



Ronald H. Levine, M.D., M.P.H. STATE HEALTH DIRECTOR

NC 28542

DIVISION OF HEALTH SERVICES STATE LABORATORY OF PUBLIC HEALTH 306 N. Wilmington St. P.O. Box 28047 Raleigh, N.C. 27611-8047

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CAMP LEJEUNE/WTR QC BACT LAB BASE MAINT DEPT/BLDG 65 CAMP LEJEUNE

MEMORANDUM

Laboratories Certified for the Analysis of Drinking Water

FROM:

TO:

E. D. Beesley

DATE: December 19, 1982

A new 5 digit identification number has been assigned to your laboratory. It has been designed to indicate the state in which the laboratory is located, the laboratory type, and serial number.

State Serial No.

The number signifying North Carolina is 37.

Laboratory Type will include:

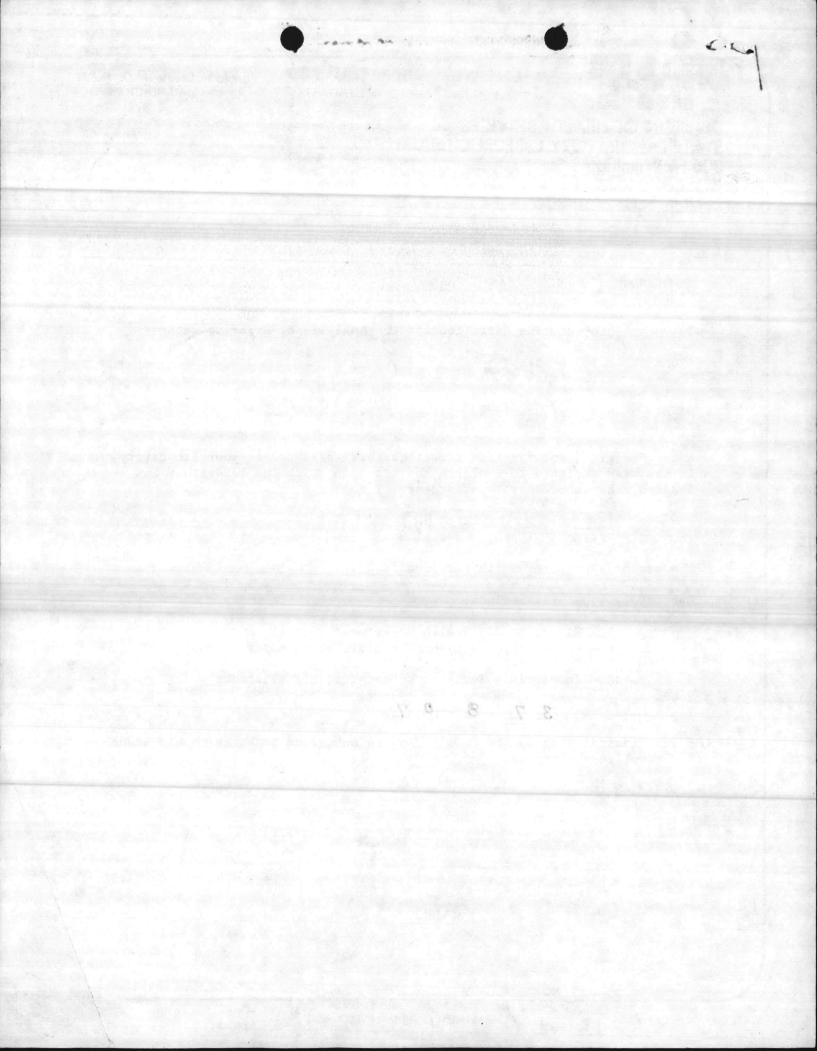
5 - State, County Health Department

- 6 Municipal, County or District Water Supply
- 7 Commercial
- 8 Industrial, Federal, University, Miscellaneous

Your number is 37807

Please include this number on all reports submitted to Water Supply Branch for compliance purposes.

EDB; EN/leh



NATURAL RESOURCES AND WIRONMENTAL AFFAIRS DIVISION Marine Corps Base Camp Lejeune, North Carolina 28542

10-28-82 Date

To: Down DS Subj:

Subj,

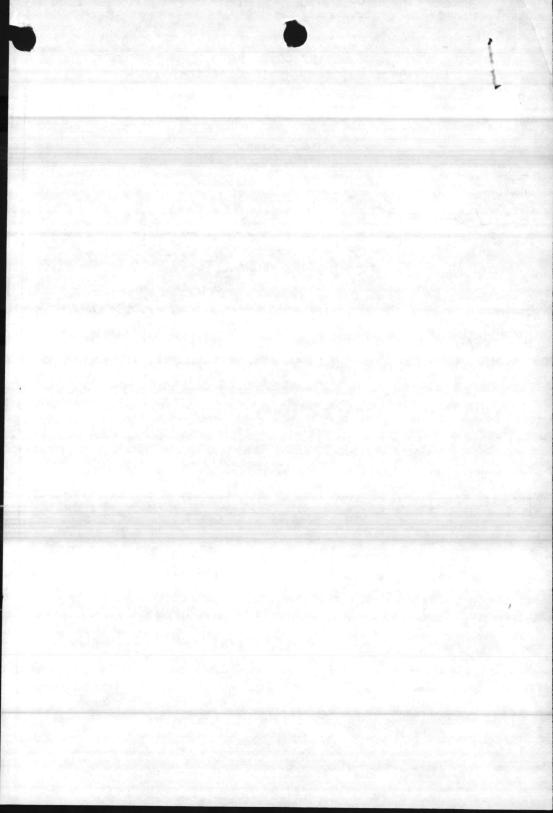
I told tol. Marshall + ITCol Fulzgerald about the writigeation,

Julia

Betsy - Post The

Certification and file

the report.



Ronald H. Levine, M.D., M.P.H. STATE HEALTH DIRECTOR

DIVISION OF HEALTH SERVICES STATE LABORATORY OF PUBLIC HEALTH 306 N. Wilmington St. P.O. Box 28047 Raleigh, N.C. 27611-8047

October 18, 1982

Commanding General U. S. Marine Corps Base Camp Lejeune, North Carolina 28542

Dear Sir:

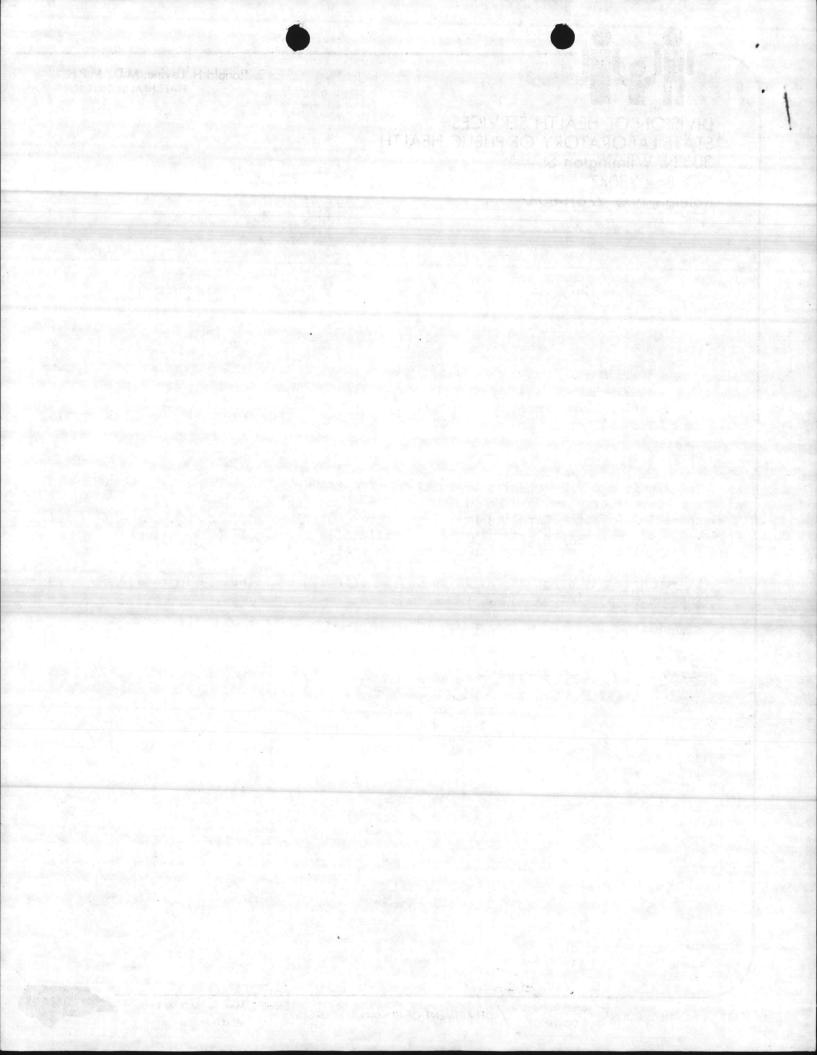
The findings of the on-site evaluation on September 28, 1982 indicates that your laboratory has met the minimum requirements for certification as specified in North Carolina Drinking Water Regulations (10NCAC 9D .0301 -.0330). We therfore grant Interim Certification to your laboratory for total coliform analysis on public water supplies.

If you have any questions or if we may be of further assistance in this matter, please let us know.

Sincerely,

E. D. Beesley Laboratory Certification Evaluator

EDB/leh Enclosure



REPORT OF AN ON-SITE EVALUATION USMCB-CAMP LEJEUNE QUALITY CONTROL LABORATORY BACTERIOLOGY LABORATORY ENVIRONMENTAL SECTION, NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH

BASE MAINTENANCE DIVISION, BUILDING 65

CAMP LEJEUNE, NORTH CAROLINA 28542

SEPTEMBER 28, 1982

8Y:

E. D. BEESLEY LABORATORY CERTIFICATION EVALUATOR ENVIRONMENTAL SCIENCES BRANCH

LABORATORY SECTION NORTH CAROLINA DIVISION OF HEALTH SERVICES NORTH WILMINGTON STREET RALEIGH, NORTH CAROLINA 27611

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USMCG-CAMP LEJELINE

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BACTERIGLOGY LABORATORY

ENVIRONMENTAL SECTION, NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH

BASE MAINTENANCE DIVISION, BUILDING 65

CAMP LEJEUNE, MORTH CAROLINA 28542

SEPTEMBER 28, 1982

:Y8

E. D. BEESLEY

LABORATORY CERTIFICATION EVALUATOR

ENVIEDNMENTAL SCIENCES ERANCH

LABORATORY SECTION

NORTH CAROLINA DIVISION OF HEALTH SERVICES

NORTH WELMINGTON STREET

RALFICH, NORTH CARDI INA 27611

USMCB-Camp Lejeune Quality Control Lab. Camp Lejeune, N. C. September 28, 1982 Page 2

I. INTRODUCTION

The equipment and procedures employed in the bacteriological analyses of water by this laboratory conformed with the provisions of the North Carolina Safe Drinking Water Regulations, except for the items indicated.

II. DEVIATIONS AND RECOMMENDATIONS

No deviations

III. REMARKS

The NBS traceable thermometer should be replaced with one calibrated in 0.1 C divisions.

A maximum registering thermometer must be obtained for checking autoclave function.

IV. LIST OF PERSONNEL

NAME

POSITION

IESI_NORMALLY_PEREORMED

Elizabeth A. Betz	Supervisory Chemist	MF & MPN
Hoy Burns	Technician/Analyst	MF & MPN
Bob Lachapelle	Technician/Analyst	MF
Gaines Honeycutt	Technician/Analyst	MF
Gerald Monahan	Technician/Analyst	MF

V. CONCLUSION

The procedures and equipment in use at the time of this survey were in general compliance with the provisions of the North Carolina Drinking Water Regulations (10NCAC 9D .0301 - .0330). We recommend that the analytical data be accepted for MF and MPN Coliform analysis of drinking waters under the North Carolina Safe Drinking Water Act.

USACE-Camp Lajoune Guality Control Lab Camp Lejeune, N. C. September 28, 1982 Fage 2

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III. REMARKS

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A maximum registering thermometer must be obtained for checking autoclave function.

IV. LIST OF PERSONNEL

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POSITION

TEST NORMALLY PERFORMED

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Supervisory Chemist	Elizabeth A. Betz
TevienAlmeisindoeT	Hoy Burns
Technician/Analyst	Bob Lachapelle
Technician/Analyst	Gaines Honeycult
Technician/Analyst	Cerald Monahan

V. CONCLUSION

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FORMS FOR ON-SITE EVALUATION OF LABORATORIES INVOLVED IN ANALYSIS OF PUBLIC WATER SUPPLIES-MICROBIOLOGY

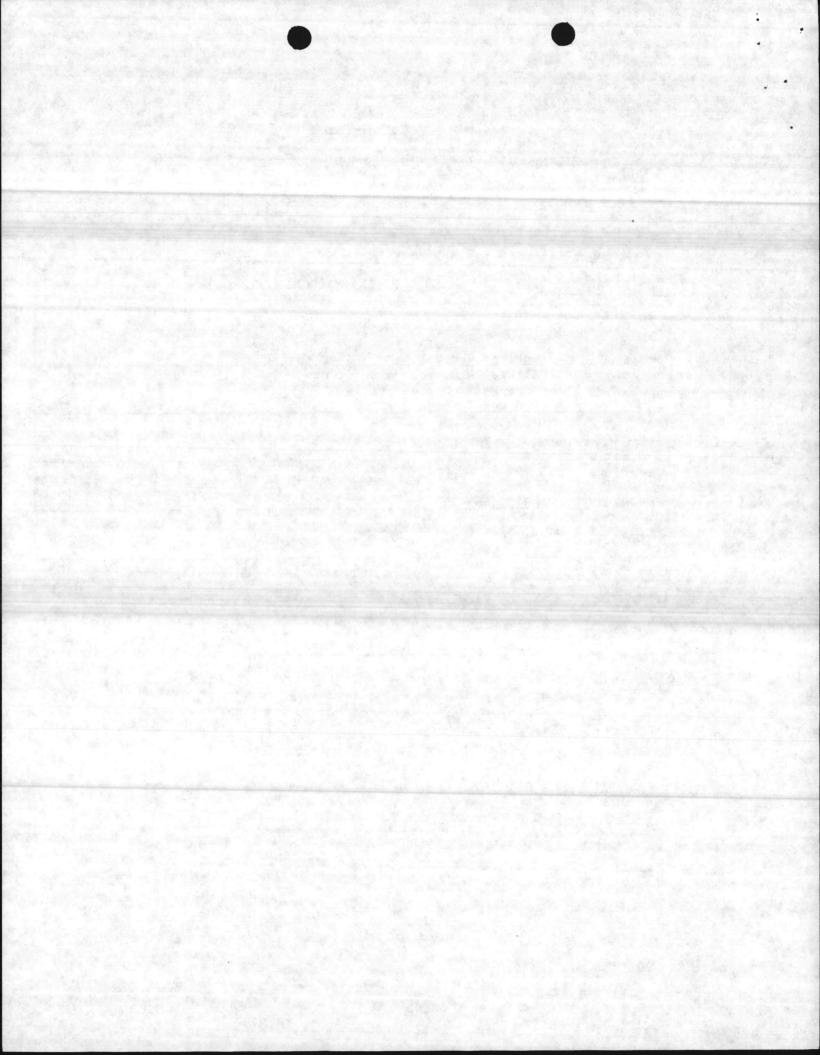
LABORATORY:	Quality Control Laboratory, Environmental Section
STREET:	Natural Resources & Environmental Affairs Branch Base Maintenance Division MCB Camp Lejeune, Bldg 65
CITY:	Camp Lejeune STATE: North Carolina 28542
TELEPHONE NUMBER:	(919) 451-5977
SURVEY BY:	E. D. Beesley
AFFILIATION:	North Carolina Division of Health Services
DATE:	September 28, 1982

CODES FOR MARKING ON-SITE EVALUATION FORMS:

S - Satisfactory
X - Unsatisfactory

NA - Not Applicable

DHS FORM 2907 Revised (8/80) Laboratory



PERSONNEL

POSITION/	NAME	1.50	ACADEMI	C TRAINI	NG	TESTING	EXPERIENCE
TITLE	NAME	HS	BA/BS	MA/MS	PH.D	METHOD(S)	(YEARS/AREA)
LABORATORY DIRECTOR Supervisory Chemist	Elizabeth A. Betz	X	BS Chem	1.	The state of the s	MF & MPN	3 years
and the set of the set	Hoy Burns	x	1 year*	$ \begin{array}{c} x & y y x \left(\begin{array}{c} x & y \\ x & y \\ \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ y \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}{c} x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}(x \\ x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}(x \\ x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}(x \\ x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}(x \\ x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}(x \\ x \\ z \end{array} \right) \\ & \sum_{i=1}^{N} \frac{1}{2} \left(\begin{array}(x \\ x \\ z \end{array} \right) \\ & \sum_{i=1}^{N$	1	MF & MPN	6 years
a site and a site and a second	Bob Lachapelle	x	1 year*			MF	1 year
	Gaines Honeycutt	x	AAS***			MF	1 year
TECHNICIAN/ ANALYST	Gerald Monahan	x	BS Env.	Studies		MF	l year
and the second s	tari, skit i 300⊺ski	0.00	123	13 1913 13 1914 - S			

* 14 months Navy Clinical Lab School. Reg. Med. Tech. ** 14 months " " " Lab supervisor 4 years *** 6 years NC Dept. of Natural Resources

LABORATORY FACILITIES

Space in laboratory and preparation room is adequate for needs during peak work periods (200 ft² and 6 linear ft. of usable bench space per analyst).

Facilities are clean, with adequate lighting (100 ft-candles) and air conditioning.

Satisfactory

-2-

LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS

1. pH Meter

3.

Manufacturer	Corning Orion	Model	M10 701
	to 0.1 pH units each use perio		
Aliquot of standar	d pH 7.0 buffer used only once		s

1013

S

"这些国际自己的资源"

2. Balance-Top Loader or Pan

Manufacturer	Ohaus	Model	Harvard Trip
Clean. Detects a preparation o	50-mg weight accuratel f > 2-g quantities)	ly (for a general medi	.a
	ts in clean condition.	수가가 많은 것 같은 것은 것 같은 것이 같이 있는 것이 같이 같이 있는 것이 같은 것이 가지 않는 것이 같은 것이 같은 것이 같은 것이 같은 것이 같은 것이 없다.	<u>s</u>
Glass thermometers	0.1 ⁰ C Trac. Therm., M calibrated annually a lent accuracy; metal	against a certified th	ermometer or
	8		

4. Incubator or Incubator Room

No separation in liquid column......

- Aller Aller - Aller - Frank - The

Manufacturer	Precision	ModelM2
Sufficient size for	daily work load	
Thermometer graduat and located on	ed in 0.5°C increments with shelves in use	bulb immersed in liquid
		11 areas used (35.0° ± 0.5°C) S
Temperature recorde	d daily or recording thermo	meter sensitive to ± 0.5°C S

5. Autoclave

Manufacturer	Market Forge	Model	Sterilmatic	
Reaches sterilization cycle	tion temperature (121°C), e, and requires no more th	maintains 121 ⁰ C du an 45 min for a co	uring steril- omplete cycle	S
Pressure and tempo valve	erature gauges on exhaust	side and an operation	ting safety	s
	oduced in fermentation via			
	on time and temperature f			
Max.Reg.	<u>121.3</u> (NCDHS) -3-			S

6. Hot-Air Oven

7.

8.

Manufacturer NA	Model
Operates at a minimum of 170°C	
Thermometer inserted or oven equipped with tem thermometer device	perature-recording
Time and temperature record maintained for eac	h sterilization cycle
Thermometer bulb in sand (optional)	
Refrigerator	
Temperature maintained at 1° to 5.0°C (34° to	40°F)
and a start of the	STISSES SHE SHE SHE STAD
Inoculation Equipment	C. C. With a Altoret
Sterilized loops of at least 3-mm diameter, 22 Chromel, or platinum-iridium wire	to 24 gauge Nichrome,
Disposable, dry heat-sterilized, hardwood appl presterilized loops	icator sticks or

9. Optical Equipment

Low power magnification device (preferably binocular microscope with 10 to 15X) with fluorescent light source for counting MF colonies......<u>S</u> Colonies counted with a mechanical hand tally (optional)

10. Membrane Filtration Equipment

Manufacturer	Millipore	Model	1. Y (1994)
Made of stainless a	teel, glass, or autoclay	vable plastic	s
Nonleaking and unco	orroded		S

11. Membrane Filters and Pads

Manufacturer	Millipore	Туре	HAWG	
Filters recommended by	manufacturer for wat	er analyses		S
Filters and pads prest				
Lot numbers and dates				

				•
12.	. Glass, Plastic, and Metal Utensils for Media Prep	paration		
	SP Automatic Washer Det		LIVE FAR JOK .	1.
******	Washing process provides glassware free of toxic by the inhibitory residue test and results r	ecorded		. <u>_</u> S
	Glass items of borosilicate, free of chips and cr	acks	•12•1•1••••••••	S
	Utensils clean and free from foreign residues or	dried mediu	m	S
	Plastic items clear with visible graduations		*********	S
	orra mannessed for back division of a manness or a			
13.	. Sample Bottles	abar anya	7379,29473405	
	Wide-mouth hard glass bottles; stoppered or plast at least 120 ml	ic <u>screw-ca</u>	pped; capacity	s
1 (1) 1 (1) 1 (1)	Glass-stoppered bottles with tops covered with all paper	uminum foil	or kraft	N
	Screw-caps have leakproof nontoxic liners that can sterilization (30 min at 121°C)	n withstand	repeated	
	Sterility of each batch of sample bottles checked			
	A A A A A A A A A A A A A A A A A A A	and the second	A particular and a set of	_ <u></u>
4.	Pipets			
	BrandFalcon	Туре	TD	
	Sterile; glass or plastic; with a 2.5 percent tole	erance		s
	Tips unbroken; graduations distinctly marked			
		1999 - 1992 - 1995 -	Construction and the second second	
5.				
	Aluminum or stainless stool			
	Aluminum or stainless steel Pipets wrapped in quality kraft paper (char-resist		••••••	N
			••••••	S
	Open packs of disposable sterile pipets resealed t	between use	8	<u></u> S
6.		Felsivo la colta. Sourrico d'éso		
	Brand Pyrex Millipore	Туре	100 X 15 49 X 9	•
	Sterile plastic or glass	19 han santa	ia.) september ()	s
	Open packs of disposable sterile plastic dishes re			S
	Dishes are in containers of aluminum or stainless-			
	are wrapped with heavy aluminum foil or char-	resistant p	paper	S

state

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17. Culture Tubes and Closures

Sufficient size to contain medium and sample without danger of spillage	S
Metal or plastic caps; plastic plugs	S
Borosilicate glass or other corrosion-resistant glass	S

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18. Maintenance

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Service contracts or approved <u>internal protocol</u> maintained on balance, autoclave, water still, etc.; service records entered in a log book.....

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GENERAL LABORATORY PRACTICES

1. Sterilization Procedures

2.

Timing for sterilization begins when autoclave reaches 121°C	
Tube broth media and reagents sterilized at 121°C 12 to 15 min	5
Tubes and flasks packed loosely in baskets or racks for uniform heating and cooling	
Total exposure of MPN media to heat not owner (5 -in	
Dilution water blanks autoclaved at 121°C for 30 min	S
ME prostovilized on outsel . 10100 -	S
MF presterilized or autoclaved at 121°C for 10 min fast exhaust	S
MF assemblies and empty sample bottles sterilized at 121°C for 30 min	S
MF assemblies sterilized between sample filtration series	S
Rinse water volumes of 500 to 1,000 ml sterilized at 121°C for 45 min	S
Wire loops, needles, and forceps sterilized	c
Individual glassware items autoclaved at 121°C for 30 min	S
Individual dry glassware items sterilized 2 hours at 170°C (dry heat)	NA
Pipets, culture dishes, and applicator sticks in boxes sterilized at 170°C for 2 hours	
MPN media removed and cooled as soon as possible after sterilization and stored in cool dark place (optional)	NA
UV light or boiling water for at least 2 min may be used on membrane filter assemblies to reduce bacterial carry-over between each filtration (optional)	
Heat-sensitive tapes and/or strips/ampoules used during sterilization (optional)	
Laboratory Pure Water	
Only Johanstein	
Only laboratory pure water, used in preparing media, reagents, rinse water, and dilution water	
Laboratory pure water not in contact with heavy metals	<u> </u>
사람들이 잘 잘 못했는 것 같은 것을 깨끗한 것이 같아요. 그는 것 같아요. 이가 많은 것을 것을 가 많아요. 것을 가지 않는 것을 가 많다. 것을 가 많다.	<u>_S_</u>
Source: Laboratory-prepared Purchased	and a start
If laboratory-prepared: Still Manufacturer Corning Megapure 61.	
Deionizer Manufacturer Corning High Cap	
Record of recharge frequency	S. Hay
Production rate and quality adequate for laboratory needs	s

Culton white the internet

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Inspected, repaired, cleaned by service contract or in-house service...... S

-7-

Chemical Quality Control

a.

Den 1 Contra				
Record of satisfactory annu	al analyses for tr	ace metals		
A single metal not greater	ater than 0.05 mg/	1		
Total metals: equal to	or less than 1.0	mg/1		Revelation and the second
Testing laboratory	the second and the second		e	
Record of monthly analyses	of laboratory pure	water		
Conductance: >0.2 megol	hm resistivity or -	<5.0 microh	mos/cm	S
pH: 5.5 - 7.5				<u> </u>
Standard plate count:	10,000/ml			 e
Free chlorine residual	<pre> .0.0 <0.1 </pre>			<u>S</u>
b. Microbiological Quality Cont	trol			
Test for bactericidal proper performed at least annu	rties of distilled ually	water (0.8	- 3.0)	
Testing laboratory	Pet 101 01 11	Date	Ratio	
Rinse and Dilution Water	nanja na mbusi sh		al dis 12. C.	
Stock buffer solution prepared ac	cording to "Stand:	ard Methods	15th ", 13th	
edition	••••••	•••••	•••••	S
Stock buffer solution adjusted to) pH 7.2	.0	••••••	S
Stock buffer autoclaved at 121°C, or filter sterilized	, stored at 1 ⁰ to 4	-4°C (34°	to 40°F)	
Stock buffer labeled and dated				<u></u>
Stock potassium phosphate buffer	solution (1.25 ml)) added per	liter	<u>_s_</u>

distilled water for rinse and dilution water.....

4. Media

Dehydrated media bottles kept tightly closed and protected from dust

	Media stored at low temperatures are incubated overnight prior to use and tubes with air bubbles discarded	· ·	ALC: NO
	Media protected from sunlight	S	
	MF media stored in refrigerator; <u>broth media</u> used within 96 hours, agar within two weeks if prepared in tight-fitting dishes Ampouled media stored at 1° to 4.4°C and time limited to manufacturer's	S	
-	expiration date	S	1.10

5. Quality Control of Media and Reagents

Satisfactory records containing complete quality control checks on	
media available for inspection	S
Laboratory chemicals of Analytical Reagent Grade	S
Dyes certified for bacteriological use	NA
pH checked and recorded on each batch of medium after preparation and after sterilization	S
Causes for deviations beyond ± 0.2 pH units specified	S
Media ordered on a basis of 12-month need; purchases in ½ 1b. quantities, except those used in large amounts (optional)	
Bottles dated on receipt and when opened (optional)	
Opened bottles of routinely used media discarded within 6 months (if stored in desiccator storage may be extended) (optional)	
Shelf life of unopened bottles not in excess of 2 years (optional)	
New lots of media quality tested against satisfactory lot using natural water samples (optional)	

6. Lauryl Tryptose Broth

Manufacturer	Difco	Lot No.	703562 2/87
Single strength	composition, 35.6g per	liter pure water	
Single strength	pH 6.8 ± 0.2; double	strength pH 6.7 ± 0.2	<u>s</u>
Not less than 10) ml per tube		<u>s</u>
		h after addition of samp	

1

7. Brilliant Green Lactose Bile Broth

Manufacturer _	Difco	Lot No.	686824 10/86
Medium composi	tion 40g per liter pure water		<u>s</u>
Final pH 7.2 ±	0.2		<u>s</u>

M-Endo Media

8.

Manufacturer Difco	Lot No.	702638	
Medium composition 48.0g per liter pure water; o agar added/1	optionally 1	5g	S
Reconstituted in laboratory pure water containing (not denatured)	2 percent e	thanol	
Final pH 7.2 ± 0.2			S
Medium held in boiling water bath until completely			

9. Standard Plate Count Agar

Manufacturer	Difco	Lot No.	677117	
Correct comp	osition, sterile and pH 7.0 \pm 0.	2		s
Sterile medi	um not remelted a second time af	ter sterilization.	••••••	S
Culture dish	es incubated 48 hours at $35^{\circ} \pm 0$.5°C		S
No more than	1.0 ml or less than 0.1 ml samp	le plated (sample	or dilution).	S
Liquefied ag	ar, 10 ml or more; medium temper	ature between 44°	to 46°C	S
Melted mediu	m stored no longer than 3 hours	before use	•••••	S
Only plates	with between 30 to 300 colonies ed sample is plated, colony dens	counted: when 1 ml	of	
Only two sig	nificant figures recorded and ca	lculated as standa	rd	1.5.9
plate c	ount/ml	• • • • • • • • • • • • • • • • • • • •		<u> </u>

10. Levine's Eosin Methylent Blue Agar (EMB)

Manufacturer	Difco	Lot No.	70/060	· · ·
Medium composition	37.5g per liter			s
Final pH 7.1 ± 0.2	2		-	S

MET	HODOLOGY	
Meth	14th, 15th hodology specified in "Standard Methods" 13th edition, or EPA manual	S
M-Er	ndo broth, M-Endo agar, or Les Endo agar used in a single step procedure	S
In t	<pre>two-step Les M-Endo procedure, MF incubated on lauryl tryptose broth saturated absorbent pad for 1.5 to 2 hours at 3.5° ± 0.5°C; then on M-Endo broth at Les Endo agar for 20 to 22 hours at 35° ± 0.5°C</pre>	NA
1.	Total Coliform Membrane Filter Procedure	
inana i	Samples containing excessive bacterial populations (greater than 200), confluency, or turbidity retested by the MPN procedure	S
	Filtration assembly sterile at start of each series	S
	Absorbent pads saturated with medium, excess discarded; or 4.0 ml of agar medium can be used per culture dish instead of a pad	S
	Sample shaken vigorously immediately before test	and the second se
·····	Test sample portions measured and not less than 100 ml	S
	Funnel rinsed at least twice with 20- to 30-ml portions of sterile buffered water	S
	MF removed with sterile forceps, grasping outside effective filtering area	S
ter a star	MF rolled onto medium pad or agar so air bubbles are not trapped	S
	A start and finish MF control test (rinse water, medium and supplies) run with each filtration series and results recorded	
	When controls indicate contamination occurred, all data on affected samples rejected and resampling requested	S
	a. Incubation of Membrane Filter Cultures	
	Total incubation time 22 to 24 hours at $35^{\circ} \pm 0.5^{\circ}C$	S
	Incubated in tight-fitting culture dishes or loose-fitting dishes incubated in high relative humidity chambers	<u> </u>
	b. Membrane Filter Colony Counting	
	Samples repeated when coliforms are "TNTC" or colony growth is confluent, possibly obscuring coliform development and/or	
	detection	S
	가슴, 방법은 것, 다 방법에서 동네, Yeak, Nation, Charles, Charles, Children, Children, Charles, March, Charles, Children, Childr	S
	Samples containing five or more coliforms per 100 ml are resampled and tested	c
	Low power magnification device with fluorescent light positioned	<u> </u>
	for maximum sheen visibility	S

-

c. Verification of Total Coliform Colonies

All typical coliform (sheen) colonies or at least five randomly selected sheen colonies from each positive sample verified in lauryl tryptose broth and BGLB	S
Counts adjusted based on verification	c
All atypical coliform (borderline sheen) colonies or at least five randomly-selected colonies verified in LTB and BGLB	1.
Counts adjusted based on verification	<u>с</u>
Sheen colonies in mixed confluent growth reported and verified (optional)	

d. MF Field Equipment

Manufacturer

Mode1

Only standard laboratory MF procedures adapted to field application

2. Total Coliform Most Probable Number Procedure

13 744

NA

a. Presumptive Test

Five standard portions, either 10 or 100 ml	0
Sample shaken vigorously immediately before test	<u> </u>
Tubes incubated at $35^{\circ} \pm 0.5^{\circ}$ C for 24 ± 2 hours	<u>s</u>
Examined for gas (any gas bubble indicates positive test)	<u> </u>
Tubes that are gas-positive within 24 hours submitted promptly to confirm test	
Negative tubes returned to incubator and examined for gas within 48 ± 3 hours; positives submitted to confirm test	
Public water supply samples with heavy growth and no gas production confirmed for presence of supressed coliforms	
Adjusted count reported based upon confirmation	<u>e</u>
Adequate test labeling and tube dilution coding (optional)	<u> </u>

b. Confirmed Test

Presumptive positive tube gently shaken or mixed by rotating	s
One loopful or one dip of applicator transferred from presumptive tube to BGLB	
Incubated at 35°C ± 0.5°; checked within 24 hours ± 2 hours for gas production	100
Positive confirmed tube results recorded; negative tubes reincubated and read within 48 ± 3 hours	

Confirmation procedure carried out every 3 months on one sample	Unsatisfactory sample defined as three or more positive confirmed tubes	. 4	•
Low cach problem water Supply			

Completed Test

C.

Applied to 10 percent of all positive samples each quarter S Positive confirmed tubes streaked on EMB plates for colony isolation S Plates adequately streaked to obtain discrete colonies S Typical nucleated colonies, with or without sheen on EMB plates selected for completed test identification If typical colonies absent, atypical colonies selected for completed test identification If no colonies or only colorless colonies appear, confirmed test for that particular tube considered negative An isolated typical colony or two atypical colonies transferred to lauryl tryptose broth..... Incubated at 35° ± 0.5°C; checked for gas within 48 ± 3 hours..... Cultures producing gas in lauryl tryptose broth within 48 ± 3 hours are considered coliforms

3. Analytical Quality Control

re	cord of analytical quality control tests available for review S
	Duplicate analyses
	Duplicate analyses run on positive polluted samples not to exceed 10 percent but a minimum of one per month (optional)
	Positive Control Samples
	One positive control sample (polluted water) run each month (optional)
	Colony Counting (If more than one Analyst in Laboratory)
	Two or more analysts count sheen colonies; all colonies are verified analysts' counts compared to verified counts; procedure is carried out at least once per month (optional)

Check Analyses by State Laboratories.

A minimum of samples proportional to the local laboratory work load processed by State Laboratory (see criteria for recommendations) (optional)

5. Sample Receipt in Laboratory

Sample logged in when received in laboratory, including date and time	
of arrival and analysis	S
Chain-of-custody procedures required by State regulations followed	S
A second s	1.2.11.2

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DATA REPORTING

Sample information and laboratory data fully recorded	S
Direct MF counts and/or confirmed MPN results reported promptly	S
After MF verification and/or MPN completion, adjusted counts reported	S.
One copy of report form retained in laboratory or by State program for 3 years	q

Test results assembled and available for inspection (optional)

ACTION RESPONSE TO LABORATORY RESULTS

Unsatisfactory test results given action response and resampled as defined in National Interim Primary Drinking Water Regulations	
State and responsible local authority notified within 48 hours after check samples confirm coliform occurrence	
All data reported to State and local authorities within 40 days	

QUALITY CONTROL PRACTICES

An outline of the quality control efforts of the laboratory available for review.....

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that is explored in South

SAMPLE COLLECTION, HANDLING, AND PRESERVATION

Representative samples of potable water distribution system	S
Minimal sampling frequency as specified in the National Interim Primary Drinking Water Regulations	S
Sample collector trained and approved as required by State regulatory authority or its delegated representative	S

1. Sample Bottles

Sodium thiosulfate, (10 mg per 100 ml.) added to sample bottle before sterilization	-
Ample air space remains after sample collected to allow for adequate	
mixing	•• <u>s</u>

0.20

2. Sampling

Sample collected after maintaining a steady flow for 2 to 3 min to clear service line	S
Tap free of aerator, strainer, hose attachment, water purification, or other devices	S
Samples refrigerated when possible during transit and storage periods in the laboratory (optional)	

3. Sample Identification

Sample identified immediately after collection	S
Identification includes, water source, location, time and date of collection, and collector's name; insufficiently identified	
samples discarded	S
Chlorine residual where applicable	S

4. Sample Transit Time

Transit time for potable water samples sent by mail or commercial	
transportation, not in excess of 30 hours	NA
No sample processed after 48-hour transit/storage	NA
Samples delivered to laboratory by collectors examined the day of collection	s
Data marked as questionable on samples analyzed after 30 hours	



Ronald H. Levine, M.D., M.P.H. STATE HEALTH DIRECTOR

DIVISION OF HEALTH SERVICES STATE LABORATORY OF PUBLIC HEALTH 306 N. Wilmington St. P.O. Box 28047 Raleigh, N.C. 27611-8047

October 18, 1982

Commanding General U. S. Marine Corps Base Camp Lejeune, North Carolina 28542

Dear Sir:

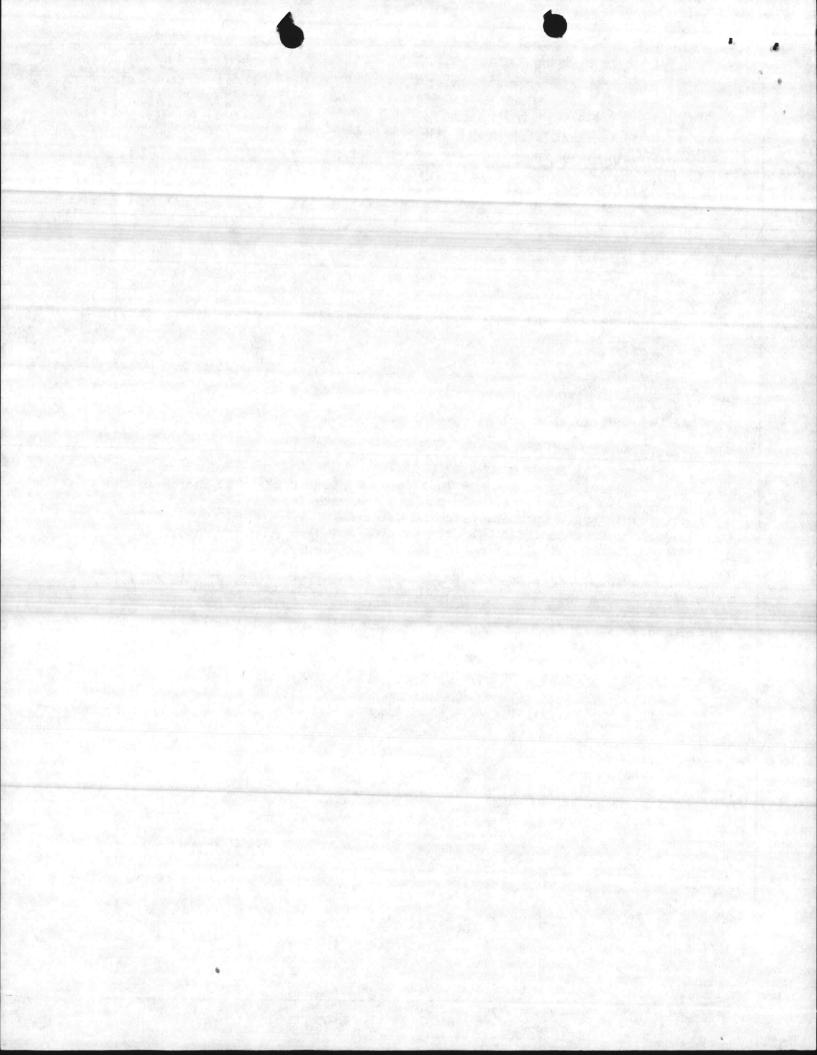
The findings of the on-site evaluation on September 28, 1982 indicates that your laboratory has met the minimum requirements for certification as specified in North Carolina Drinking Water Regulations (IONCAC 9D .0301 -.0330). We therfore grant Interim Certification to your laboratory for total coliform analysis on public water supplies.

If you have any questions or if we may be of further assistance in this matter, please let us know.

Sincerely,

E. D. Beesley O Laboratory Certification Evaluator

EDB/leh Enclosure



North Carolina Department of Human Resources Division of Health Serdices



Interim Certification for the analysis of drinking water

has been granted to

CAMP LEJEUNE QUALITY CONTROL LABORATORY

for the following parameters

Coliform Bacteria - by Membrane Filter Procedure Coliform Bacteria - by Most Probable Number Procedure

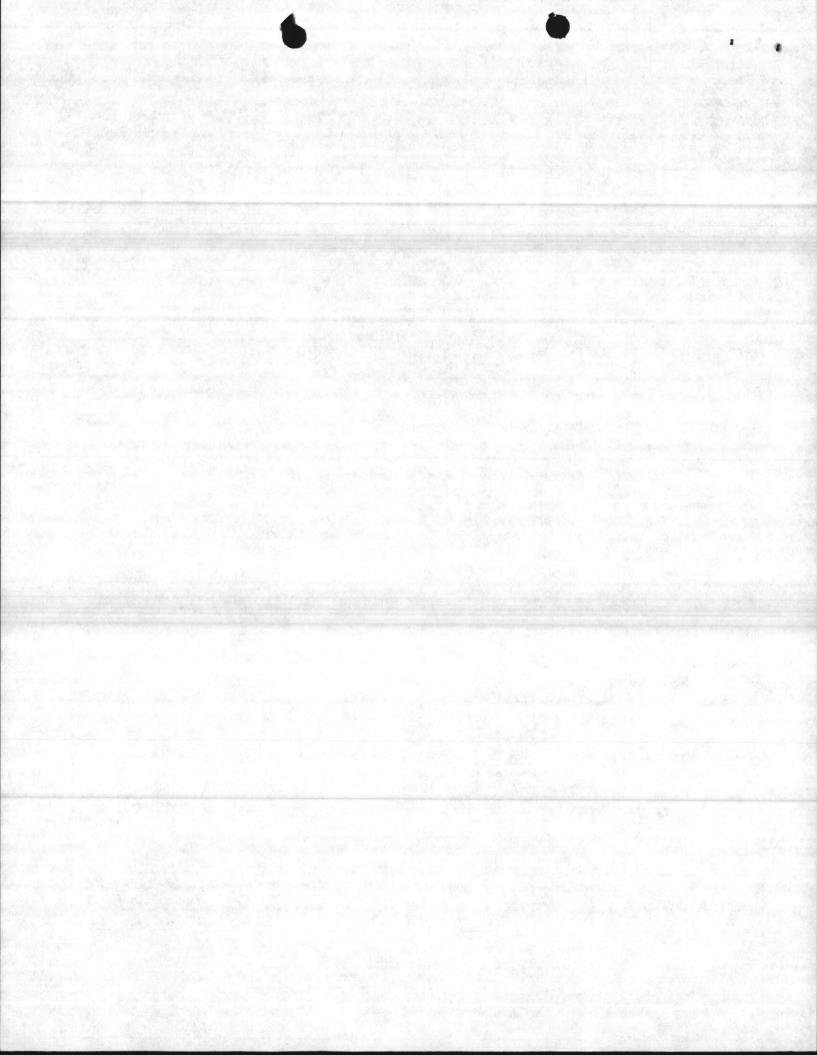
September 1984 Expiration Date

Laboratory Number

Mildred Kerbaugh Chief, State Laboratory of Public Health

- D. Benlu Certification Officer

te Health Director



REPORT OF AN ON-SITE EVALUATION

USMCB-CAMP LEJEUNE

QUALITY CONTROL LABORATORY

BACTERIOLOGY LABORATORY

ENVIRONMENTAL SECTION, NATURAL RESOURCES & ENVIRONMENTAL AFFAIRS BRANCH

BASE MAINTENANCE DIVISION, BUILDING 65

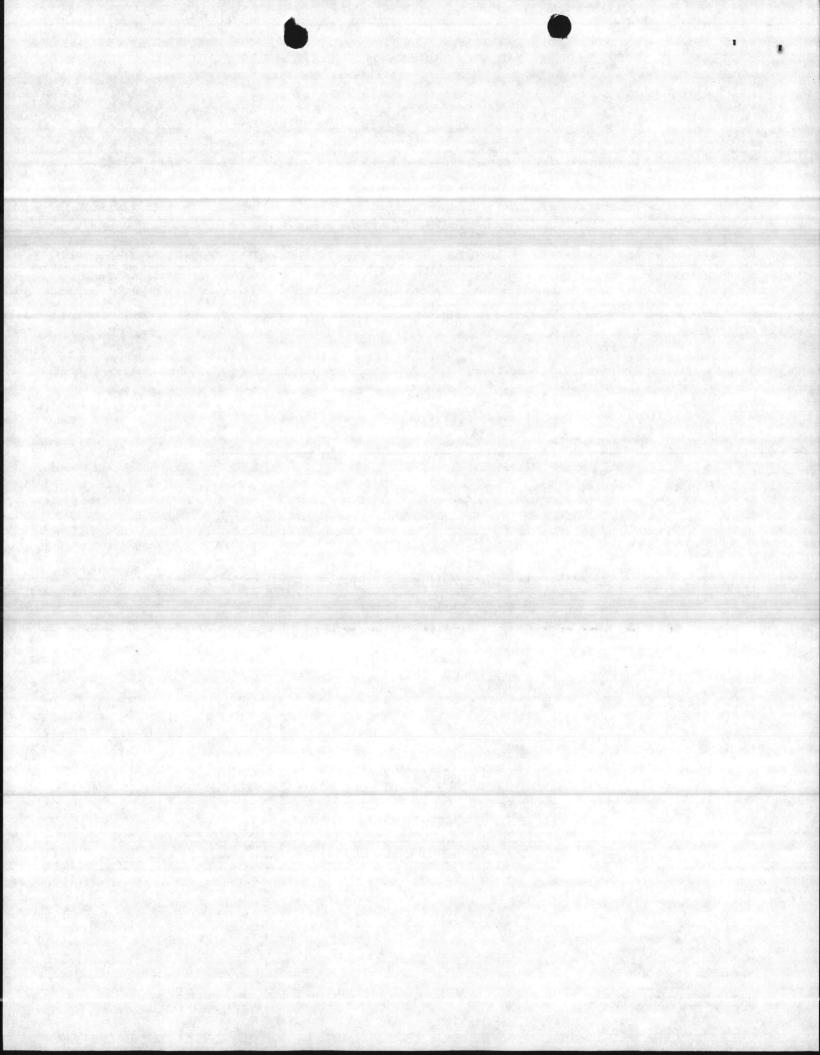
CAMP LEJEUNE, NORTH CAROLINA 28542

SEPTEMBER 28, 1982

BY:

E. D. BEESLEY LABORATORY CERTIFICATION EVALUATOR ENVIRONMENTAL SCIENCES BRANCH

LABORATORY SECTION NORTH CAROLINA DIVISION OF HEALTH SERVICES NORTH WILMINGTON STREET RALEIGH, NORTH CAROLINA 27611



USMCB-Camp Lejeune Quality Control Lab. Camp Lejeune, N. C. September 28, 1982 Page 2

I. INTRODUCTION

The equipment and procedures employed in the bacteriological analyses of water by this laboratory conformed with the provisions of the North Carolina Safe Drinking Water Regulations, except for the items indicated.

II. DEVIATIONS AND RECOMMENDATIONS

No deviations

III. REMARKS

The NBS traceable thermometer should be replaced with one calibrated in 0.1 C divisions.

A maximum registering thermometer must be obtained for checking autoclave function.

IV. LIST OF PERSONNEL

NAME

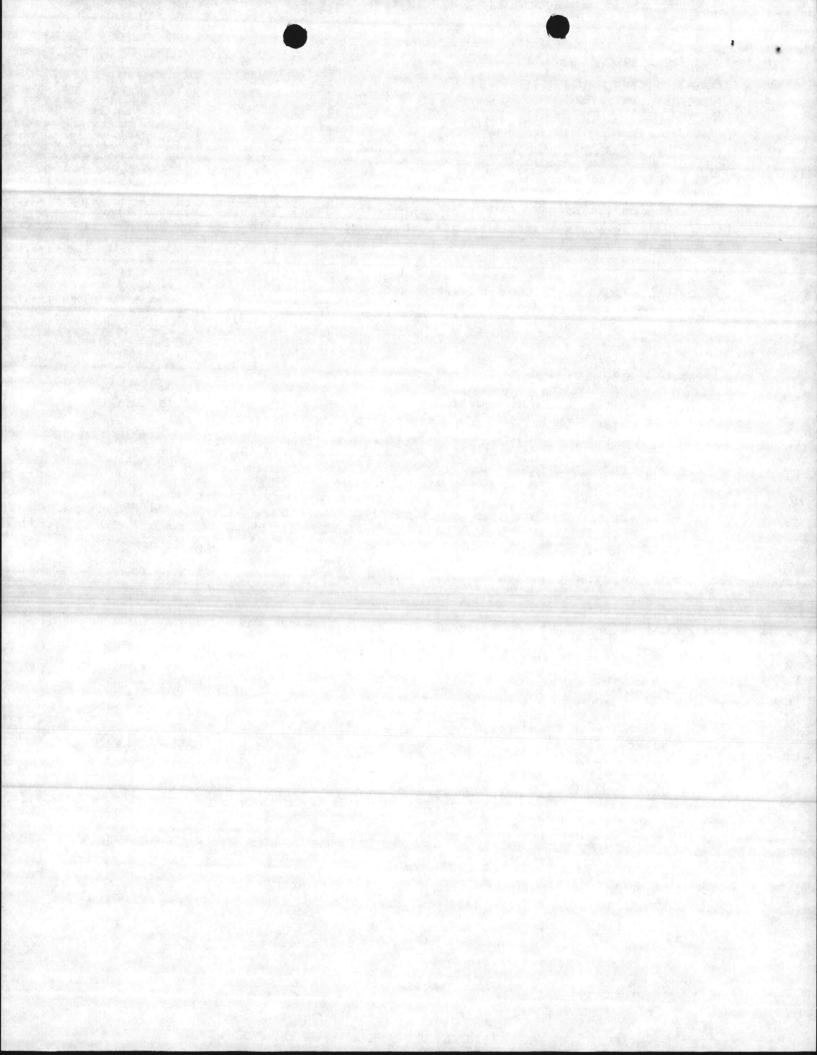
EOSITION

IEST_NORMALLY_PEREORMED

Elizabeth A. Betz	Supervisory Chemist	MF & MPN
Hoy Burns	Technician/Analyst	MF & MPN
Bob Lachapelle	Technician/Analyst	MF
Gaines Honeycutt	Technician/Analyst	MF
Gerald Monahan	Technician/Analyst	MF

V. CONCLUSION

The procedures and equipment in use at the time of this survey were in general compliance with the provisions of the North Carolina Drinking Water Regulations (10NCAC 9D .0301 - .0330). We recommend that the analytical data be accepted for MF and MFN Coliform analysis of drinking waters under the North Carolina Safe Drinking Water Act.



STATE LABORATORY OF PUBLIC HEALTH DIVISION OF HEALTH SERVICES NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES P. O. BOX 28047, 306 NORTH WILMINGTON STREET, RALEIGH, N. C. 27611

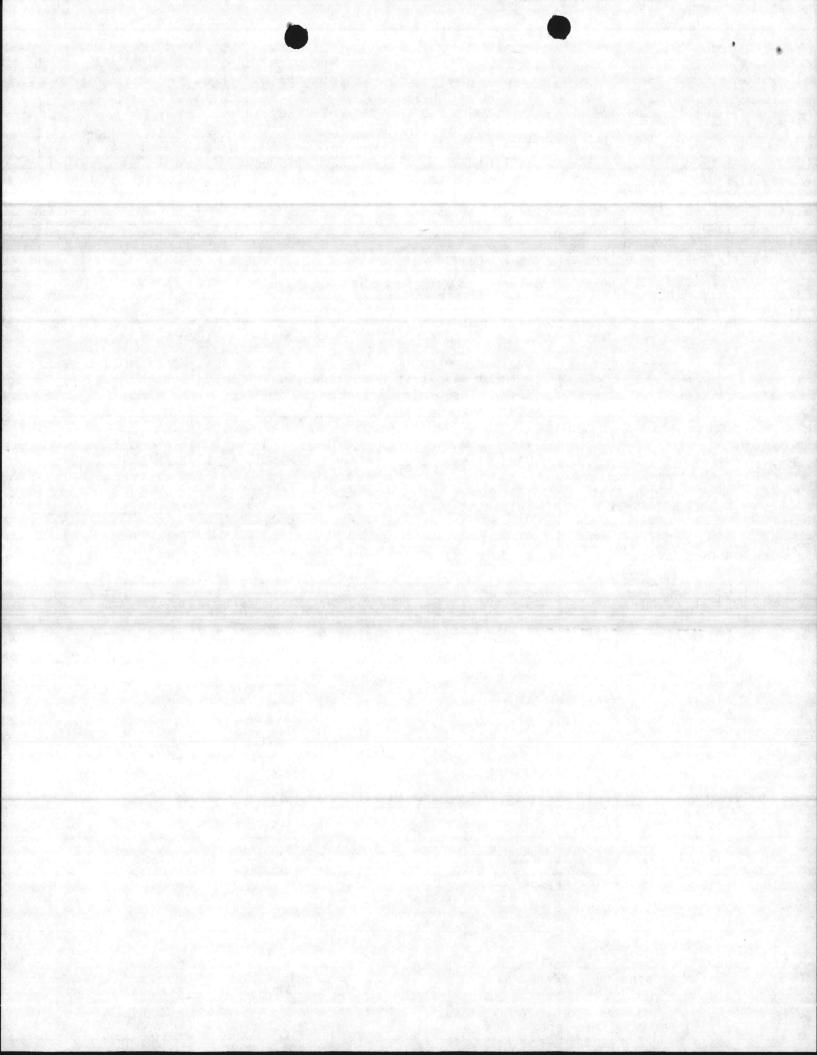
FORMS FOR ON-SITE EVALUATION OF LABORATORIES INVOLVED IN ANALYSIS OF PUBLIC WATER SUPPLIES-MICROBIOLOGY

LABORATORY :	Quality Control	Laboratory	Environmental S	ection	
	Natural Resources & Environmental Affairs Branch Base Maintenance Division				
STREET:	MCB Camp Leieune	e, Bldg 65		ana ana amin'ny solatan'ny solatan'ny solatan'ny solatan'ny solatan'ny solatan'ny solatan'ny solatan'ny solata	an a
CITY:	Camp Lejeune	STATE:	North Carolina	28542	Independent des set de la company
TELEPHONE NUMBER:	(919) 451-5977				
SURVEY BY:	E. D. Beesley				
AFFILIATION:	North Carolina	Division of	Health Services		
DATE:	September 28, 19	982			
and the second	and the second second			and the second second	Na tshrak

CODES FOR MARKING ON-SITE EVALUATION FORMS:

- S Satisfactory
- X Unsatisfactory
- NA Not Applicable

DHS FORM 2907 Revised (8/80) Laboratory



PERSONNEL

POSITION/	VANCE	ACADEMIC TRAINING				TESTING	- EXPERIENCE	
TITLE	NAME		BA/BS	MA/MS/	PH.D	METHOD(S)	(YEARS/AREA)	
LABORATORY DIRECTOR Supervisory	Elizabeth A. Betz	X	BS Chem			MF & MPN	3 years	
	Hoy Burns Bob Lachapelle Gaines Honeycutt	x x x	1. year* 1 year* AAS***			MF & MPN MF MF	6 years 1 year 1 year	
TECHNICIAN/ ANALYST	Gerald Monahan	X	BS Env.	Studies		MF	l year	

* 14 months Navy Clinical Lab School. Reg. Med. Tech. ** 14 months " " " Lab supervisor 4 years *** 6 years NC Dept. of Natural Resources

LABORATORY FACILITIES

*

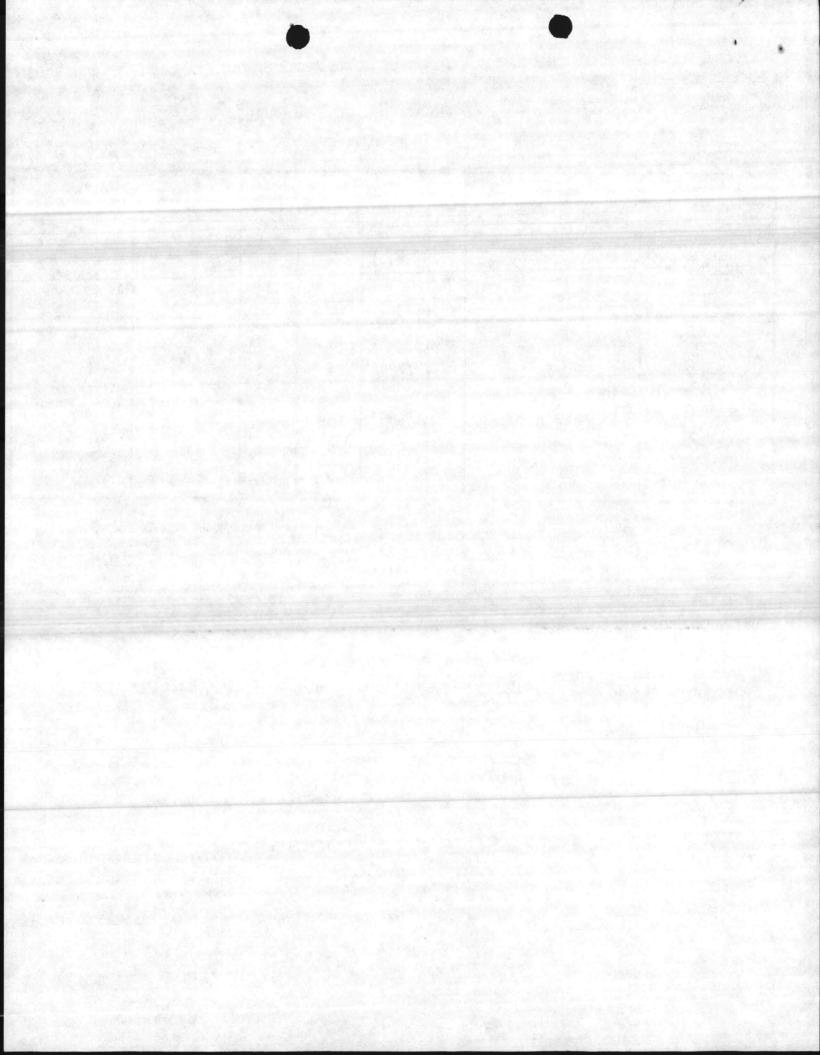
Space in laboratory and preparation room is adequate for needs during peak work periods (200 ft² and 6 linear ft. of usable bench space per analyst).

14 8 A. 897 27

Facilities are clean, with adequate lighting (100 ft-candles) and air conditioning.

Satisfactory

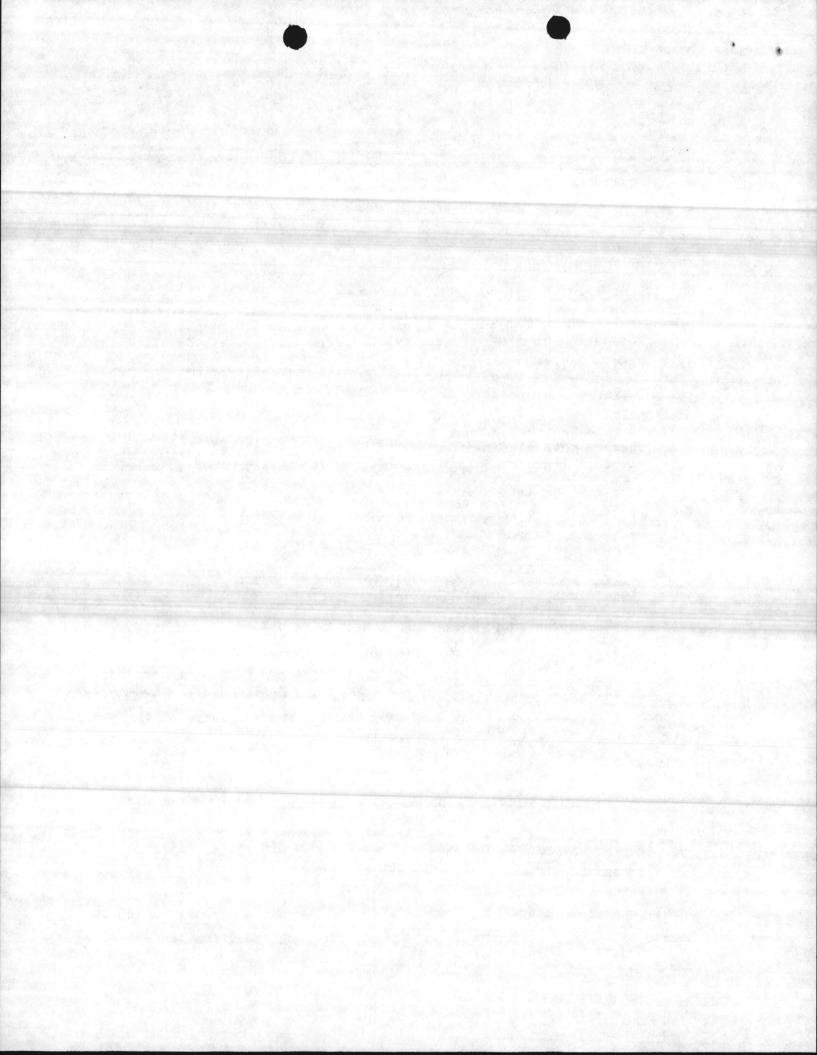
That is a fair and to go .



LABORATORY EQUIPMENT, SUPPLIES, AND MATERIALS

1.	nH	M	eter
1.		m	ener

	Manufacturer			M10 701	
	Clean, calibrated to 0.1	l pH units each use period;	record	maintained	C
	Aliquot of standard pH 7	.0 buffer used only once			S
2.	Balance-Top Loader or Po				
	the second s	Dhaus	Model	Harvard Trip	
		weight accurately (for a g			S
	Good quality weights in	clean condition		**************	S
		last in the second second			
3.	Rec. 0.1°C Glass thermometers calib	Trac. Therm., Max Reg. prated annually against a c	ertified	thermometer or	
		accuracy; metal thermomete			S
	Legible graduations		Constanting of		CONTRACTOR OF COMPANY
	No separation in liquid	column			<u> </u>
4.	Incubator or Incubator H	Room		Tirkaring S	
	ManufacturerP	recision	_ Model _	M2	
	Sufficient size for dail	y work load			S
	Thermometer graduated in	0.5°C increments with bul ves in use	b immerse	d in liquid	s
		tained on shelves in all a			
•		ly or recording thermomete		and the second	S
5.	Autoclave				
	ManufacturerM	arket Forge	_ Model _	Sterilmatic	
	Reaches sterilization te ization cycle, and	mperature (121°C), maintai requires no more than 45 m	ns 121 ⁰ C in for a	during steril- complete cycle	S
		gauges on exhaust side an			S
	No air bubbles produced	in fermentation vials duri	ng depres	surization	S
		e and temperature for each			Barrist Brook Intern
	Max.Reg.	121.3 (NCDHS) -3-			S



Hot-Air Oven

6.

	Manufacturer Model
	Operates at a minimum of 170°C
	Thermometer inserted or oven equipped with temperature-recording thermometer device
	Time and temperature record maintained for each sterilization cycle
	Thermometer bulb in sand (optional)
7.	Refrigerator
	Temperature maintained at 1° to 4.4°C (34° to 40°F)

2. 11:33-40

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C

8. Inoculation Equipment

Sterilized loops of at least 3-mm diameter, 22 to 24 gauge Nichrome, Chromel, or platinum-iridium wire.....

Disposable, dry heat-sterilized, hardwood applicator sticks or presterilized loops.....

9: Optical Equipment

Low power magnification device (preferably binocular microscope with 10 to 15X) with fluorescent light source for counting MF colonies.....

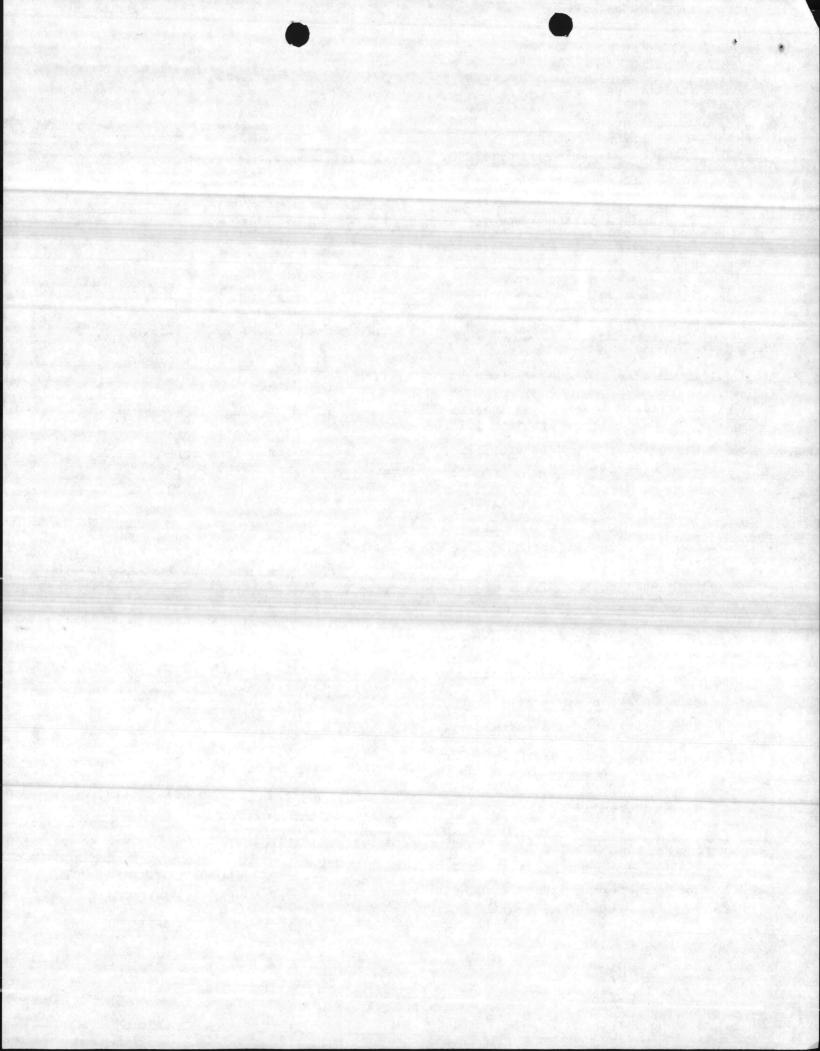
Colonies counted with a mechanical hand tally (optional)

10. Membrane Filtration Equipment

Manufacturer Millipore M	odel
Made of stainless steel, glass, or autoclavable plast	ics
Nonleaking and uncorroded	•••••• S

11. Membrane Filters and Pads

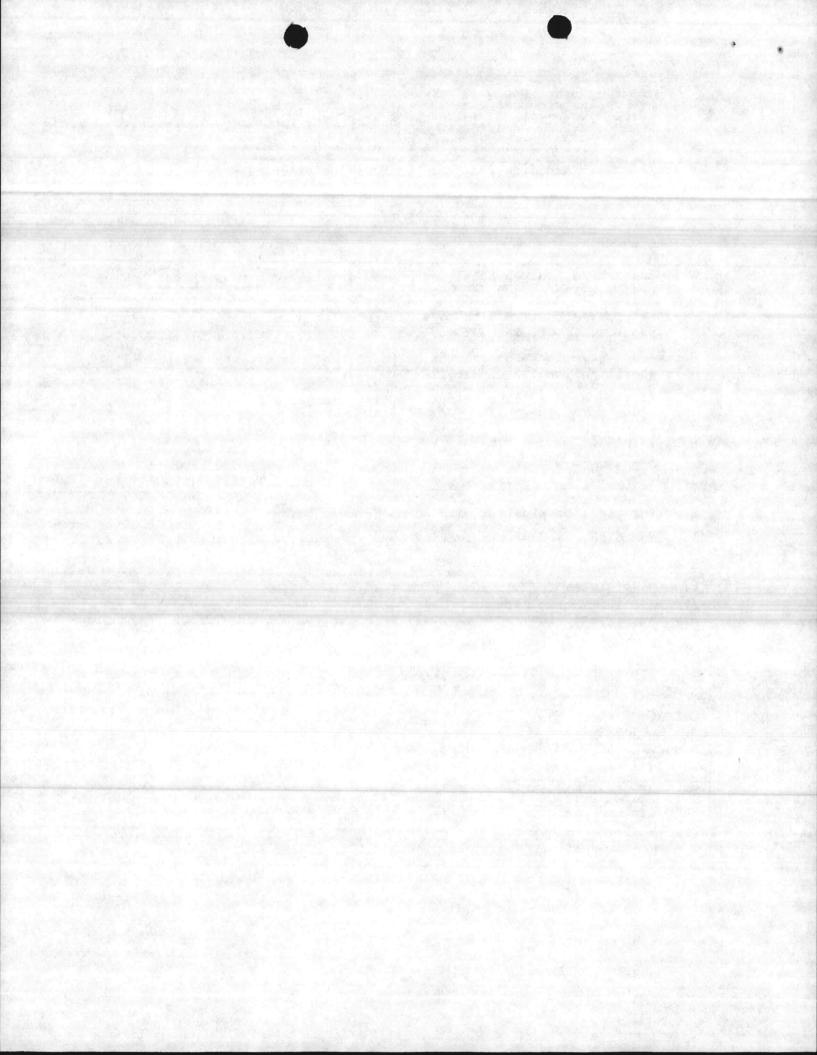
Manufacturer	Millipore	Туре	HAWG	
Filters recommended by	manufacturer for water	analyses		S
Filters and pads prest				
	of receipt of membrane i			



	가 집안 이렇게 잘 하는 것 같아요. 그는 것 같아요. 방법에 가장 감독하는 것이 같아요. 것이 같아요. 같이 같아요. 말 같아요. 말 같아요. 말 다 가 있는 것이 같아요. 그는 것	1.11
12.	Glass, Plastic, and Metal Utensils for Media Preparation	
-	SP Automatic Washer Det. Washing process provides glassware free of toxic residue as demonstrated by the inhibitory residue test and results recorded	S
	Glass items of borosilicate, free of chips and cracks	S
	Utensils clean and free from foreign residues or dried medium	S
	Plastic items clear with visible graduations	Creating and and
	Links and and and the second of second states and and	
13.	Sample Bottles	
	Wide-mouth hard glass bottles; stoppered or plastic screw-capped; capacity at least 120 ml	s
	Glass-stoppered bottles with tops covered with aluminum foil or kraft	NA
	Screw-caps have leakproof nontoxic liners that can withstand repeated sterilization (30 min at 121°C)	S
	Sterility of each batch of sample bottles checked and results recorded	S
-	A second s	
14.	Pipets Brand Falcon Type TD	
	Brand <u>Falcon</u> Type <u>TD</u>	teres and a second second second
	Sterile; glass or plastic; with a 2.5 percent tolerance	<u> </u>
	Tips unbroken; graduations distinctly marked	S
15		
15.	Pipet Containers	
15.	Pipet Containers Aluminum or stainless steel	NA
15.	Aluminum or stainless steel	<u>NA</u>
13.		NA S S
	Aluminum or stainless steel. Pipets wrapped in quality kraft paper (char resistant). Open packs of disposable sterile pipets resealed between uses	<u>NA</u> <u>S</u>
15.	Aluminum or stainless steel. Pipets wrapped in quality kraft paper (char resistant). Open packs of disposable sterile pipets resealed between uses. Culture Dishes Pyrex 100 X 15	<u>NA</u> <u>S</u>
	Aluminum or stainless steel. Pipets wrapped in quality kraft paper (char resistant) . Open packs of <u>disposable sterile pipets</u> resealed between uses. Culture Dishes	<u>NA</u> <u>S</u>
	Aluminum or stainless steel. Pipets wrapped in quality kraft paper (char resistant). Open packs of disposable sterile pipets resealed between uses. Culture Dishes Pyrex 100 X 15	<u>NA</u> <u>S</u> S
	Aluminum or stainless steel. Pipets wrapped in quality kraft paper (char resistent). Open packs of disposable sterile pipets resealed between uses. Culture Dishes Brand Pyrex Millipore Type 49 X 9	S

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17. Culture Tubes and Closures

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Sufficient size to contain medium and sample without danger of spillage.... <u>S</u> Metal or <u>plastic caps</u>; plastic plugs......<u>S</u> Borosilicate glass or other corrosion-resistant glass.....<u>S</u>

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18. Maintenance

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Service contracts or approved internal protocol maintained on balance, autoclave, water still, etc.; service records entered in a log book.....

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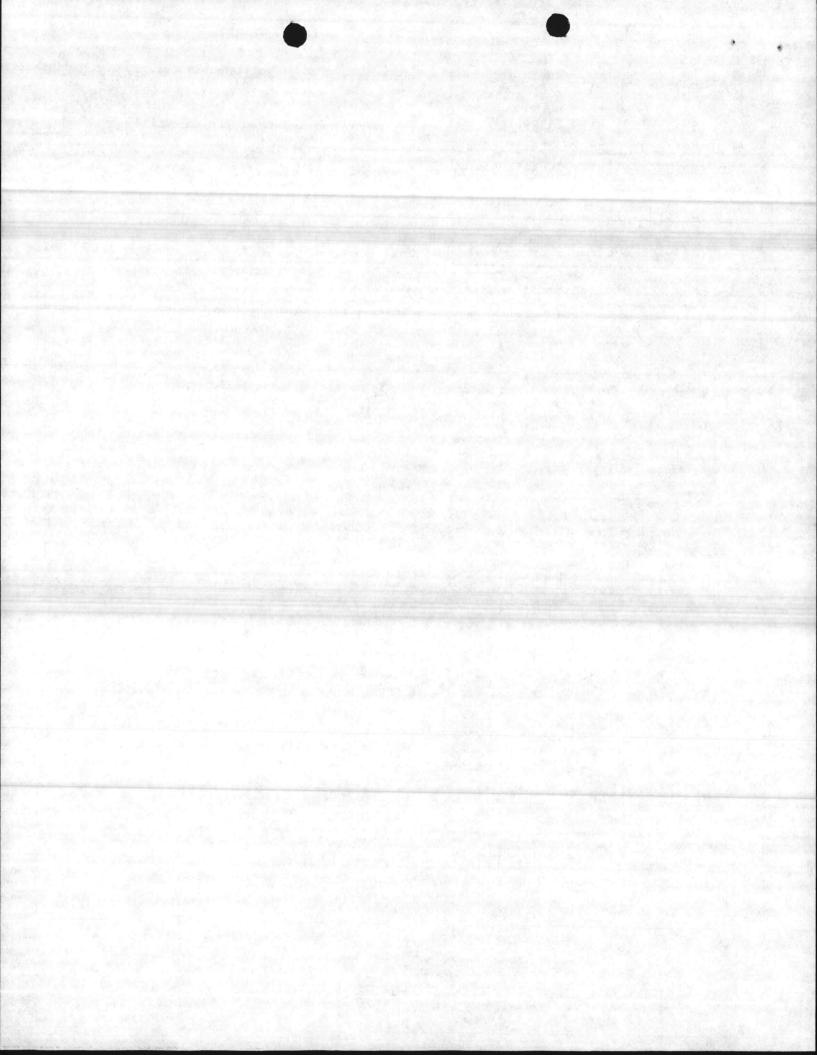
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GENERAL LABORATORY PRACTICES

. Sterilization Procedures

Timing for sterilization begins then autoplane master 1010g	
Timing for sterilization begins when autoclave reaches 121°C	S
Tube broth media and reagents sterilized at 121°C 12 to 15 min	S
Tubes and flasks packed loosely in baskets or racks for uniform heating and cooling	ç
Total exposure of MPN media to heat not over 45 min	S
Dilution water blanks autoclaved at 121°C for 30 min	S
MF presterilized or autoclaved at 121°C for 10 min fast exhaust	S
MF assemblies and empty sample bottles sterilized at 121°C for 30 min	S
MF assemblies sterilized between sample filtration series	S
Rinse water volumes of 500 to 1,000 ml sterilized at 121°C for 45 min	S
Wire loops, needles, and forceps sterilized	S
Individual glassware items autoclaved at 121°C for 30 min	S
Individual dry glassware items sterilized 2 hours at 170°C (dry heat)	NA
Pipets, culture dishes, and applicator sticks in boxes sterilized at 170°C for 2 hours	NA
	Chapter Street

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MPN media removed and cooled as soon as possible after sterilization and stored in cool dark place (optional)

These.

UV light or boiling water for at least 2 min may be used on membrane filter assemblies to reduce bacterial carry-over between each filtration (optional)

Heat-sensitive tapes and/or strips/ampoules used during sterilization (optional)

2. Laboratory Pure Water

Only laboratory pure water, use water, and dilution water.	ed in preparing	media, reagents,	rinse	S
Laboratory pure water not in co				S
Source: Laboratory-prepared	V	Purchased		
If laboratory-prepared.		The second		

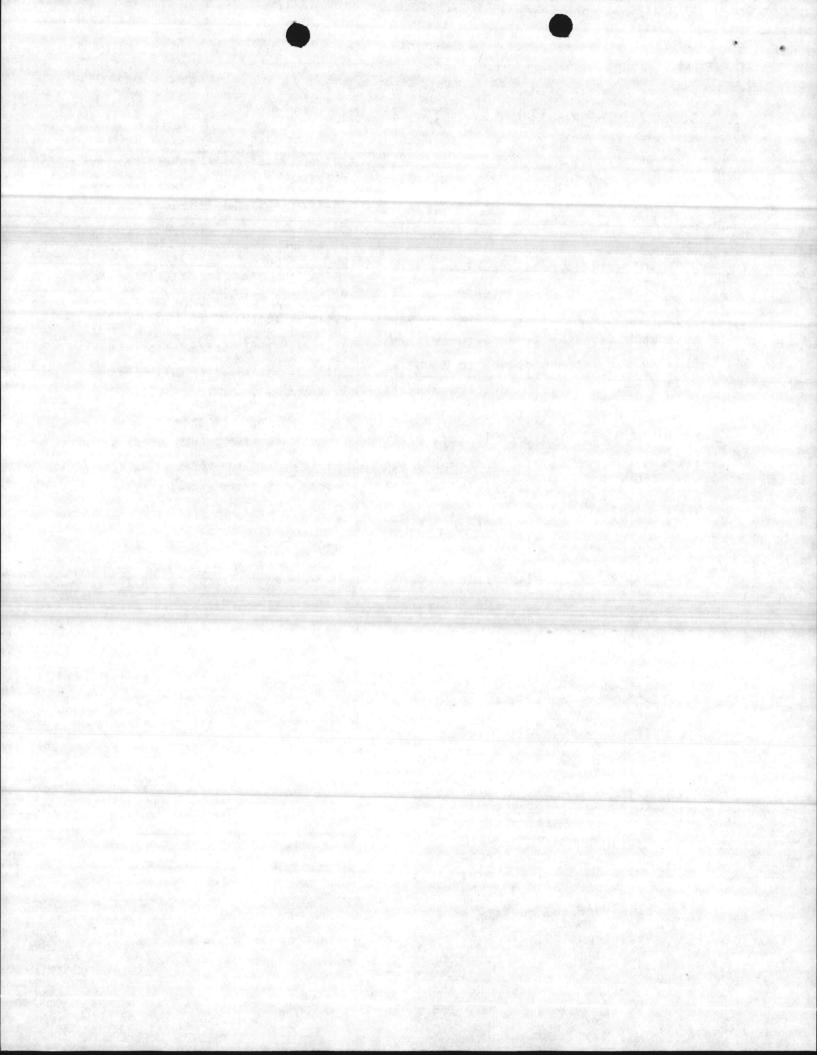
If laboratory-prepared: Still Manufacturer

Corning Megapure f

Deionizer Manufacturer ____Corning High Cap.

Record of recharge frequency

Production rate and quality adequate for laboratory needs...... S Inspected, repaired, cleaned by service contract or in-house service...... S



Chemical Quality Control

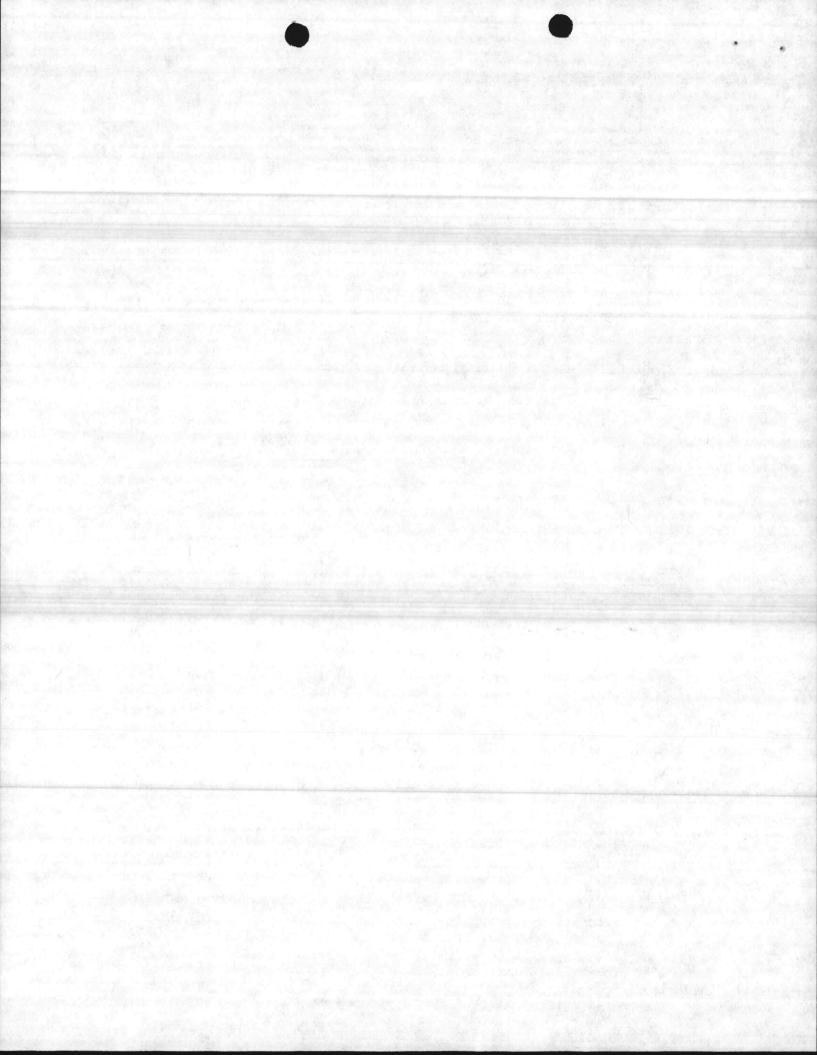
a. onemical quality control	
Record of satisfactory annual analyses for trace metals	
A single metal not greater than 0.05 mg/1	
Total metals: equal to or less than 1.0 mg/1	
Testing laboratory Date	
Record of monthly analyses of laboratory pure water	
Conductance: >0.2 megohm resistivity or <5.0 microhmos/cm	S
pH: 5.5 - 7.5	Carlo Carlos - Carlos
Standard plate count: <10,000/m1	<u> </u>
	<u> </u>
Free chlorine residual: 0.0	<u> </u>
b. Microbiological Quality Control	
Test for bactericidal properties of distilled water (0.8 - 3.0) performed at least annually	
Testing laboratory Date Ratio	
and the second	
Rinse and Dilution Water	
Stock buffer solution prepared according to "Standard Methods", 13th edition	
Stock buffer solution adjusted to pH 7.2	<u>S</u>
Stock buffer autoclaved at 121°C, stored at 1° to 5.0 or filter sterilized	S
Stock buffer labeled and dated	S
Stock potassium phosphate buffer solution (1.25 ml) added per liter distilled water for rinse and dilution water	<u> </u>
Final pH 7.2 ± 0.1	
	S

4. Media

3.

Dehydrated media bottles kept tightly closed and protected from dust

-8-



Media stored at low temperatures are incubated overnight prior to use and tubes with air bubbles discarded	S
Media protected from sunlight	S
MF media stored in refrigerator; broth media used within 96 hours, agar within two weeks if prepared in tight-fitting dishes	S
 Ampouled media stored at 1° to 4.4°C and time limited to manufacturer's expiration date	S

国家 (1997年1月1日日)

5. Quality Control of Media and Reagents

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Satisfactory records containing complete quality control checks on media available for inspection	S
Laboratory chemicals of Analytical Reagent Grade	S
Dyes certified for bacteriological use	NA
pH checked and recorded on each batch of medium after preparation and after sterilization	S
Causes for deviations beyond ± 0.2 pH units specified	S
Media ordered on a basis of 12-month need; purchases in ½ lb. quantities, except those used in large amounts (optional)	
Bottles dated on receipt and when opened (optional)	
Opened bottles of routinely used media discarded within 6 months (if stored in desiccator storage may be extended) (optional)	-
Shelf life of unopened bottles not in excess of 2 years (optional)	
New lots of media quality tested against satisfactory lot using natural water samples (optional)	

6. Lauryl Tryptose Broth

Manufacturer Difco	Lot No 2/87
Single strength composition, 35.6g per liter pure	waterS
Single strength pH 6.8 ± 0.2; double strength pH	6.7 <u>+</u> 0.2
Not less than 10 ml per tube	هـــ • • • • • • • • • • • • • • • • • •
Media made to result in single strength after add portions	

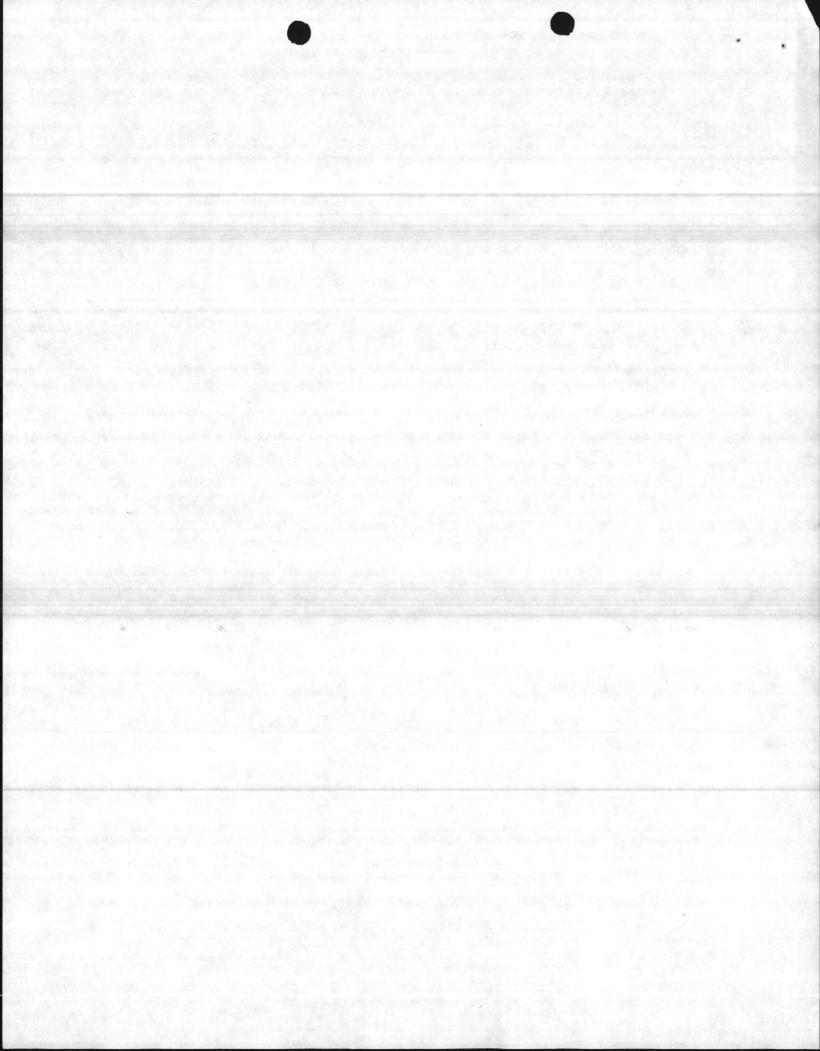
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7. Brilliant Green Lactose Bile Broth

Manufacturer _	Difco	Lot No.	686824 10/86
Medium composi	tion 40g per liter pure water.		
Final pH 7.2 +	. 0.2		<u>S</u>



M-Endo Media

8.

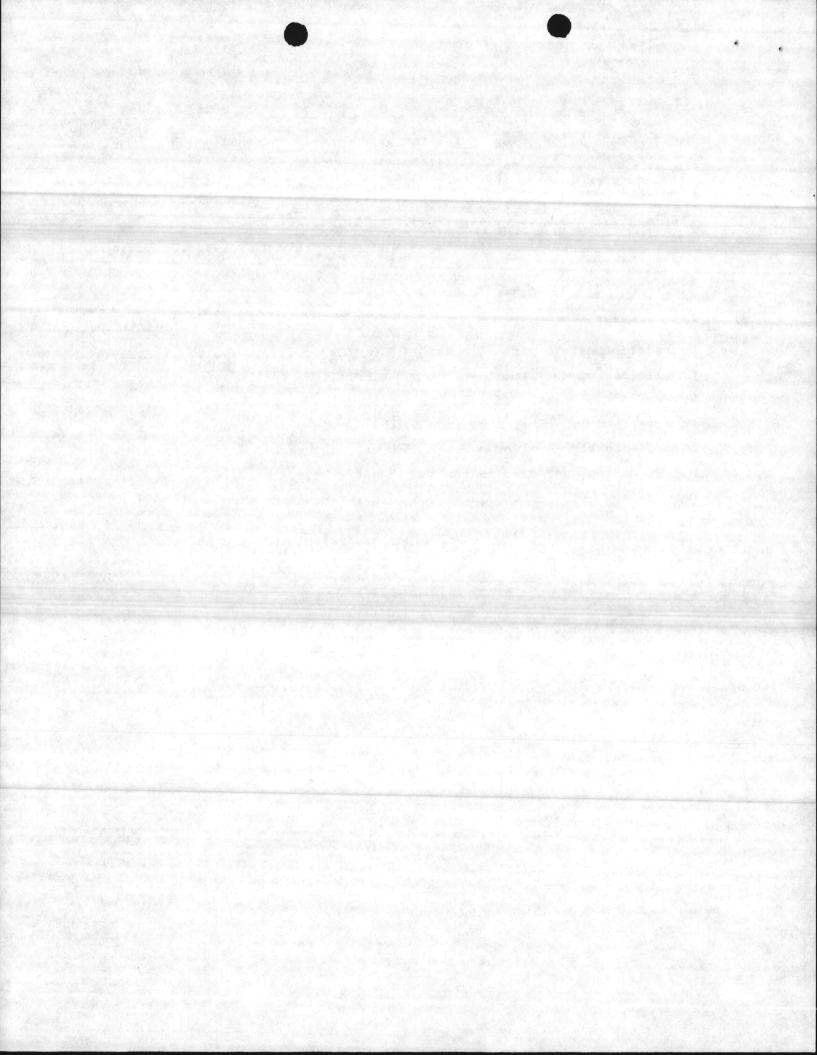
Manufacturer	Difco	Lot No.	702638	
Medium compositio agar added/1	n 48.0g per liter pur	e water; optionally 15	ig	S
Reconstituted in	laboratory pure water	containing 2 percent et	hanol	
				and the second se
		completely dissolved		

9. Standard Plate Count Agar

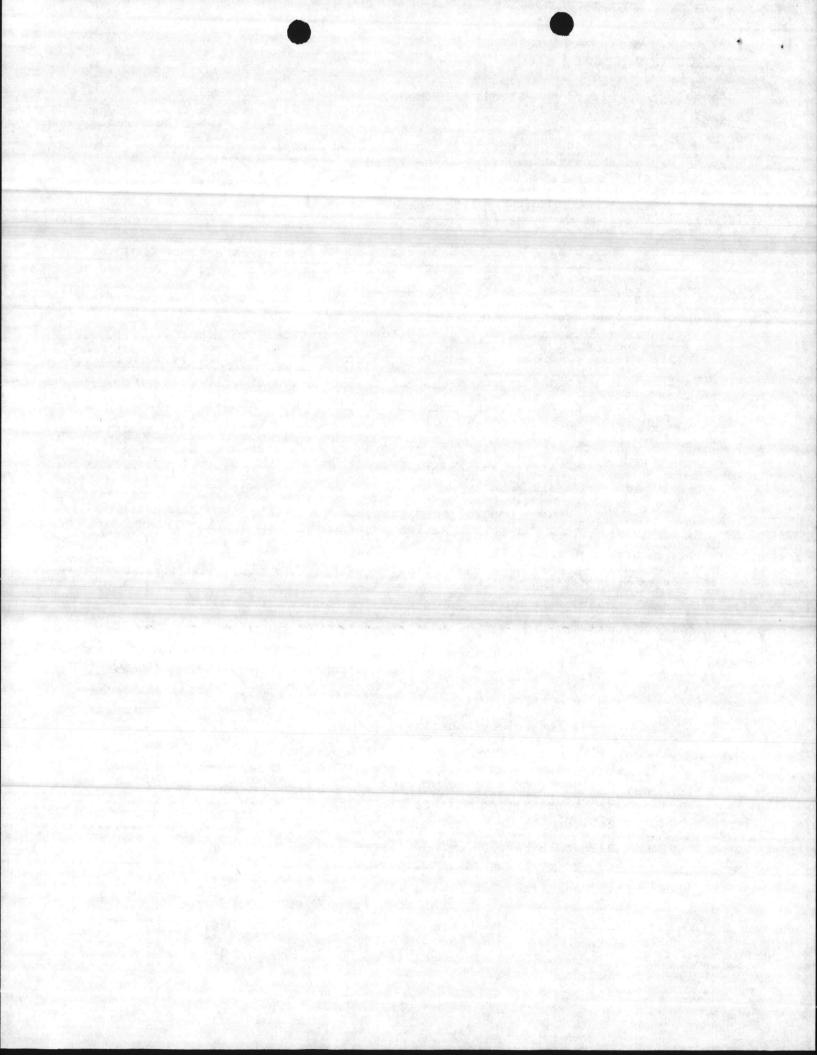
Manufacturer	Difco	Lot No.	677117
Correct compos	ition, sterile and pH 7.	0 ± 0.2	•••••• S
Sterile medium	not remelted a second t	ime after sterilization	••••• <u>S</u>
Culture dishes	incubated 48 hours at 3	5° ± 0.5°C	
No more than 1	.0 ml or less than 0.1 m	1 sample plated (sample	or dilution). S
Liquefied agar	, 10 ml or more; medium	temperature between 44°	to 46°C S
Melted medium	stored no longer than 3	hours before use	•••••• <u>S</u>
Only plates with	h between 30 to 300 col sample is plated, colon	onies counted; when 1 m	l of
Only two signif	ficant figures recorded	and calculated as standa	ard
plate cour	nt/ml	•••••••	<u></u>

10. Levine's Eosin Methylent Blue Agar (EMB)

Manufacturer	Difco	Lot No.	70/060	
Medium compositi	on 37.5g per liter			S
Final pH 7.1 ± ().2			S



METHODOLOGY	
14th. 15th	
Methodology specified in "Standard Methods" 13th edition, or EPA manual	
M-Endo broth, M-Endo agar, or Les Endo agar used in a single step procedure	<u> S </u>
In two-step Les M-Endo procedure, MF incubated on lauryl tryptose broth saturated absorbent pad for 1.5 to 2 hours at 3.5° ± 0.5°C; then on M-Endo broth at Les Endo agar for 20 to 22 hours at 35° ± 0.5°C	NA
1. Total Coliform Membrane Filter Procedure	
Samples containing excessive bacterial populations (greater than 200), confluency, or turbidity retested by the MPN procedure	S
Filtration assembly sterile at start of each series	S
Absorbent pads saturated with medium, excess discarded; or 4.0 ml of agar medium can be used per culture dish instead of a pad	S
Sample shaken vigorously immediately before test	S
Test sample portions measured and not less than 100 ml	S
Funnel rinsed at least twice with 20- to 30-ml portions of sterile buffered water	S
MF removed with sterile forceps, grasping outside effective filtering	
area	S
MF rolled onto medium pad or agar so air bubbles are not trapped	S
A start and finish MF control test (rinse water, medium and supplies) run with each filtration series and results recorded	S
When controls indicate contamination occurred, all data on affected samples rejected and resampling requested	
a. Incubation of Membrane Filter Cultures	
Total incubation time 22 to 24 hours at $35^{\circ} \pm 0.5^{\circ}C$	S
Incubated in tight-fitting culture dishes or loose-fitting dishes incubated in high relative humidity chambers	S
b. Membrane Filter Colony Counting	
Samples repeated when coliforms are "TNTC" or colony growth is confluent, possibly obscuring coliform development and/or detection	S
Total coliform count calculated in density per 100 ml	S
Samples containing five or more coliforms per 100 ml are resampled and tested	S
Low power magnification device with <u>fluorescent light posit</u> ioned for maximum sheen visibility	S
Tor maximum sheen visibility	2



Verification of Total Coliform Colonies c.

All typical coliform (sheen) colonies or at least five randomly selected sheen colonies from each positive sample verified in lauryl tryptose broth and BGLB	S
Counts adjusted based on verification	
All atypical coliform (borderline sheen) colonies or at least five randomly-selected colonies verified in LTB and BGLB	100
Counts adjusted based on verification	S
Sheen colonies in mixed confluent growth reported and verified (optional)	

MF Field Equipment d.

> electo autori Manufacturer

Only standard laboratory MF procedures adapted to field application ...

Model

Total Coliform Most Probable Number Procedure 2.

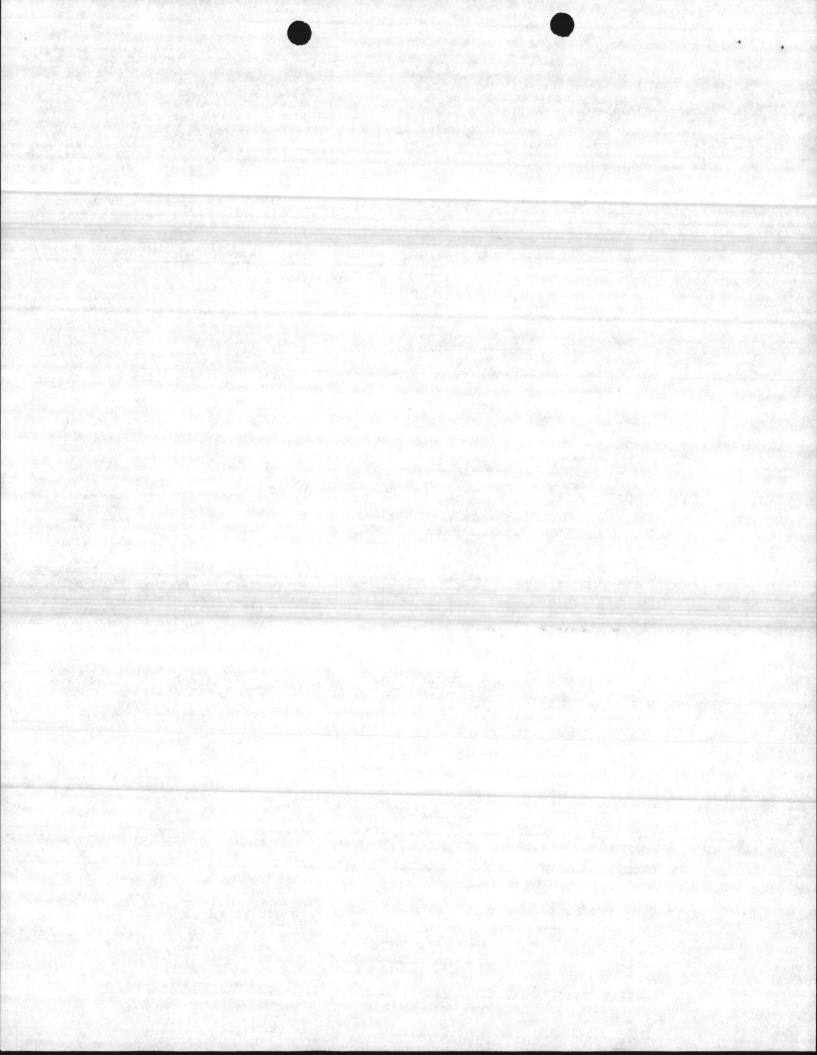
NA

Presumptive Test a.

Five standard portions, either 10 or 100 ml
Sample shaken vigorously immediately before test
Tubes incubated at $35^{\circ} \pm 0.5^{\circ}$ C for 24 ± 2 hours
Examined for gas (any gas bubble indicates positive test)
Tubes that are gas-positive within 24 hours submitted promptly to confirm test
Negative tubes returned to incubator and examined for gas within 48 ± 3 hours; positives submitted to confirm test
Public water supply samples with heavy growth and no gas production confirmed for presence of supressed coliforms
Adjusted count reported based upon confirmation
Adequate test labeling and tube dilution coding (optional)

Confirmed Test ь.

Presumptive positive tube gently shaken or mixed by rotating	S
One loopful or one dip of applicator transferred from presumptive tube to BGLB	0.260
Incubated at 35°C ± 0.5°; checked within 24 hours ± 2 hours for gas production	C. C. K.
Positive confirmed tube results recorded; negative tubes reincubated and read within 48 ± 3 hours	Printer T



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		on p	LOCCULLE	Carrie	u out	every	2 mon	ins of	a ous	sample		
fr	rom	each	problem	water	suppl	y					 5	3

3

c. Completed Test

	Applied to 10 percent of all positive samples each quarter	S	
	Applied to all positive confirmed tubes in each test completed		
-	Positive confirmed tubes streaked on EMB plates for colony isolation	S	
	Plates adequately streaked to obtain discrete colonies	S	
	Incubated at 35° ± 0.5°C for 24 ± 2 hours	S	
	Typical nucleated colonies, with or without sheen on EMB plates selected for completed test identification	14 A.A.	
	If typical colonies absent, atypical colonies selected for completed test identification	S	
San Maria	If no colonies or only colorless colonies appear, confirmed test for that particular tube considered negative	S	
at all in	An isolated typical colony or two atypical colonies transferred to lauryl tryptose broth		
1.4.1	Incubated at $35^{\circ} \pm 0.5^{\circ}$ C; checked for gas within 48 ± 3 hours	S	Pour
	Cultures producing gas in lauryl tryptose broth within 48 ± 3		
-	hours are considered coliforms	S	-

3. Analytical Quality Control

A	record of a	nalytical	quality control	tests available	for review	• S
	Duplicat	e analyses	en an			

was i have

Duplicate analyses run on positive polluted samples not to exceed 10 percent but a minimum of one per month (optional)

Positive Control Samples

One positive control sample (polluted water) run each month (optional)

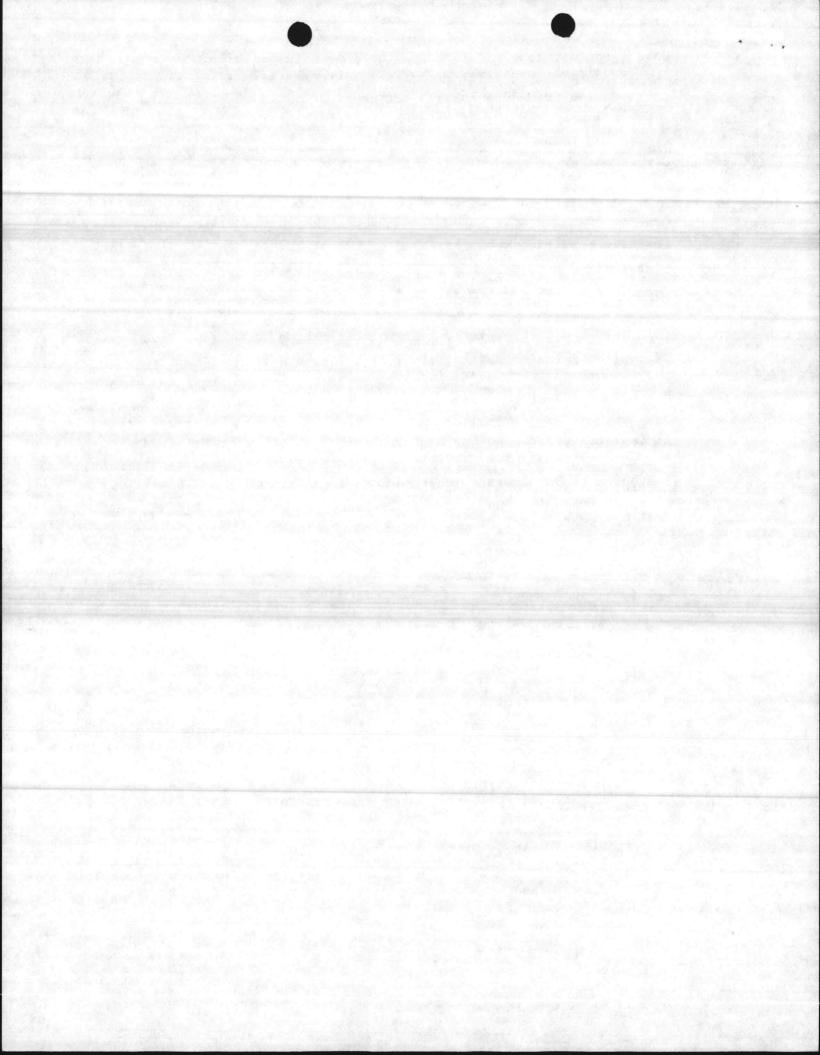
Colony Counting (If more than one Analyst in Laboratory)

Two or more analysts count sheen colonies; all colonies are verified analysts' counts compared to verified counts; procedure

is carried out at least once per month (optional)

Check Analyses by State Laboratories.

A minimum of samples proportional to the local laboratory work load processed by State Laboratory (see criteria for recommendations) (optional)



SAMPLE COLLECTION, HANDLING, AND PRESERVATION

Representative samples of potable water distribution system	S
Minimal sampling frequency as specified in the National Interim Primary Drinking Water Regulations	Ş
Sample collector trained and approved as required by State regulatory authority or its delegated representative	S

1. Sample Bottles

Sodium thiosulfate, (10 mg per 100 ml.) added to sample bottle before sterilization
Ample air space remains after sample collected to allow for adequate
 mixingS

2. Sampling

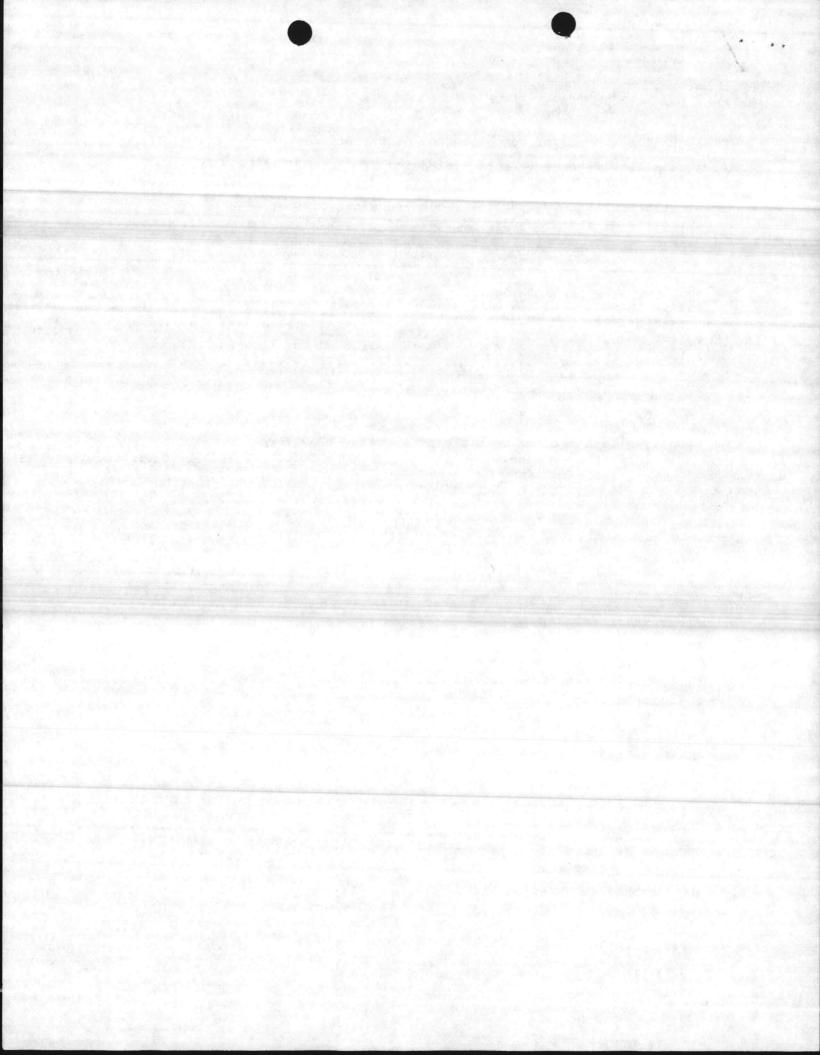
Sample collected after maintaining a steady flow for 2 to 3 min to clear service line	S
Tap free of aerator, strainer, hose attachment, water purification, or other devices	S
Samples refrigerated when possible during transit and storage periods in the laboratory (optional)	

3. Sample Identification

		llection	<u> </u>
		location, time and date of	
collecti	on, and collector's name;	insufficiently identified	
samples	discarded		S

4. Sample Transit Time

Transit time for potable water samples sent by mail or commercial transportation, not in excess of 30 hours	NA
No sample processed after 48-hour transit/storage	NA
Samples delivered to laboratory by collectors examined the day of collection	S
Data marked as questionable on samples analyzed after 30 hours	NA



Sample Receipt in Laboratory

Sample logged in when received in laboratory, including date and time	
of arrival and analysis	S
Chain-of-custody procedures required by State regulations followed	S

Share and all

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Land Land Branch

DATA REPORTING

Test results assembled and available for inspection (optional)

ACTION RESPONSE TO LABORATORY RESULTS

Unsatisfactory test results given action response and resampled as defined in National Interim Primary Drinking Water Regulations....

State and responsible local authority notified within 48 hours after check samples confirm coliform occurrence.....

All data reported to State and local authorities within 40 days

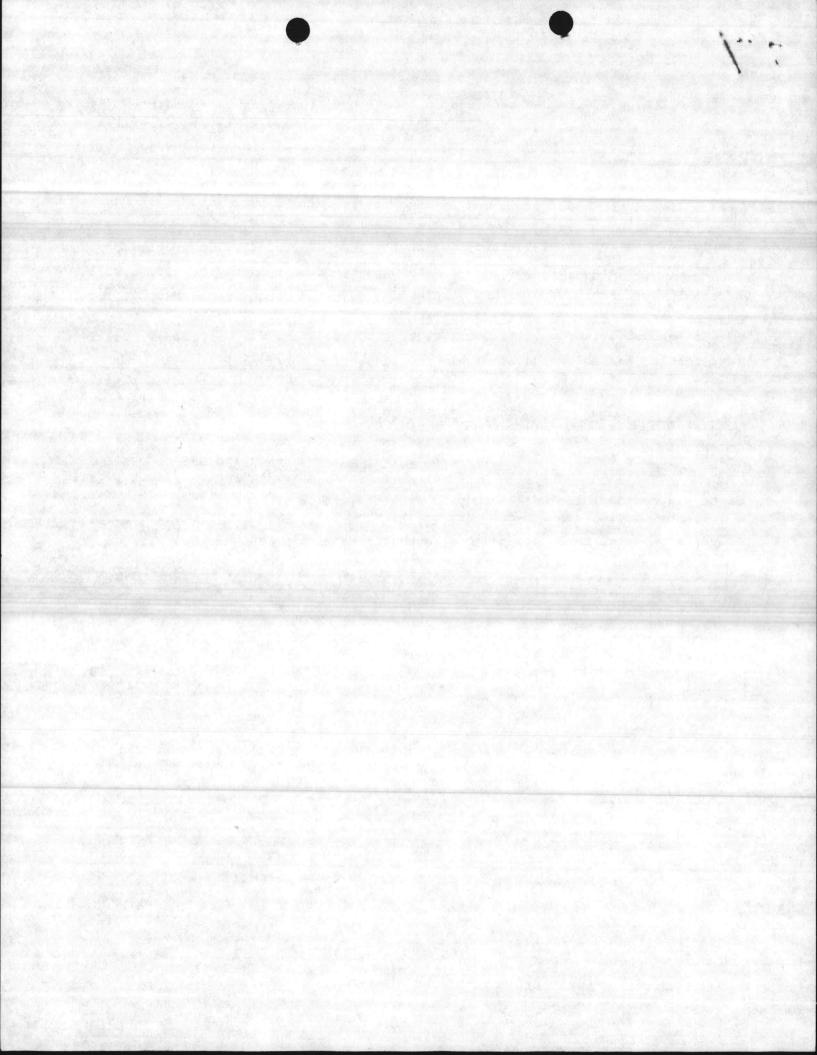
QUALITY CONTROL PRACTICES

An outline of the quality control efforts of the laboratory available for review.....

....

1011 23 444

aligned a mar



Date: 3 November 1982

Memorandum for the Record

From: Ms. Betz, Quality Cotrol Lab., Environmental Branch, NREAD, Facilities

Subj: State Inspection of Quality Control Lab for Microbiology Analysis

1. On 17 September 1982, Don Beesley, Lab Certification Evaluator with the State of North Carolina, called our lab and atated he was planning an inspection of the bacteria lab on 28 September 1982. If there were any problems to let him know.

2. On 28 September 1982, Don Beesley arrived to inspect the lab. Overall the inspection went well, he found no deviations. He did make some recommendations and they are covered below.

3. NBS thermometer. He recommended it be replaced with one calibrated in 0.1° C divisions since all incubator thermometers were either 0.5 or 0.1 divisions.

4. Autoclave. Beesley highly recommended purchasing a maximum temperature thermometer to #ake check the autoclave's maximum temperature. He checked the autoclave with his maximum thermometer and it was fine. He suggested, from the States experience with these thermometers, that we get one from Brooklyn Thermometer Co., with factory certification at 121°C (Code FC 121). The one he had was Cat# 1410MX12" with a range from -10°C to 203°C with divisions of 1° at a cost of \$27.

5. Media. Don Beesley commented on the dark solids in the media. We stated it was happening quit regularly, with our Difco m-Endo broth. He recommended writing to Difco, also trying BBL m-Endo Broth.

6. Sample Bottles. He did not like the paper liners in our caps. He suggested using plastic, nalgene sample bottles (Cat# ASP: B7533-14, Fisher: 02-893A).

7. Dilution Water Buffer. He said to try MhCl₂ instead of MnSO₄. Also to be sure to use reagent grade.

8. Sampling. He recommended getting the state sampling film and instructing the operators in proper sampling.

9. Before departing, Don Beesley debrieffed Colonel Calta, Base Maintenance Officer and Mr. Danny Sharpe, Supervisory Ecologist.

Elizabeth A. Bet

Supervisory Chemist O

Maria Maria and an analy for

Proto: No. Sees, Cooling Council Lab. Conframental Branch, MALAN, Facilities

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 (n.1) Selicates 1982; Dob Revelet: Lab Gerification Evaluator Trib the Same or Horn: Conditua, called our tab and stated be van elementer an instantion of the chain derig lab on 28 Sectement 177. The space sere any problems for let bla const.

 Guil: Convertor 1000, Inc. Decir, arrived to Leapert the low. Constitute instantion want well the count to periodicity. He did wate come recommendations due they are covered below.

3. We successor, in recommended in by replaced with one alling of bo 0.180 over the 0.180 over the distribution of the overall incommendation of the second overall of the second over the second overall of the second overall overall of the second overall overal

4. Antrola C. Beusio, highly communication a markable emperative the antrole closmoreter to will check the autovisue's maximum temperature. The closhed the autovieve with its continue is and stor and it was find. He suggared firs Trades exsector could here thermonetars, the was find. He suggared for Trades exsector could here thermonetars, the was find. He suggared for Trades exsector could here the monetars, the was find. He suggared for Trades exsector could here the monetars, the was find. The could be fille sector to with the sector of 1900 (Oce 10 121). The could have could for 10100 the sector of the 2030 (sith History of 10 12).

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6: sends potries. He did not lib the major liners in our last, Ho A gentred wares and a gentred ware lasted and lasted sends for the formation of the sender of a 1934).

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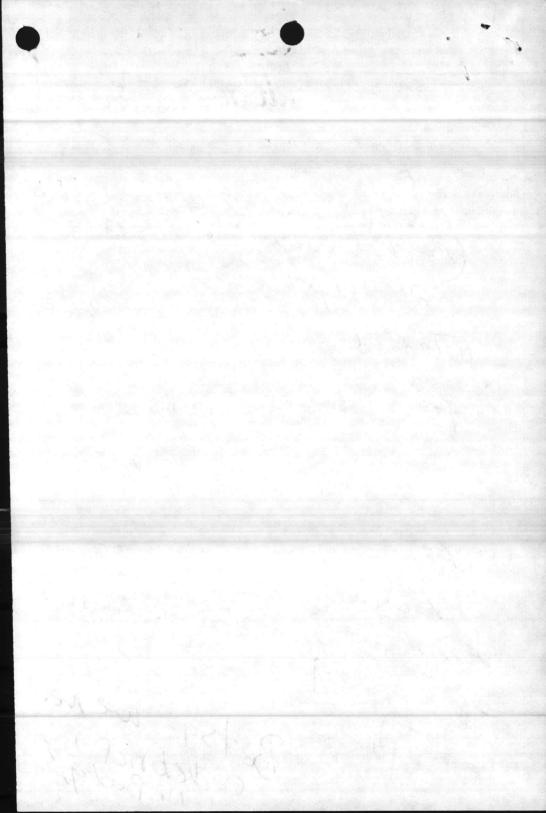
 Defended departure in Bensley debriation Coloral Calls: Base Maintonance Cilling and Dr. Dony Times and Newry Ecologist.

Elizabel A. Barr

PACTORY CERTIFICE 7 CODE: FC 1210 MAX. TEMP THEEMO BEDOKLYN THERMOMETER CO.IN 90 VERDI ST. FARMINGDALE NY 11735 516 694-7610 ARMOR CASE 12" GHZ # 7.00 THER 1412 mx 12" -10-203°C 1 DIVISION #27

ACTO THERMOMETER O.1° NBS REGISTEREP DIFCO WRITE LETTER BBL MENDO BESTH RASTIC NALENGE SAMPLE BOTTLES CONDWOTIVITY BUPPER ->7.1+7.3 1.7 REAGENT GRADE -MNSOY -> MNC12 FISHER (NOTFISHER) THOMAS MAX TEMP 4010 THERMOMETER 1410 MX BROOKLYN

NATURAL RESOURCES AN ENVIRONMENTAL AFFAIRS BRANCH Base Maintenance Division Marine Corps Base Camp Lejeune, North Carolina 28542 Date 9-22-82 From: Director, NREAB To: BMO Subj: annual Laboratory Inspection Bact. analysis) by State 28 Sept 82 attached submitted for your Julian info. BUE MREA, bing Mu beesly them smo office foctown inpution to Do Jun Poctown we need to Do Jun Betsy- we need a debrict by A debrict by



OPNAV 5216/144 (REV. 6.70) S/N 0107-L F-778-8097 DEPARTMENT OF THE NAVY Memorandum

DATE: 21 September 1982

D. Sharre

Director

FROM: Ms. Betz, Quality Control Lab., Environmental Section, NREAB, BMaintDiv

TO: Mr. Sharpe, Supervisory Ecologist, Environmental Section, NREAB, BMaintDiv

SUBJ: State Inspection of Quality Control Laboratory for Bact Analysis.

1. Don Beesley, Laboratory Certification Evaluator with the Saate, wants to come and evaluate the lab for our regular Microbiological analysis inspection. He would like to come on the afternoon of 28 September 1982, which is our drinking water day. He did not specify that he wanted to come on our sample day.

2. He called on 17 September 1982, which was while I was out, and Gaines took the message. Mr. Beesley said if there were any problems to call him.

Supervisory Chemist

1. Don Heesley Laboratory Sevenil attact Transcor with the Same or is to a disvaluate the information for the share of the state of the would like to some the attach. Of Sector 19 with a small the vale, day. He did not specify that or vashed for the state of day.

He called of [Sa toplot 1 2] when was while I was not and Guines top is essage. Mr. Beasley said if there were any problems consilering

6 Relations

Cabrally where we are



STATE OF NORTH CAROLINA

DEPARTMENT OF HUMAN RESOURCES Division of Health Services

HUGH H. TILSON, M.D.

GOVERNOR SARAH T. MORROW, M.D., M.P.H. SECRETARY

JAMES B. HUNT, JR.

STATE LABORATORY OF PUBLIC HEALTH 306 NORTH WILMINGTON STREET P.O. BOX 28047 RALEIGH 27611

September 18, 1981

Commanding General Marine Corps Camp Lejeune, North Carolina 28542

Dear Sir:

The findings of the on-site evaluation on August 19, 1981 and your letter of September 14, 1981 citing correction of deviations indicate that your laboratory has met the minimum requirements for certification as specified in North Carolina Drinking Water Regulations (10NCAC 9D .0301 -.0326). We therefore grant Interim Certification to your laboratory for total coliform analysis on public water supplies.

If you have any questions or if we may be of further assistance in this matter, please let us know.

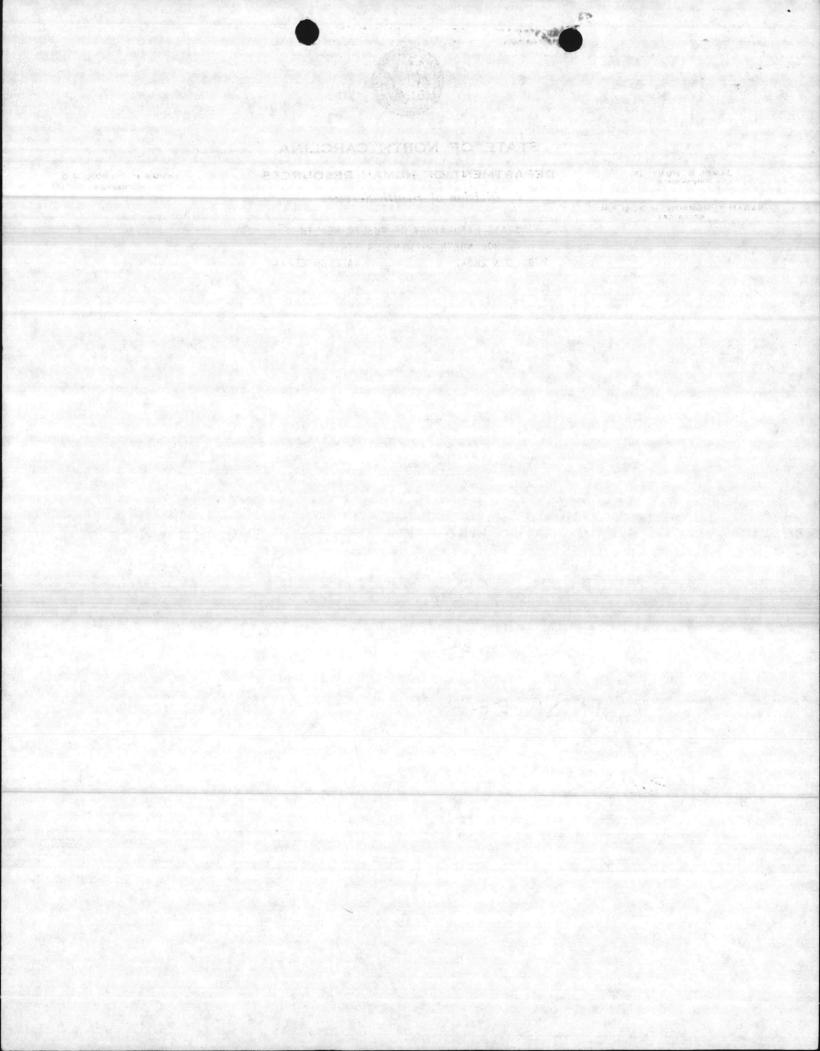
Sincerely,

Shea

John C. Sheats, Head Environmental Sciences Branch

E. D. Beesley Laboratory Certification Evaluator

JCS;EDB/1eh Enclosure



MAIN/EAB/th 6280/7 Sep 14, 198)

Mr. E. D. Beesley Laboratory Certification Evaluator State Laboratory of Public Health Division of Health Services Department of Human Resources State of North Carolina 306 North Wilmington Post Office Box 28047 Raleigh, North Carolina, 27611

Dear Sirsa

This is in response to your 2 September 1981 correspondence concerning drinking water analysis certification of the Quality Control Laboratory, Base Maintenance Division, Marine Corps Base, Camp Lejeune, North Carolina.

Your letter provided a narrative report on your 19 August 1981 visit which listed three points under Deviations and Recommendations. The three points have been corrected as follows:

Point 1. Difco Catalog No. 241 Lauryl Tryptose Broth and Difco Catalog No. 7 Brillant Green Bile Broth in one-fourth pound bottles were ordered on 20 August 1981, to replace the 1978 bottles.

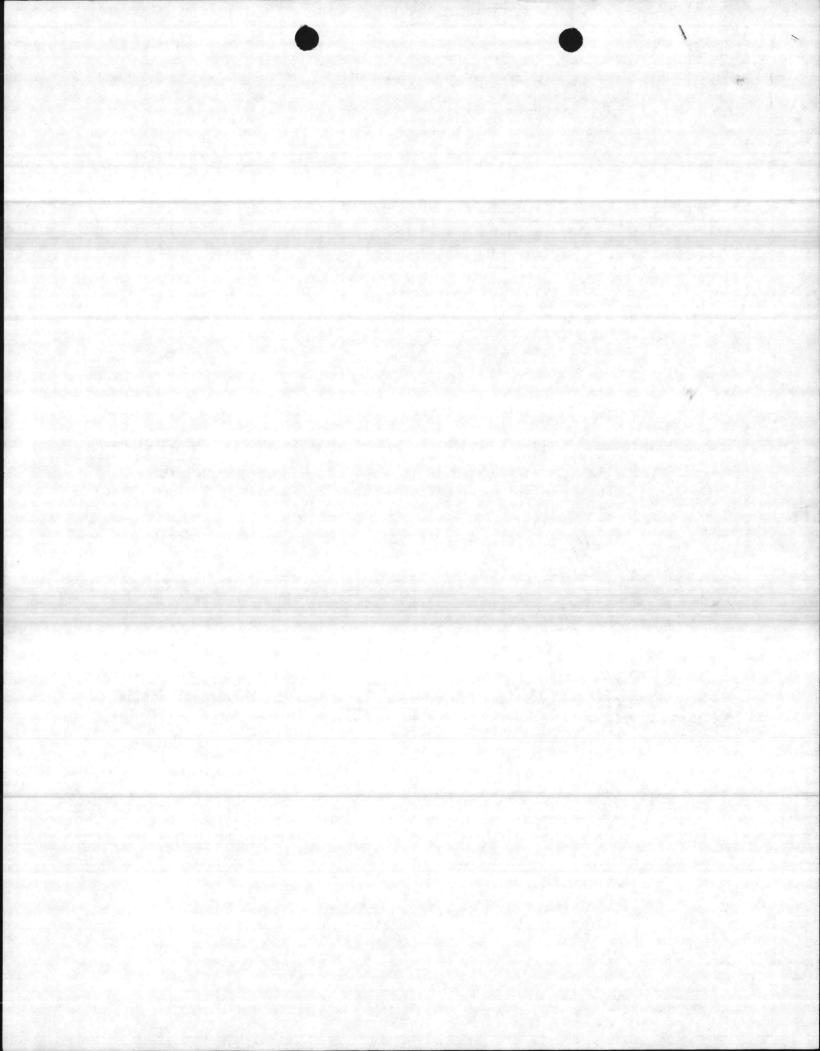
Point 2. On 20 August 1981, Difco Catalog No. 479 Plate Count Agarwas ordered to replace Nutrient Agar.

Point 3. On 20 August 1981, Difco Catalog No. 76 EMB Agar was ordered to replace Endo Agar.

Should you require additional information regarding the corrective action taken, please contact Ms. Elizabeth Betz, Natural Resources and Environmental Affairs Branch, Base Maintenance Division, telephone (919) 451-5977.

Sincerely,

B. W. ELSTON Acting Base Maintenance Officer By direction of the Commanding General



Mr. E. D. Beesley Laboratory Certification Evaluator State Laboratory of Public Health Division of Health Services Department of Human Resources State of North Carolina 306 N. Wilmington, PO Box 28047 Raleigh, North Carolina 27611

Dear Sir:

This is in response to your letter of 2 September 1981 concerning your inspection on 19 August 1981, of the Quality Control Laboratory under Base Maintenance Division, aboard Marine Corps Base Camp Lejeune, North Carolina.

Enclosed in your letter of 2 September 1981, was a copy of the narrative report on your 19 August 1981 visit. In the report you listed three points under Deviations and Recommendations. The three points are addressed below.

The fist point was the 1978 Lauryl Tryptose Broth and Brilliant Green Bile Broth. Difco Cat #241 Lauryl Tryptose Broth and Difco Cat #7 Brillant Green Bile Broth in ½ 1b. bottles were ordered on 20 August 1981, tp replace the 1978 bottles.

The second point was on Standard Plane Count agar. On 20 August 1981, Difoo Cat #479 Plate Count Agar was ordered to replace Nutrient Agar.

The last point was on Levine's Eosin Methylene Blue Ager. On 20 August 1981, Difco Cat #76 EMB AGar was ordered to replace Endo Agar.

Should yourrequire additional information regarding the corrections hade, please contact Ms. Elizabeth Betz, Natural Resources and Environmental Affairs Branch, Base Maintenance Division, telephone (919) 451-5977.

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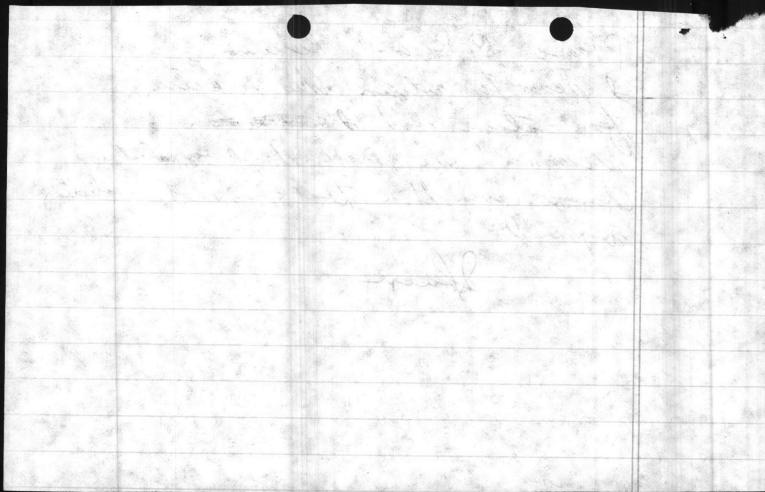
MRE. D. BEESLEY! LABORATORY CERTIFICATION EVALUATOR STATE LABORATORY OF RUBLIC HEALTH DIVISION OF HEALTH SERVICES DEPART. OF HUMAN RESOURCES STATE OF NORTH CAROLINA 306 N. WILMINGTON ST. P.O. Box 28047 RALEIGH, NC 27611 DEAR SIR! THIS IS IN RESPONSE TO YOUR LETTER OF 2 SEPTEMBER 1981 CONCERNING ODUR INSPECTION OF 19 AUGUST 1981, OF THE QUALITY CONTROL LABORATORY UNDER BASE MAINTENANCE DIVISION ABOARD MARINE CORPS BASE, CAMP LEJEUNE. NORTH CAROLINA. ENCLOSED IN YOUR LETTER OF 2 SEPTEMBER 1981 WAS A COPY OF THE NARRATIVE REPORT ON YOUR 19 ADOUST 1981 VISIT. IN THE REPORT YOU LISTED THREE POINTS UNDER DEVIATIONS AND RECOMMENDATIONS. THE THREE POINTS ARE ADDRESSED BELOW, THE FIRST POINT WAS THE 1978 LAURYL TRY PTOSE BROTH AND BRILLIANT GREEN BILE BROTH. DIFCO CAT # 241 LAVERL TRYPTOSE BROTH AND DIFCO CAT # 7 BRILLANT GREEN BILE BROTH IN 4/16 BOTTLES WERE GRDERED ON 20 AUGUST 1981 TO REPEACE THE 1978 BOTTLES.

THE SECOND POINT WAS ON STANDARD PLATE COUNT AGAR. ON 20 AUGUST 1981 DIFCO CAT # 479 PLATE COUNT AGAR WAS ORDERED TO REPLACE NUTRIENT AGAR.

THE LAST POINT WAS ON LEVINE'S EOSIN METHYLENE BLUE AGAR. ON 20 AUGUST 1981 DIFCO CAT # 76 EMB AGAR WAS ORDERED TO REPLACE ENDO AGAM

SHOULD YOU REQUIRE ADDITIONAL INFORMATION REGARDING THE CORRECTIONS MADE, PLEASE CONTACT ME. ELIZABETH BETZ, NREAB, BMAINT DIV., TELEPHONE (919) 457-5977

Please Note and Return. I plan to return this to below for acten and & come Changes - even those that are not absolutely required. Sharpe





From: Quality Control Lab., Environmental Section, NREAB, BMaintDiv

Memorandum for the Record

Subj: State Inspection for Microbiological Laboratory Certification

1. On 19 August 1981, Mr. Don Beesley, a laboratory certification evaluator of the Public Health Laboratory, Division of Health Services, Department of Human Resources, State of North Carolina came and inspected the Quality Control Lab. for Microbiological analysis.

2. A list was provided to Mr. Beesley of the Laboratory personnel and their experience as required by the inspection evaluation forms. The following personnel were listed:

Eliazbeth Betz-Laboratory Director Hoy Burns Robert Lachapelle Gaines Huneycutt Gerald Monahan

3. The only unsatisfactory ratings were received for using the wrong agars for Standard Plate Counts and Completed Test(MPN). The lab needs to use Standard Methods Agar and EMB Agar and a requisition order was made on 20 August 1981 for yth correct agars.

4. Mr. Beesley hade several recommendations and they are discussed in the following paragraphs.

5. Mr. Beesley recommended purchasing a new NBS thermometer with either 0.5 or 0.1 graduations since the incubator thermometers were required to be in 0.5 graduations and are in fact in 0.1 graduations. O.K.ODS

6. It was discussed that the 15th edition of Standard Methods was the newly accepted reference manual by the State and EPA. Therefore Mr. Beesley suggested we should order one. He stated that it had some new procedures in it. $O(\kappa, \rho)$ >

7. Mr. Beesley commented on our rather old LTB & BGB agar. He suggested ordering some new and in smaller quantities since we didn't use it that often. The requisitions were submitted on 20 August 1981.

8. On in house maintenance on equipment, mainly the stills, Mr. Beesley suggested we should keep a complete and separate record in addition to our present procedure of putting the date of the last cleaning on the still. $\bigcirc /\bigcirc PS$

9. On collection, I stated that the Water Plant operators were responsible for sample collection but that we do work with them to help train them. He suggested showing them <u>ahe</u> movie the State has on sample collection. Mr. Beesley said it was available to use.

Get with Price/Frazelle



Dates 126 A iggst 1987

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Sould Score Thereecton for Microbulorical Laboratory Cercillerian

 of 10 August Lobb, Mr. Don Booslov, A Laboratory canativation evolution of the abile Health Haboratory, Physican of Health Scrutoss; Papartment of Human Resources, Statesof Why: Caroline aces and inspected the Quelicy control tab. for Microbiological enalysis;

2. A list was provided to in, Beasley of the Laberatory represented and their specificace as regarized by the long office beside to detail "Gnapholic Structory personal weight detail."

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3. And puly unsatisfactory valiants were received for using the wrote agars for Standand These Counts and Constants Yest(W2N). The lab needs to use Standard Methode Agar and ENE Agar and a resultion order was used on 20 Apr 1st 1991 For all connect agars.

 Br. Breel y Lang Beverst recommunations and they are discussed in the following interrupts.

5. H., Acheloy recompanded multikating a new NaC chiquemeter with eltier 0.3 or 0.1 productions also e the incohator ebecometers were required to be to 0.5 chaduations and are to fee to 0.5 chaduations and are to fee to 0.5 chaduations

6. It was disactised that the bin calific wit Standard Matheds, as the cawly accepted related manual by the State and SPA. Therefore in Passicy suffected werehold order ones. To arated thes it had seven now procedures in it.

3. for leapley undertaid amout ration and ETS & BGG agorf. He suggested ordering sould be ind an gualler quantifies dince we didn't use in their after. The request class were subalticed on 20 August 1981.

9. Qui in hode maintanance de equipachi, mainiy tha stills. Mr. Beetley suggested ve should are a completerant separate rabore in addition to our present crucedure of furthin the date of the last chemics on the scill.

(**** Or bollscaling, i stated that the Watar Plant or analyts white responsible for fimils collection but that is do work with them tothel from them. He are responsible for fimils that all notice the State has on marie collection. Mr. ascaley said it was available to bear 10. Finally, Mr. Beeslye recommended running another trace metal analysis on the Still's water as soon as it was working again since it has been over a year. He stated that the State could run it this time but not again. Tharefore, by next August this lab will need to be cetified in trace metals or we will have to find a lab that is.

Hizabetha. Bet

Elizabeth A. Betz Supervisory Chemist Ab. Linelly, M. Beckige reconsended renning another fragemental analysis on the Scilide eater as soon as it was working againstines if has been over asyear. To also ther the State could run it this the but not again. Therefore, by dath fraues by tab will need to be certiled in trace-matais or se will have to find a lab thereis.

Sand Mary St.

Sec. 2

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From: Quality Control Lab., Environmental Section, NREAB, BMaintDiv

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2. A list was provided to Mr. Beesley of the Laboratory personnel and their experience as required by the inspection evaluation forms. The following personnel were listed:

Eliazbeth Betz-Laboratory Director Hoy Burns Robert Lachapelle Gaines Huneycutt Gerald Monahan

3. The only unsatisfactory ratings were received for using the wrong agars for Standard Plate Counts and Completed Test(MPN). The lab needs to use Standard Methods Agar and EMB Agar and a requisition order was made on 20 August 1981 for the correct agars.

4. Mr. Beesley made several recommendations and they are discussed in the following paragraphs.

5. Mr. Beesley recommended purchasing a new NBS thermometer with either 0.5 or 0.1 graduations since the incubator thermometers were required to be in 0.5 graduations and are in fact in 0.1 graduations.

6. It was discussed that the 15th edition of Standard Methods was the newly accepted reference manual by the State and EPA. Therefore Mr. Beesley suggested we should order one. He stated that it had some new procedures in it.

7. Mr. Beesley commented on our rather old LTB & BGB agar. He suggested ordering some new and in smaller quantifies since we didn't use it that often. The requisitions were submitted on 20 August 1981.

8. On in house maintenance on equipment, mainly the stills, Mr. Beesley suggested we should keep a complete and separate record in addition to our present procedure of putting the date of the last cleaning on the still.

9. On collection, I stated that the Water Plant operators were responsible for sample collection but that we do work with them to help train them. He suggested showing them the movie the State has on sample collection. Mr. Beesley said it was available to use.

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Wrot: Quality Control Lab., Environmental Sention, WCAR, What note

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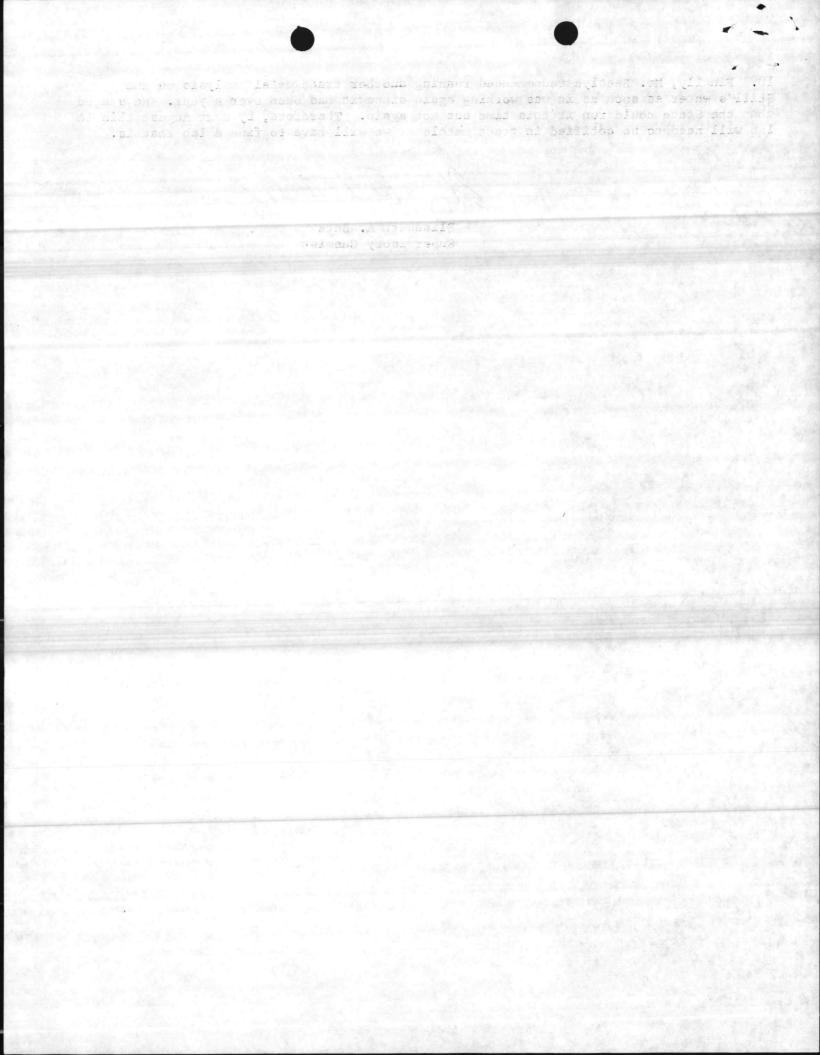
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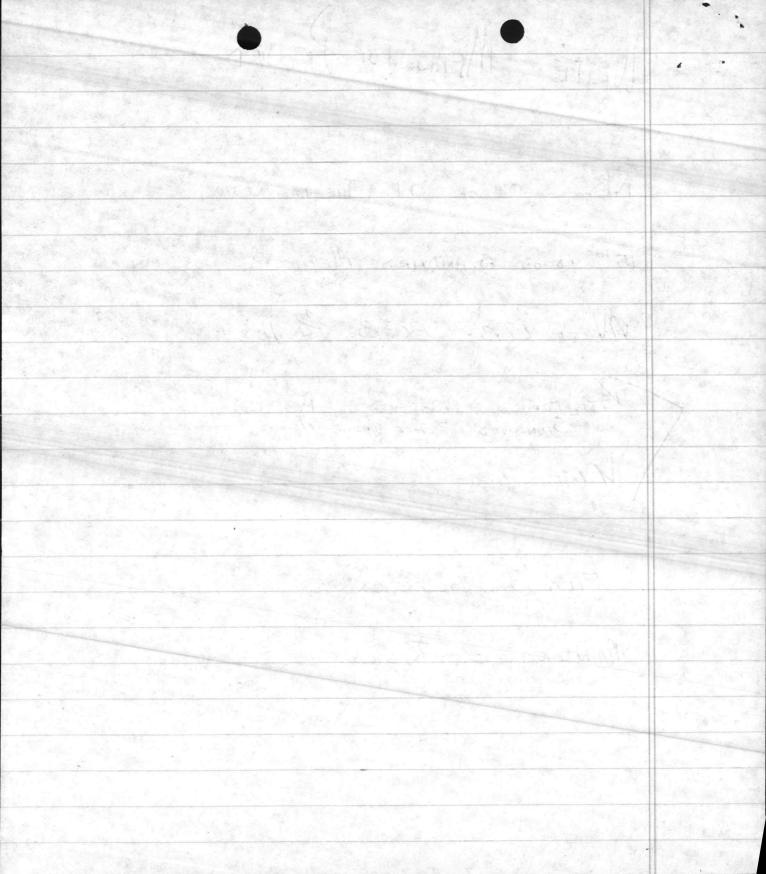
 the molification, I access the residence field of residence and collarity developed of a second collection of the residence of the collection of the second s 10. Finally, Mr. Beeslye recommended running another trace metal analysis on the Still's water as soon as it was working again since it has been over a year. He stated that the State could run it this time but not again. Therefore, by next August this lab will need to be cetified in trace metals or we will have to find a lab that is.

Hyabeth a. Betz Elizabeth A. Betz

Supervisory Chemist



WRITE MEMO FOR RECORD NBS 0.5 OR O.I THEROMOMETER 15TH EDTION STANDARD METHODS WEW LTB+ BGB 4 1/ps BTANDARD METHODS AGAR STANDARD PLATE COUNT AGAR VEMB AGAR FILM ON COLLECTION MAINTENANCE RECORD



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FIGURE IV-A-1. Equipment Operation Temperature Record.

QA/LABORATORY OPERATIONS

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TABLE IV-A-2

Glassware Maintenance

	ltem	Monitoring Procedure					
1. Utensils and Containers for Media Preparation		Use utensils and containers of non-corrosive and non-contaminating materials such as pyrex glass, stainless, steel or aluminum.					
2.	Glassware (Reusable)	a. With each use, examine glassware especially screw-capped dilution bottles and flasks, for chipped or broken edges and etched surfaces. Discard chipped or badly-etched glassware.					
		 Inspect glassware after washing. If water beads excessively on the cleaned surfaces, run the glassware through again. 					
		c. Test for acid or alkaline residues by adding bromthymol blue indicator to representative glassware items (see 5.1.2 in This Section).					
		d. Test for residual detergent by the test in 5.1.3, This Section.					



STATE OF NORTH CAROLINA

DEPARTMENT OF HUMAN RESOURCES

HUGH H. TILSON, M.D. DIRECTOR

JAMES D. HUNT, JR. GOVERNOR

Division of Health Services

SARAN T. MORROW, M.D., M.P.H.

STATE LABORATORY OF PUBLIC HEALTH 306 NORTH WILMINGTON STREET P.O. BOX 28047 RALEIGH 27611

May 18, 1981

Commanding General Marine Corps Base Camp Lejeune, North Carolina 28542

Attention: Base Maintenance Officer

Dear Sir:

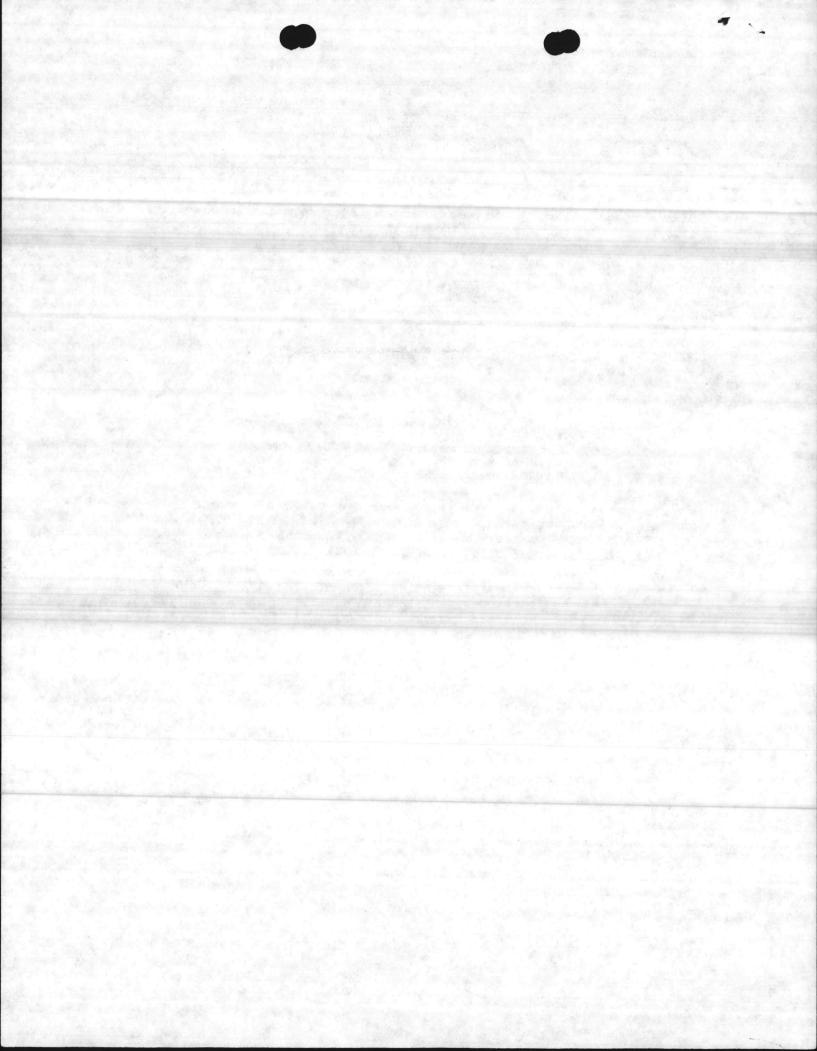
The findings of the on-site evaluation on February 20, 1980 and your letter of May 12, 1981 citing correction of deviations indicate that your laboratory has met the minimum requirements for certification as specified in North Carolina Drinking Water Regulations (10NCAC 9D .0301 - .0326). We therefore grant Interim Certification to your laboratory for total coliform analysis on public water supplies.

If you have any questions or if we may be of further assistance in this matter, please let us know.

Sincerely,

John C. Sheats, Head Environmental Sciences Branch

JCS/leh Enclosure Blind Copy: Elizabeth Betz



Aorth Carolina Department of Human Besources Didision of Health Serdices



Interim Certification for the analysis of drinking water has been granted to

CAMP LEJEUNE BACTERIOLOGY LABORATORY

for the following parameters

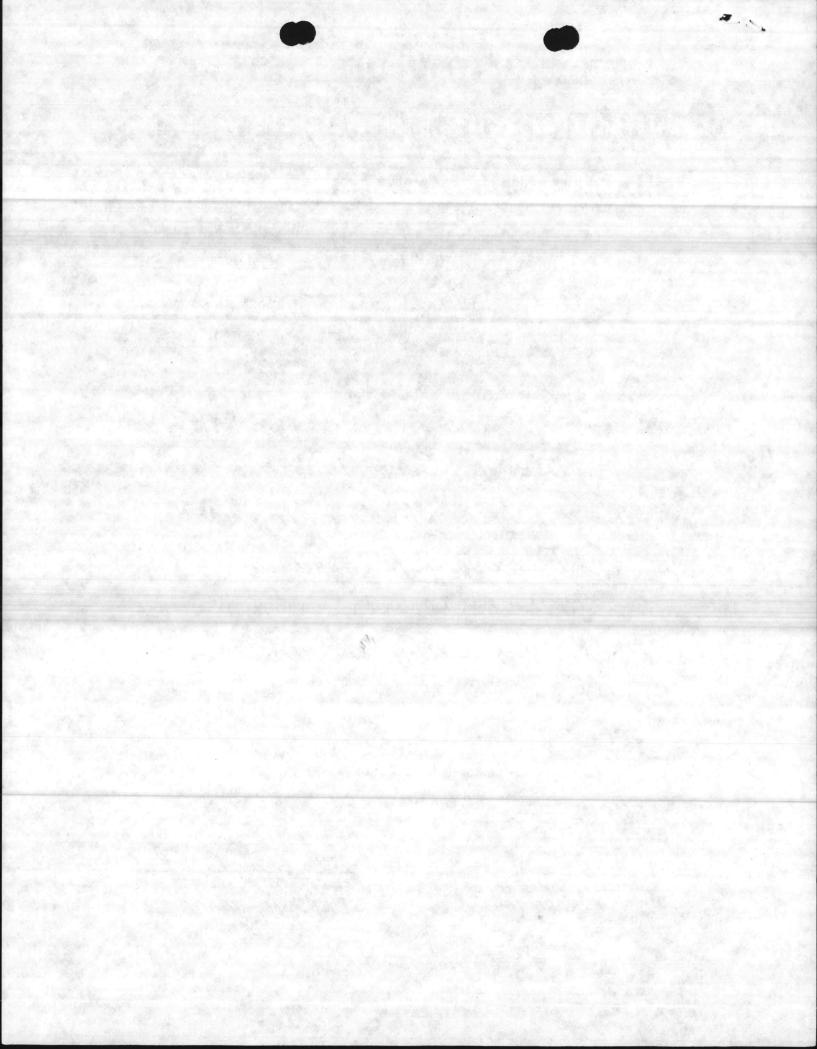
Coliform Bacteria - by Membrane Filter Procedure

February 1982 Expiration Date

Hud H. Then MO Difector, Division of Health Services

Laboratory Number

hief, State Labora of Public Health





STATE OF NORTH CAROLINA

JAMES B. HUNT, JR. GOVERNOR

SARAH T. MORROW, M.D., M.P.H. SECRETARY DEPARTMENT OF HUMAN RESOURCES Division of Health Services HUGH H. TILSON, M.D. DIRECTOR

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John C. Sheats, Head Environmental Sciences Branch

JCS/leh Enclosure



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MR. JOHN SHEATS

ENVIRONMENTAL SCIENCES BRANCH LABORATORY

DEPT. OF HUMAN RESOURCES

POST OFFICE BOX 28047

RALEIGH, NORTH CAROLINA 2011

DEAR MR. SHEAD;

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A 19 SEPTEMBER 1980 THIS AS A FOLLOW-UP TO TO MR. CHARLES E. RUNDGREN OF YOUR MARINE CORPS BASE LETTER REQUESTING LABORATORY PERSONNEL CERTIFICATION TO PERFORM ON OR CONCERNING & THE ST STATIS OF THE CORRECTIONS NEEDED FOR CERTIFICATION. AS STATED IN THE 19 SEPT 1980 LETTER THE ONLY DISCRENPANCY IN LEFT TO CORRECT WAS THE INHIBITORY TEST. THE INHIBITORY TEST ON THE WASHING PROCESS HAD BEEN DELAYED DINTIL THE RECENTED PURCHASED DISHWASHER HAD BEEN COMPLETEDY INSTALLED AND AND THE REQUIRED GLASS PETEL DISHES ON MARCH 4 MARCH 1981 THE INHIBITORY TEST, AS DESCRIBED IN STADIDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 13TH ON THE DISHWASHER. EDITION, p. 643, WAS RUN, BELOW IS A TABLE STANDARD PLANE OF THE AVERAGE GOLONY COUNTS FOR FOR GLASS WERE EACH GROUP ? GROUP A WAS WERE THE PETRI AND EINSED THEOUGH THE NORMAL OFCLE IN THE DISHES WASHED THE USUAL WAY. GROUP B WERE CLASS * RINSED THE PETRI DISHES WASHED LIKE A BUT HAD

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SHOULD YOU REQUIRE ADDITIONAL INFORMATION, PLEASE CONTACT MS. ELIZABETH BETZ, NR AND EA D, BASE MAINT. DEDT., TELEPHONE (919) 451-5977

MAIN/JIW/th 6280 19 Sep 80

Mr. Charles E. Rundgren Water Supply Branch Division of Health Services Department of Human Resources Post Office Box 2091 Raleigh, North Carolina 27602

Dear Mr. Rundgren:

This is a follow-up to a 19 October 1978 Marine Corps Base letter requesting laboratory and personnel certification to perform bacteriological and inorganic chemical tests of drinking water supplies located and operated by Marine Corps Base, Camp Lejeune, North Carolina.

Since 1978, personnel from your agency have visited the base on one occasion. On 21 February 1980, Mr. Ralph Gentry, Microbiologist, Quality Assurance and Laboratory Evaluation Section, Surveillance and Analysis Division, Region IV, Environmental Protection Agency, conducted an on-site bacteriological evaluation of the Base Quality Control Laboratory located at Building 65.

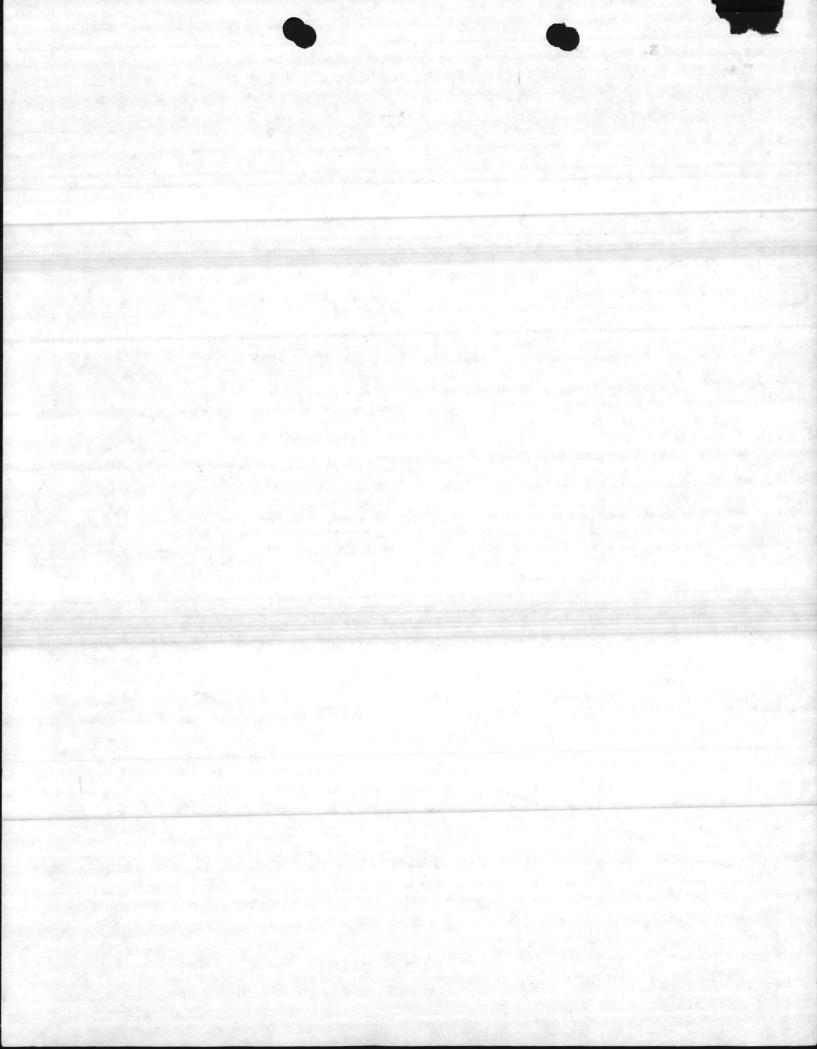
The inhibitory test on the washing process has been delayed until the instillation of a recently purchased dishwasher has been completed. All other recommendations made by Mr. Gentry for improving the laboratory equipment and procedures have been fully implemented. The bactericidal properties test on the laboratory distilled water supply was requested during a telephone conversation with Mr. John Sheats of your office, on 17 April 1980, and is expected to be conducted in the near future.

Should you require additional information regarding this request, please contact Ms. Elizabeth Betz, Natural Resources and Environmental Affairs Division, Base Maintenance Department, telephone (919) 451-5977.

Sincerely,

B. W. ELSTON Acting Base Maintenance Officer By direction of the Commanding General (14)

Copy to: Cmdr NAVFACENGCOM (Code 114)



Mr. Charles E, Rundgren Water Supply Branch Division of Health Services Department of Human Resources Post Office Box 2091 Raleigh, North Carolina 27602

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Since 1978 personnel from your agency have visited on one occasion. On 21 February 1980, Mr. Ralph Gentry, Microbiologist, Quality Assurance and Laboratory Evaluation Section, Surveillance and Analysis Division, Region IV, Environmental Protection Agency conducted an on-site bacteriological laboratory evaluation of the Base Laboratory. All recommendations made by Mr. Gentry for improving the laboratory equipment and procedures have been fully implemented expept for the following:

- (a) The inhibitory test on the washing process has been delayed until the installation of a recently purchased dishwasher has been completed.
- (b) The bactericidal properties test on the laboratory distilled water supply was requested during a telephone conversation with Mr. John Sheats of your office on 17 April 1980 and is expected to be conducted in the near future.

Please advise as to what further actions are required. Should you require additional information, regarding this request, please contact Miss Elizabeth Betz, Base Maintenance Department, Telephone 451-5977.

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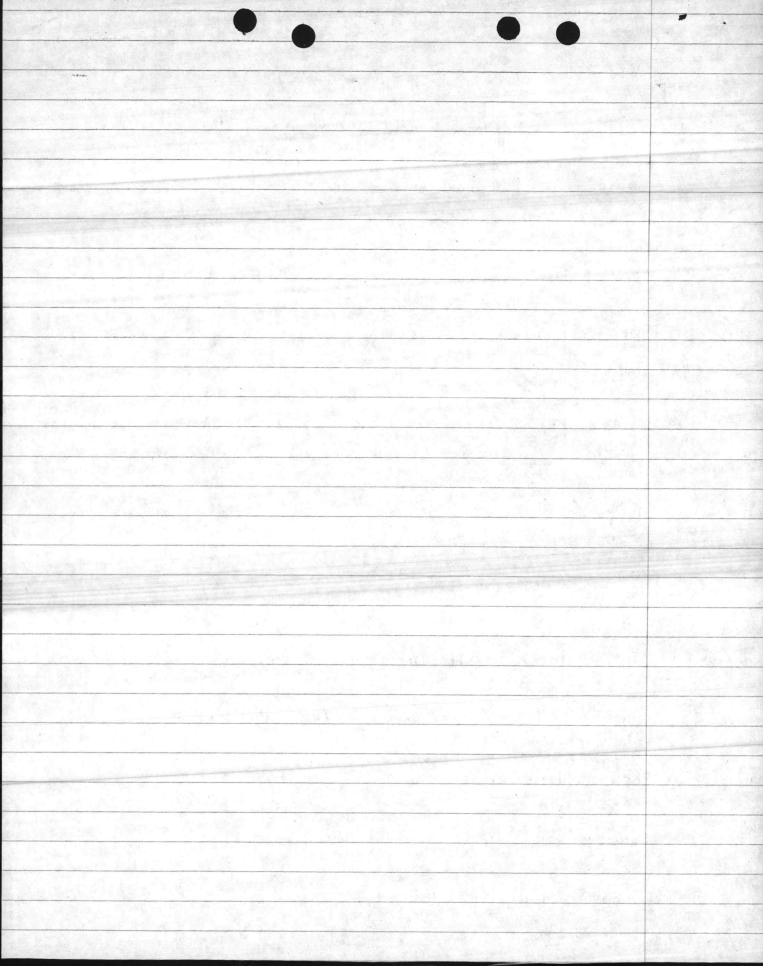
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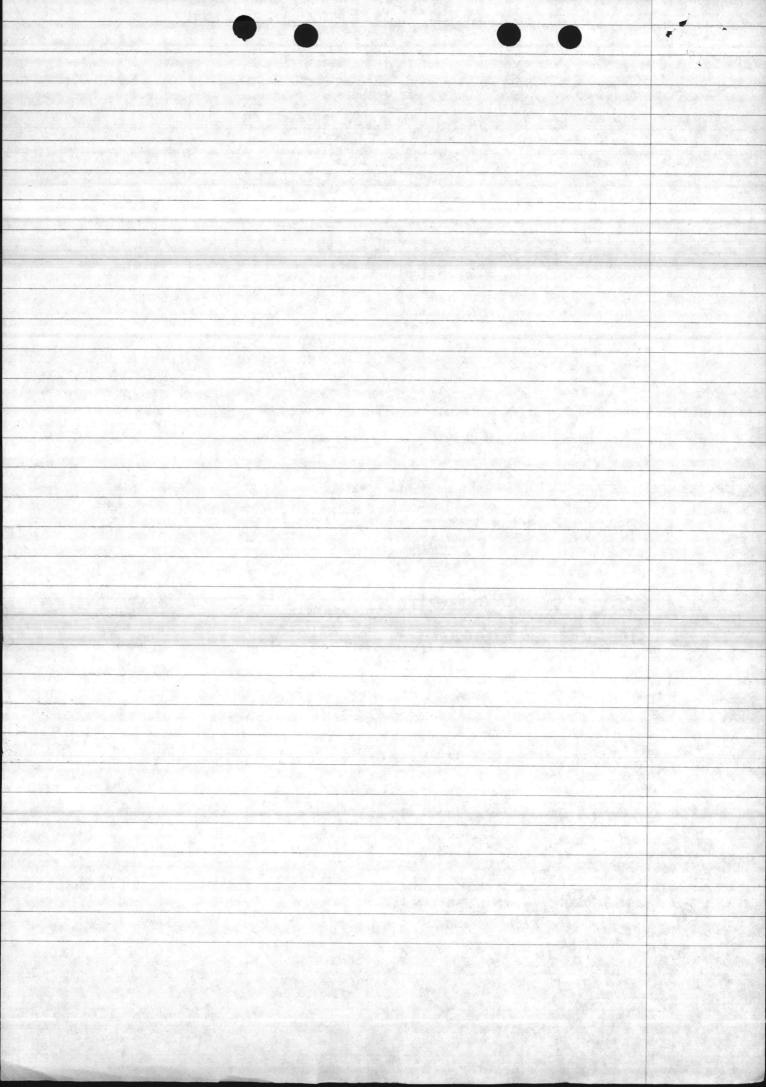
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ORDERED 25 FEB 80	SUGGESTED NEW INCUBATOR
23 APR 26 MAR 80	TRACE METALS ON DISTILLED WATER
17 APR 80 PHONE CON WITH SHEATS	BACTERICIDAL PROPERTIES ON DISTILLED WATER
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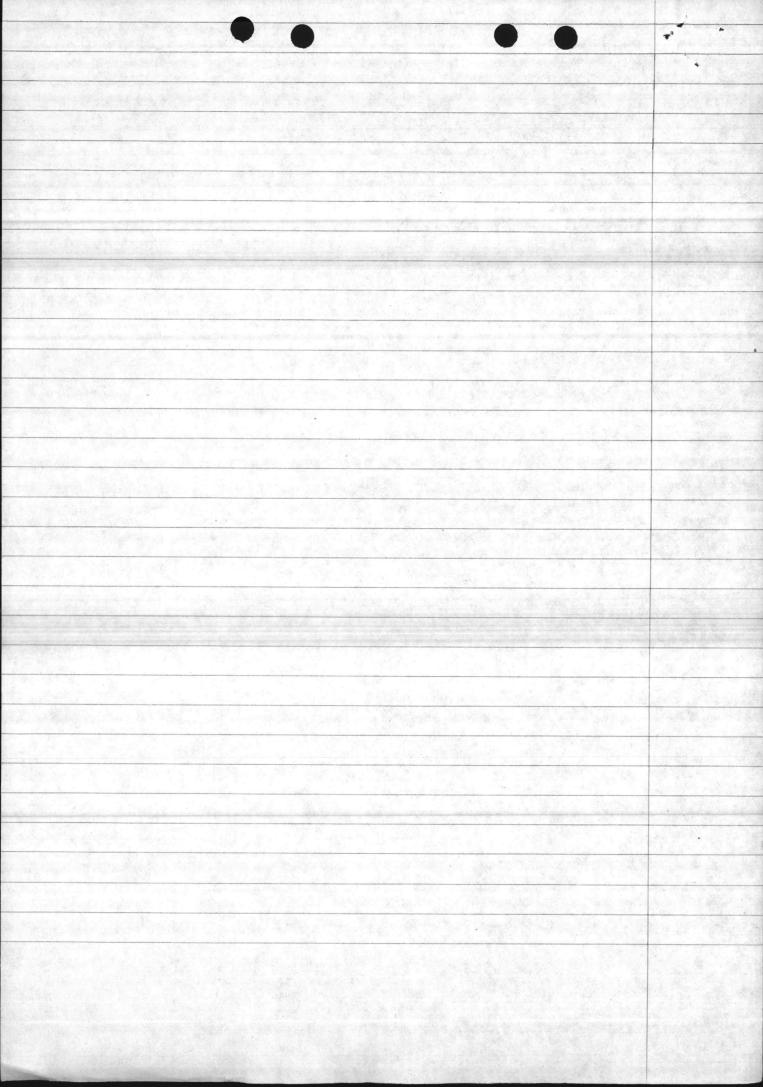
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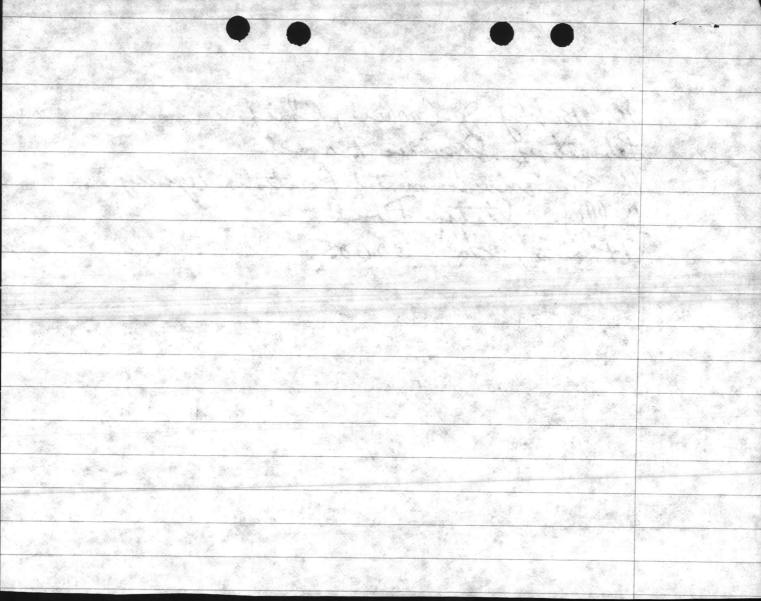
NOTES ON R. GENTRY'S INSPECTION At Incubator Distart Reading and correcting factor. on sheet Start Reading on Monday Morning and make any adjustments. 20-50° calibrated in 15th (3) or 4 A New incubator CIV light case -John Oheats - Service on bacterieidal properties under \$100 - well worth it Make are everything is Labeled & dated Pat Stock buffer in tubes. Order some more prepared media-Milipore Bad samples -State unsatisfactory and don't give count until verified Start writing time collected Q.C. - rule a positive, let everyone count It, compare counts, verify each one Duplicates on Fecal. Suspect P



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M. Bobby J. Carrol, Chief Laboratory Dervice Branch US Environmental Poratection agency College Statin Road athens, Sa 30605 MR. JOHN SHEATS Envioronmental Sciences Branch Lab PO. Box 28047 Rahegh, N.C. 27611 733-7308



ENVIRONMENTAL PROTECTION ACTCY REGION IV SURVEILLANCE AND ANALYSIS DIVISION ATHENS, GEORGIA 30601

January 30, 1980

REF: 4SA-LS

Commanding General Marine Corps Base Camp Lejeune, NC 28542

Dear Sir:

On February 21, 1980, I will conduct an on-site bacteriology laboratory evaluation of the Quality Control Laboratory in the Natural Resources Division under Base Maintenance.

This evaluation is a requirement prior to the granting of interim certification to laboratories analyzing public drinking water supplies.

The on-site evaluation and date have been discussed with Ms. Elizabeth Betz of the Quality Control Laboratory.

If you have any questions, please contact me at 404/546-3176.

Sincerely yours,

Ralph E. Gentry Microbiologist Quality Assurance & Laboratory Evaluation Section

cc - John Sheats NC Dept. of Human Resources / Raleigh, NC

