Works Assoc.* 60:847.

PALIN, A.T. 1975. Current DPD methods for residual halogen compounds and ozone in water. *J. Amer. Water Works Assoc.* 67:32.

Methods for the Examination of Waters and Associated Materials. Chemical Disinfecting Agents in Water and Effluents, and Chlorine Demand. 1980. Her Majesty's Stationery Off., London, England.

4500-Cl G. DPD Colorimetric Method

1. General Discussion

a. Principle: This is a colorimetric version of the DPD method and is based on the same principles. Instead of titration with standard ferrous ammonium sulfate (FAS) solution as in the titrimetric method, a colorimetric procedure is used.

b. Interference: See A.3 and F.1*d*. Compensate for color and turbidity by using sample to zero photometer. Minimize chro-

mate interference by using the thioacetamide blank correction.

c. Minimum detectable concentration: Approximately 10 μg Cl as Cl_2/L. This detection limit is achievable under ideal conditions; normal working detection limits typically are higher.

2. Apparatus

a. Photometric equipment: One of the following is required:

1) *Spectrophotometer,* for use at a wavelength of 515 nm and providing a light path of 1 cm or longer.

2) *Filter photometer,* equipped with a filter having maximum transmission in the wavelength range of 490 to 530 nm and providing a light path of 1 cm or longer.

b. Glassware: Use separate glassware, including separate spectrophotometer cells, for free and combined (dichloramine) measurements, to avoid iodide contamination in free chlorine measurement.

3. Reagents

See F.2*a*, *b*, *c*, *d*, *e*, *h*, *i*, and *j*.

4. Procedure

a. Calibration of photometric equipment: Calibrate instrument with chlorine or potassium permanganate solutions.

1) Chlorine solutions—Prepare chlorine standards in the range of 0.05 to 4 mg/L from about 100 mg/L chlorine water standardized as follows: Place 2 mL acetic acid and 10 to 25 mL chlorine-demand-free water in a flask. Add about 1 g KI. Measure into the flask a suitable volume of chlorine solution. In choosing a convenient volume, note that 1 mL 0.025*N* $Na_2S_2O_3$ titrant (see B.2*d*) is equivalent to about 0.9 mg chlorine. Titrate with standardized 0.025*N* $Na_2S_2O_3$ titrant until the yellow iodine color almost disappears. Add 1 to 2 mL starch indicator solution and continue titrating to disappearance of blue color.

Determine the blank by adding identical quantities of acid, KI, and starch indicator to a volume of chlorine-demand-free water corresponding to the sample used for titration. Perform blank titration A or B, whichever applies, according to B.3*d*.

$$\text{mg Cl as } Cl_2/\text{mL} = \frac{(A + B) \times N \times 35.45}{\text{mL sample}}$$

where:

N = normality of $Na_2S_2O_3$,
A = mL titrant for sample,
B = mL titrant for blank (to be added or subtracted according to required blank titration. See B.3*d*).

Use chlorine-demand-free water and glassware to prepare these standards. Develop color by first placing 5 mL phosphate buffer solution and 5 mL DPD indicator reagent in flask and then adding 100 mL chlorine standard with thorough mixing as described in *b* and *c* below. Fill photometer or colorimeter cell from flask and read color at 515 nm. Return cell contents to flask and titrate with standard FAS titrant as a check on chlorine concentration.

2) Potassium permanganate solutions—Prepare a stock solution containing 891 mg $KMnO_4$/1000 mL. Dilute 10.00 mL stock solution to 100 mL with distilled water in a volumetric flask. When 1 mL of this solution is diluted to 100 mL with distilled water, a chlorine equivalent of 1.00 mg/L will be produced in the DPD reaction. Prepare a series of $KMnO_4$ standards covering the chlorine equivalent range of 0.05 to 4 mg/L. Develop color by first placing 5 mL phosphate buffer and 5 mL DPD indicator reagent in flask and adding 100 mL standard with thorough mixing as described in *b* and *c* below. Fill photometer or colorimeter cell from flask and read color at 515 nm. Return cell contents to flask and titrate with FAS titrant as a check on any absorption of permanganate by distilled water.

Obtain all readings by comparison to color standards or the standard curve before use in calculation.

b. Volume of sample: Use a sample volume appropriate to the photometer or colorimeter. The following procedure is based on using 10-mL volumes; adjust reagent quantities proportionately for other sample volumes. Dilute sample with chlorine-demand-free water when total chlorine exceeds 4 mg/L.

c. Free chlorine: Place 0.5 mL each of buffer reagent and DPD indicator reagent in a test tube or photometer cell. Add 10 mL sample and mix. Read color immediately (Reading *A*).

d. Monochloramine: Continue by adding one very small crystal of KI (about 0.1 mg) and mix. If dichloramine concentration is expected to be high, instead of small crystal add 0.1 mL (2 drops) freshly prepared KI solution (0.1 g/100 mL). Read color immediately (Reading *B*).

e. Dichloramine: Continue by adding several crystals of KI (about 0.1 g) and mix to dissolve. Let stand about 2 min and read color (Reading *C*).

f. Nitrogen trichloride: Place a very small crystal of KI (about 0.1 mg) in a clean test tube or photometer cell. Add 10 mL sample and mix. To a second tube or cell add 0.5 mL each of buffer and indicator reagents; mix. Add contents to first tube or cell and mix. Read color immediately (Reading *N*).

g. Chromate correction using thioacetamide: Add 0.5 mL thioacetamide solution (F.2*i*) to 100 mL sample. After mixing, add buffer and DPD reagent. Read color immediately. Add several crystals of KI (about 0.1 g) and mix to dissolve. Let stand about 2 min and read color. Subtract the first reading from Reading *A* and the second reading from Reading *C* and use in calculations.

5. Calculation

Reading	NCl_3 Absent	NCl_3 Present
A	Free Cl	Free Cl
$B - A$	NH_2Cl	NH_2Cl
$C - B$	$NHCl_2$	$NHCl_2$ + ½NCl_3
N	—	Free Cl + ½NCl_3
$2(N - A)$	—	NCl_3
$C - N$	—	$NHCl_2$

In the event that monochloramine is present with NCl_3, it will be included in Reading *N*, in which case obtain NCl_3 from $2(N - B)$.

6. Bibliography

See F.6.

Estado Libre Asociado de Puerto Rico
Departamento de Salud

ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE SALUD
SECRETARIA DE SALUD AMBIENTAL
PROGRAMA DE AGUA POTABLE

19 de diciembre de 2001

Sr. Jean M. Philipot, Director
Area Técnica y Cumplimiento
Compañía de Aguas de Puerto Rico
Apartado 7066, Bo. Obrero Station
Santurce, PR 00916

Re: Nueva Reglamentación de Desinfectantes y Sub-Productos de la Desinfección

Estimado señor Philipot:

Como es de su conocimiento, la sección §141.132(f): Planes de Muestreo de la Regla de Desinfectantes y Sub-Productos de la Desinfección-Etapa 1 (D/DBP's) establece que: Cada sistema al que se le requiere hacer un muestreo bajo esta subparte debe desarrollar e implementar un plan de muestreo.

El sistema debe mantener el plan disponible para inspección por el estado y el público general no más tarde de 30 días siguiendo las fechas de cumplimiento aplicables en la sección §141.130(b).

Todos los sistemas superficiales y los sistemas subterráneos directamente influenciados por aguas superficiales que sirvan una población > 3,300 debe someter este plan de muestreo al estado no más tarde de la fecha del primer informe requerido bajo la sección §141.134.

El estado también puede requerir que el plan sea sometido por cualquier otro sistema. Luego de revisado, el estado puede requerir cambios en cualquiera de los elementos del plan. El plan debe incluir como mínimo los siguientes elementos:

1. Puntos e itinerarios específicos para tomar muestras para cualquier parámetro incluido en esta subparte.
2. Cómo el sistema va a calcular cumplimiento con MCL's, MRDL's y técnicas de tratamiento.
3. Si se aprueba el muestreo como un sistema consecutivo o si provee agua a un sistema consecutivo, bajo las provisiones de la sección §141.29, el plan debe reflejar el sistema de distribución entero.

PO BOX 70184 SAN JUAN, PUERTO RICO 00936

Con el propósito de que los planes de muestreo se preparen bajo un mismo formato le sugerimos incluya lo siguiente en los mismos:

- Identificar el sistema e incluir información relevante del mismo
- Incluir un resumen del muestreo de los subproductos, desinfectantes y precursores.
- Incluir un dibujo esquemático de todas las facilidades de tratamiento.
- Incluir un dibujo esquemático del sistema de distribución.
- Un resumen de las características de operación típicas del sistema.
- Un resumen para tomar todas las muestras requeridas incluyendo frecuencia y tiempo.
- Distinguir entre muestreo de cumplimiento y aquel tomado para control del proceso.
- Un resumen de los requisitos de mejoramiento de coagulación/ablandamiento del sistema para plantas de tratamiento convencionales.

Cualquier información adicional que necesite puede comunicarse a los teléfonos (787) 777-0150 / 0151 / 0152.

Cordialmente,

Olga I. Rivera, MSA
Directora

ZRH/ DBP's Monitoring CAPR

autoridad de acueductos y alcantarillados
Estado Libre Asociado de Puerto Rico

RECIBIDO CAPR-AAA
DIRECCION TECNICA
Y CUMPLIMIENTO

02 MAY -8 PM 2:49

07 de mayo de 2002

Sra. Olga I. Rivera
Directora, Programa de Agua Potable
Departamento de Salud
PO Box 70184
San Juan, PR 00936

Re: Monitoring Plans Stage 1 D/DBP Rule

Estimada señora Rivera:

Hacemos referencia a nuestra comunicación de 25 de abril de 2002 del mismo tema.

Anexamos los Planes de Muestreo revisados (Monitoring Plans) para los sistemas que sirven más de 10,000 personas.

Estos Planes remplazan completamente los Planes sometidos el 15 de febrero de 2002.

De tener cualquier pregunta sobre este asunto, favor comunicarse conmigo.

Cordialmente,

Jean-Marc Philipot
Director Técnico

c: Raymond C. Sandza, Roberto Maldonado, Jorge Flechas, Eugenia Agosto, archivo

anexo

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13-may-02

compañía de aguas de Puerto Rico

autoridad de acueductos y alcantarillados
Estado Libre Asociado de Puerto Rico

15 de febrero de 2002

Sra. Olga I. Rivera
Directora
Programa Agua Potable
Departamento de Salud
PO Box 70184
San Juan, PR 00936

Estimada señora Rivera:

Para cumplir con la Reglamentación de "Stage 1 D/DBP Rule" sometimos un plan de monitoreo para TOC, DOC, UV254 y Alcalinidad. Este plan fue sometido el 1 de febrero de 2001.

El plan fue revisado, basado en los nuevos requisitos de la Reglamentación descritos en el Manual "Enhanced Coagulation and Enhance Precipitation Softening Guidance Manual". Incluimos copia del Plan de Monitoreo revisado. El mismo cubre las 70 plantas que tienen los sistemas con una población igual o mayor de 10,000 habitantes.

En caso de duda, favor de comunicarse con el Sr. Paul Whittam al (787) 620-2277 Ext. 2388.

Cordialmente,

Jean-Marc Philipot
Director Técnico y Cumplimiento

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Anexos

RM/PW/JMP/rim

c: R. Sandza, P. Whittam, R. Maldonado, J. Flechas, File Reglamentación, C. O'Neill

compañía de aguas de Puerto Rico

PWSID 2611 **System:** CUBUY

Plant: CUBUY

TREATMENT

Treatment designated by the Stage 1D/DBP Rule will be by Enhanced Coagulation as required by the regulation since no PRASA water treatment facilities are currently practicing softening.

The term "enhanced coagulation" refers to the process of improving the removal of disinfection byproduct (DBP) precursors in a conventional water treatment plant.
The intent of the treatment technique as discussed in the D/DBPRule is to establish TOC removal requirements so that significant TOC reductions can be achieved without the addition of unreasonable amounts of coagulant.

To achieve these objectives, a TOC-based performance standard is set by the Rule:

Step 1 requires:
Removal of a specific percentage of influent TOC to demonstrate compliance, based on the TOC and alkalinity of the source water.

Step 2 requires:

Enhanced coagulation systems that cannot meet the Step 1 criteria or any of the alternative compliance criteria to establish an alternative TOC removal percentage for defining compliance.

COMPLIANCE DETERMINATION

Compliance with the TOC Removal Requirement (Treatment Technique)

Individual treatment plants are required to achieve a specified percent removal (Step 1) of influent TOC between the raw water sampling point and the treated water TOC monitoring location.
Compliance with the TOC removal requirement is based on a running annual average (RAA), computed quarterly.

The actual TOC removal is determined using the following formula as indicated in the Stage 1 D/DBP Rule

$$(TOC_{Source\ Water} - TOC_{Filtered\ Water}) / TOC_{Source\ Water} \times 100 = \%\ Removal\ TOC$$

The Monthly Compliance ratio will be calculated as such:

Actual % Removal TOC/Required % Removal TOC = Monthly Compliance Ratio

Alternative Compliance Criteria for the Treatment Technique

Certain waters are less amenable to the removal of TOC by coagulation. Alternative compliance criteria have been placed into the regulation to allow plants flexibility for establishing compliance These criteria recognize the low potential of certain waters to produce DBPs, and also account for those waters not amenable to good TOC removal that may not meet the Step 1 TOC removal requirement.

Based upon the Stage 1 D/DBP Rule, a plant can establish compliance with the enhanced coagulation TOC removal requirement if any one (1) of the following six alternative compliance criteria is met:

1 ***Source water TOC <2.0 mg/L*** : If the source water contains less than 2.0 mg/L of TOC, calculated quarterly as a running annual average, the utility is in compliance with the treatment technique. This criterion also can be used on a monthly basis, i.e., for individual months in which raw water TOC is less than 2.0 mg/L, the plant can establish compliance for that month by meeting this criterion.

2 ***Treated water TOC <2.0 mg/L*** : If a treated water contains less than 2.0 mg/L TOC, calculated quarterly as a running annual average, the utility is in compliance with the treatment technique. This criterion can also be used on a monthly basis, i.e., for individual months in which treated water TOC is less than 2.0 mg/L, the plant can establish compliance for that month by meeting this criterion.

3 ***Raw water SUVA <2.0 L/mg-m*** : If the raw water specific ultraviolet absorption (SUVA) is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average, the utility is in compliance with the the treatment technique requirements.This criterion is also available on a monthly basis, i.e., for individual months in which raw water SUVA is less than or equal to 2.0 L/mg-m, the plant can establish compliance for that month by meeting this criterion.

4 ***Treated Water SUVA <2.0 L/mg-m*** : If the treated water SUVA is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average, the utility is in compliance with treatment technique requirements. This criterion can also be used on a monthly basis for individual months in which treated water SUVA$\leq$2.0 L/mg-m, the plant can establish compliance for that month by meeting this criterion.

5 ***Raw Water TOC <4.0 mg/L; Raw Water Alkalinity >60 mg/L$CaCO_3$; TTHM <40µg/L; HAA5 <30 µg/L:*** It is more difficult to remove appreciable amounts of TOC from waters with higher alkalinity and lower TOC levels. Therefore, utilities that meet the above criteria can establish compliance with the treatment technique requirements. All of the parameters (e.g., TOC, alkalinity, TTHM, HAA5) are based on running annual averages, computed quarterly. TTHM and HAA5 compliance samples are used to qualify for this alternative performance criterion.

6 ***TTHM <40 µg/L and HAA5 <30 µg/L with only chlorine for disinfection*** : Plants that use only free chlorine as their primary disinfectant and for maintenance of a residual in the distribution system, and achieve the stated TTHM and HAA5 levels, are in compliance with the treatment technique. The TTHM and HAA5 levels are based on running annual averages, computed quarterly. TTHM and HAA5 compliance samples are to be used to qualify for this alternative.

If more than one compliance sample is taken during any month to demonstrate compliance with an alternative compliance criterion, the results of those samples will be averaged, according to the regulation, to determine whether the alternative compliance criterion has been met.

Compliance with the Maximum Residual Disinfectant Level (MRDL)

Currenty all PRASA systems use chlorine as the disinfectant of choice for drinking water.

The MRDL for chlorine is set by the Stage 1 D/DBP Rule at 4 mg/L.
The MRDL may be exceeded to protect public health from specific microbiological contamination events. These exceedances would be for specific problems caused by unusual conditions such as line breaks, cross-contamination events, or raw water contamination.

Chlorine residuals will be performed on all sample locations within the water system for coliform analysis that have been certifed by PRDOH, and at the frequencies sampled for coliform for that month. Certified alternative sampling locations and follow-up sites sampled during any month will be included in the monthly chlorine residual average calculation for that month.

Chlorine residual Averages will be reported Quarterly. Compliance with this part of the Rule is based upon the Running Annual Average (RAA) of the water system's chlorine residual calculated quarterly.
Compliance for the MRDL for Chlorine is based on a Running Annual Average (RAA), computed using the quarterly results of monthly averages. Sample sites for this system are based upon those PRDOH certified sampling points within the system and will include any alternate sampling points and follow-up sampling performed on a monthly basis.

Compliance with the MCLs for TTHM and HAA5

Compliance for TTHM and HAA5 is based on a Running Annual Average (RAA), computed using the quarterly results and reported Quarterly. Sample sites for this system are based upon those PRDOH certified sampling points within the system and will include any certified alternate sampling points used. If samples are required more frequently than quarterly, then the quarterly average of those results will be used to determine the RAA.

REPORTING REQUIREMENTS

Based upon the D/DBP Rule all plants are required to report their monitoring results to the State primacy agency within ten days after the end of each monitoring quarter in which the samples were collected.

Plants required to sample less frequently than quarterly will provide a report to the State within ten days after within ten days after the end of the monitoring period in which the samples were collected.

Parameter	Type	Frequency
TOC Removal (Treatment Technique)	Compliance Ratio RAA*	Reported Quarterly within 10 days after the end of the quarter
TTHM & HAA5	RAA*	Reported Quarterly within 10 days after the end of the quarter
MRDL - Average Chlorine Residual (Free Cl_2)	RAA*	Reported Quarterly within 10 days after the end of the quarter

* *The quarterly average is reported during the first year and both quarterly and RAA will be reported thereafter. In accordance with the regulation, Compliance is based upon the running annual average of the quarterly averages*

PWSID : 2611

SYSTEM: CUBUY

SAMPLING PROGRAM TOC, UV, ALKALINITY & DOC

CODE	ADDRESS	SAMPLE LOCATION	FREQUENCY	SAMPLING DATE
26110200	PLANTA DE FILTROS - CUBUY CARR. 186 BO. CUBUY	RW	1 TIME PER MONTH	ANY TIME DURING THE MONTH
26110000		CFE	1 TIME PER MONTH	ANY TIME DURING THE MONTH

RW = RAW WATER
CFE =COMBINED FILTER EFFLUENT

SAMPLING PROGRAM THM & HAA

CODE	ADDRESS	SAMPLE LOCATION	MONITOR FREQUENCY OF THM	SAMPLING DAYS THM	MONITOR FREQUENCY OF HAA	TRIMESTER SAMPLES 2002
25910000	PLANTA DE FILTROS - CUBUY CARR. 186 BO. CUBUY	FW	2 TIMES PER WEEK	TUESDAY AND THURSDAY	1 TIME PER TRIMESTER	FIRST TRIMESTER (02 - 11 - 02) - (02 - 28 - 02)
25910001	CEMENTERIO MUNICIPAL CARR. 186 KM. 7 BO. CUBUY	P	2 TIMES PER WEEK	TUESDAY AND THURSDAY	1 TIME PER TRIMESTER	SECOND TRIMESTER (05 - 13 - 02) - (05 - 31 - 02)
25910002	SUP. SM. LAS LOMAS CARR. 186 KM. 5.2 BO. LAS LOMAS	P	2 TIMES PER WEEK	TUESDAY AND THURSDAY	1 TIME PER TRIMESTER	THIRD TRIMESTER (08 - 12 - 02) - (08 - 30 - 02)
25910003	EL ORINOCO CARR. 186 KM. 2.0 BO. CUBUY	P	2 TIMES PER WEEK	TUESDAY AND THURSDAY	1 TIME PER TRIMESTER	FOURTH TRIMESTER (11 - 11 - 02) - (11 - 30 - 02)

FW FILTER WATER
P SAMPLING POINT

SAMPLING PROGRAM MAXIMUM RESIDUAL DISINFECTANT LEVEL (MRDL) - CHLORINE (COLIFORM SAMPLING SITES)

CODE	ADDRESS	SAMPLE LOCATION
26110000	PLANTA DE FILTROS - CUBUY CARR. 186 BO. CUBUY	FW
26110001	CEMENTERIO MUNICIPAL CARR. 186 KM. 7 BO. CUBUY	P
26110002	SUP. SM. LAS LOMAS CARR. 186 KM. 5.2 BO. LAS LOMAS	P
26110003	EL ORINOCO CARR. 186 KM. 2.0 BO CUBUY	P
26110046	RES. AVINADAD NEGRON, CARR. 835 INT 957, GUZMAN ARRIBA RIO GRANDE	P
26110047	AGOSTO PLACE CARR. 186 KM. .1 SECTOR LOMAS DE CUBUY, CANOVANAS	P

FW FILTER WATER
P SAMPLING POINT

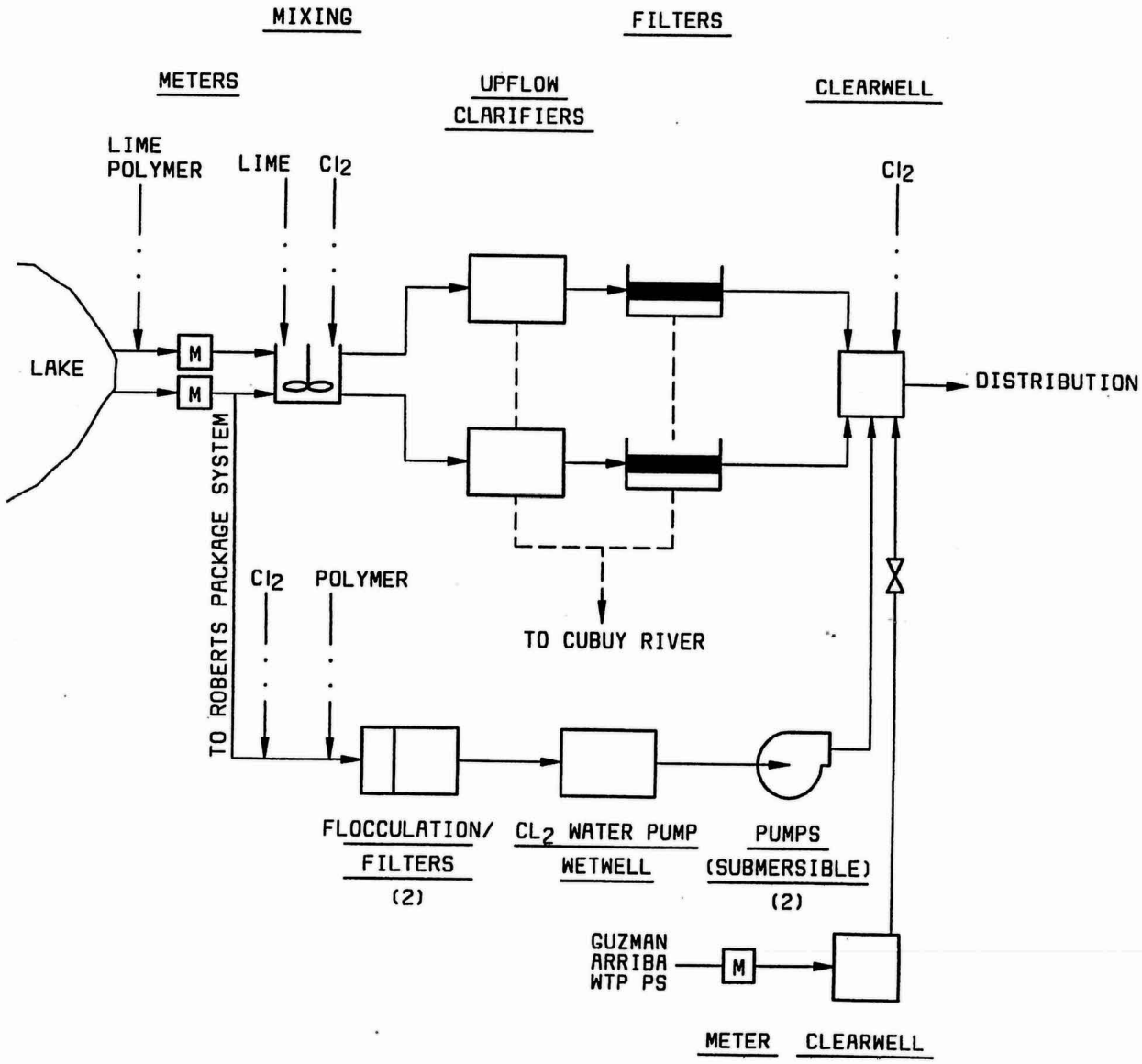
SYSTEM		CUBUY
REQUIRED	COLIFORM SAMPLES	MR = 10
SAMPLES COLLECTED PER WEEK	1ST WK	3
	2ND WK	3
	3RD WK	3
	4TH WK	1

MR=MONITORING REQUIRED FOR COLIFORM SAMPLING

ID NO. 1RB01 NAME: CUBUY (PACKAGE) WTP

REGION: METROPOLITAN MUNICIPIO: CANOVANAS

PLANT SCHEMATIC



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