301(h)

WAIVER APPLICATION

City of Portsmouth, New Hampshire

December, 1982

Prepared by:

CITY ENGINEER PORTSMOUTH, NEW HAMPSHIRE

and

N.H. WATER SUPPLY & POLLUTION CONTROL COMMISSION

The State of New Hampshire

Water Supply and Pollution Control Commission

Hazen Drive — P.O. Box 95

Concord, N.H. 03301

December 16, 1982

Mr. Lester A. Sutton
Regional Administrator, Region I
Environmental Protection Agency
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Dear Mr. Sutton:

Attached are two copies of the Portsmouth, New Hampshire application for a waiver of secondary treatment as provided for in section 301(h) of the Clean Water Act Amendment of 1981.

The City of Portsmouth has worked closely with the Commission staff for the last several years in the effort to develop a solution to the problem of inadequate capacity at the Pierce Island wastewater treatment plant. Although there have been no adverse effects on the environment reported to date from the discharge of untreated wastewater to the Piscataqua River estuary, the City and the State are both anxious for an early solution to this potential hazard.

Your early review and approval of the application will allow construction of an expanded primary plant on Pierce Island in Portsmouth. By not requiring construction of secondary treatment, an estimated 10 million dollars can be saved and reallocated to treatment facilities that in our judgement are more urgently needed elsewhere in the State of New Hampshire.

Construction funds for the primary treatment plant expansion are currently on our fiscal year 1984 priority list.

If further information is required, we would appreciate hearing from you at an early date.

Sincerely,

Calvin A. Canney
City Manager

for William A. Healy, P.E.
Executive Director

WAH/CAC/GLP/csc
Attachments
cc: Mr. Kevin McSweeney, Chief, Water Quality Branch

The State of New Hampshire

Water Supply and Pollution Control Commission

Hazen Drive — P.O. Box 95

Concord, N.H. 03301

December 22, 1982

Office of Marine Discharge Evaluation
WH-546 U.S. Environmental Protection
Agency
401 M Street S.W.
Washington, D.C. 20460

Re: 301(h) Application - Portsmouth, New Hampshire

Gentlemen:

Attached is the original and one copy of the Portsmouth, New Hampshire application for a waiver of secondary treatment as authorized in section 301(h) of the Clean Water Act Amendments of 1981.

Two copies of this application have been sent to U.S. Environmental Protection Agency, Region I for their review and approval.

The City of Portsmouth has worked closely with the Commission staff for the last several years in the effort to develop a solution to the problem of inadequate capacity at the Pierce Island wastewater treatment plant. Although there have been no adverse effects on the environment reported to date from the discharge of untreated wastewater to the Piscataqua River estuary, the City and the State are both anxious for an early solution to this potential hazard.

Construction funds for the primary treatment plant expansion are currently on our fiscal year 1984 priority list.

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Sincerely,

Calvin A. Canney
City Manager

for William A. Healy, P.E.
Executive Director

WAH/CAC/GLP/csc
Attachments
cc: Mr. Kevin McSweeney, Chief, Water Quality Branch

We certify under penalty of law that we have personally examined and are familiar with the information submitted in the attached document(s) and, based on our inquiry of those individuals immediately responsible for obtaining the information, we are convinced that the information is true, accurate and correct. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Respectfully submitted,

Daniel Collins, P.E.
Chief Engineer
N.H. Water Supply and
Pollution Control
Commission

Calvin A. Canney
City Manager
Portsmouth, NH

FORM APPROVED
OMB No. 158– 0100

FOR AGENCY USE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER

STANDARD FORM A – MUNICIPAL

SECTION I APPLICANT AND FACILITY DESCRIPTION

Unless otherwise specified on this form all items are to be completed. If an item is not applicable indicate 'NA.'

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

Please Print or Type

1. Legal Name of Applicant (see instructions)	101	Department of Public Works City of Portsmouth
2. Mailing Address of Applicant (see instructions) Number & Street	102a	700 Islington Street
City	102b	Portsmouth,
State	102c	New Hampshire
Zip Code	102d	03801
3. Applicant's Authorized Agent (see instructions) Name and Title	103a	Steven Parkinson City Engineer
Number & Street	103b	700 Islington Street
City	103c	Portsmouth,
State	103d	New Hampshire
Zip Code	103e	03801
Telephone	103f	603 (Area Code) 431-2000 (Number)
4. Previous Application If a previous application for a permit under the National Pollutant Discharge Elimination System has been made, give the date of application.	104	82 9 3 (YR MO DAY) Permit No. NH0100234 Date signed by EPA Region I

I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete, and accurate.

Calvin A. Canney Printed Name of Person Signing	102e	City Manager Title
Signature of Applicant or Authorized Agent	102f	82 12 22 YR MO DAY Date Application Signed

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and wilfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statement or representation, or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both.

FOR AGENCY USE

Received ___ ___ ___ YR MO DAY

OFFICE: ___ EPA Region Number ___ State

FOR AGENCY USE

5. Facility (see instructions)
Give the name, ownership, and physical location of the plant or other operating facility where discharge(s) presently occur(s) or will occur.

Name	105a	Pierce Island Wastewater Treatment Plant
Ownership (Public, Private or Both Public and Private).	105b	☒ PUB ☐ PRV ☐ BPP
Check block if a Federal facility	105c	☐ FED
and give GSA Inventory Control Number	105d	
Location: Number & Street	105e	Pierce Island
City	105f	Portsmouth
County	105g	Rockingham
State	105h	New Hampshire

6. Discharge to Another Municipal Facility (see instructions)

a. Indicate if part of your discharge is into a municipal waste transport system under another responsible organization. If yes, complete the rest of this item and continue with Item 7. If no, go directly to Item 7.

106a ☐ Yes ☒ No

b. Responsible Organization Receiving Discharge

Name	106b	N/A
Number & Street	106c	
City	106d	
State	106e	
Zip Code	106f	

c. Facility Which Receives Discharge
Give the name of the facility (waste treatment plant) which receives and is ultimately responsible for treatment of the discharge from your facility.

106g

d. Average Daily Flow to Facility (mgd) Give your average daily flow into the receiving facility.

106h _____ mgd

7. Facility Discharges, Number and Discharge Volume (see instructions)
Specify the number of discharges described in this application and the volume of water discharged or lost to each of the categories below. Estimate average volume per day in million gallons per day. Do not include intermittent or noncontinuous overflows, bypasses or seasonal discharges from lagoons, holding ponds, etc.

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		Number of Discharge Points		Total Volume Discharged, Million Gallons Per Day
To: Surface Water	107a1	12	107a2	6.5 estimated
Surface Impoundment with no Effluent	107b1		107b2	
Underground Percolation	107c1		107c2	
Well (Injection)	107d1		107d2	
Other	107e1	12	107e2	6.5
Total Item 7	107f1		107f2	
If 'other' is specified, describe	107g1			

If any of the discharges from this facility are intermittent, such as from overflow or bypass points, or are seasonal or periodic from lagoons, holding ponds, etc., complete item 8.

8. Intermittent Discharges

a. Facility bypass points Indicate the number of bypass points for the facility that are discharge points.(see instructions) — 108a: 1

b. Facility Overflow Points Indicate the number of overflow points to a surface water for the facility (see instructions). — 108b: 4

c. Seasonal or Periodic Discharge Points Indicate the number of points where seasonal discharges occur from holding ponds, lagoons, etc. — 108c: 6

9. Collection System Type Indicate the type and length (in miles) of the collection system used by this facility. (see instructions) — 109a

- Separate Storm: ☐ SST
- Separate Sanitary: ☐ SAN
- Combined Sanitary and Storm: ☐ CSS
- Both Separate Sanitary and Combined Sewer Systems: ☒ BSC
- Both Separate Storm and Combined Sewer Systems (109b): ☐ SSC
- Length: 71 miles

10. Municipalities or Areas Served (see instructions)

	Name		Actual Population Served
110a	New Castle	110b	200
110a	Portsmouth	110b	23,000
110a		110b	
110a		110b	
110a		110b	

Total Population Served — 110c:

FOR AGENCY USE

11. Average Daily Industrial Flow
Total estimated average daily waste flow from all industrial sources.

111 0.5 mgd

Note: All major industries (as defined in Section IV) discharging to the municipal system must be listed in Section IV.

12. Permits, Licenses and Applications
List all existing, pending or denied permits, licenses and applications related to discharges from this facility. (see instructions)

112	Issuing Agency (a)	For Agency Use (b)	Type of Permit or License (c)	ID Number (d)	Date Filed YR/MO/DA (e)	Date Issued YR/MO/DA (f)	Date Denied YR/MO/DA (g)	Expiration Date YR/MO/DA (h)
1.	EPA		NPDES	NH0100234		82/9/3		87/10/3
2.								
3.								

13. Maps and Drawings
Attach all required maps and drawings to the back of this application. (see instructions)

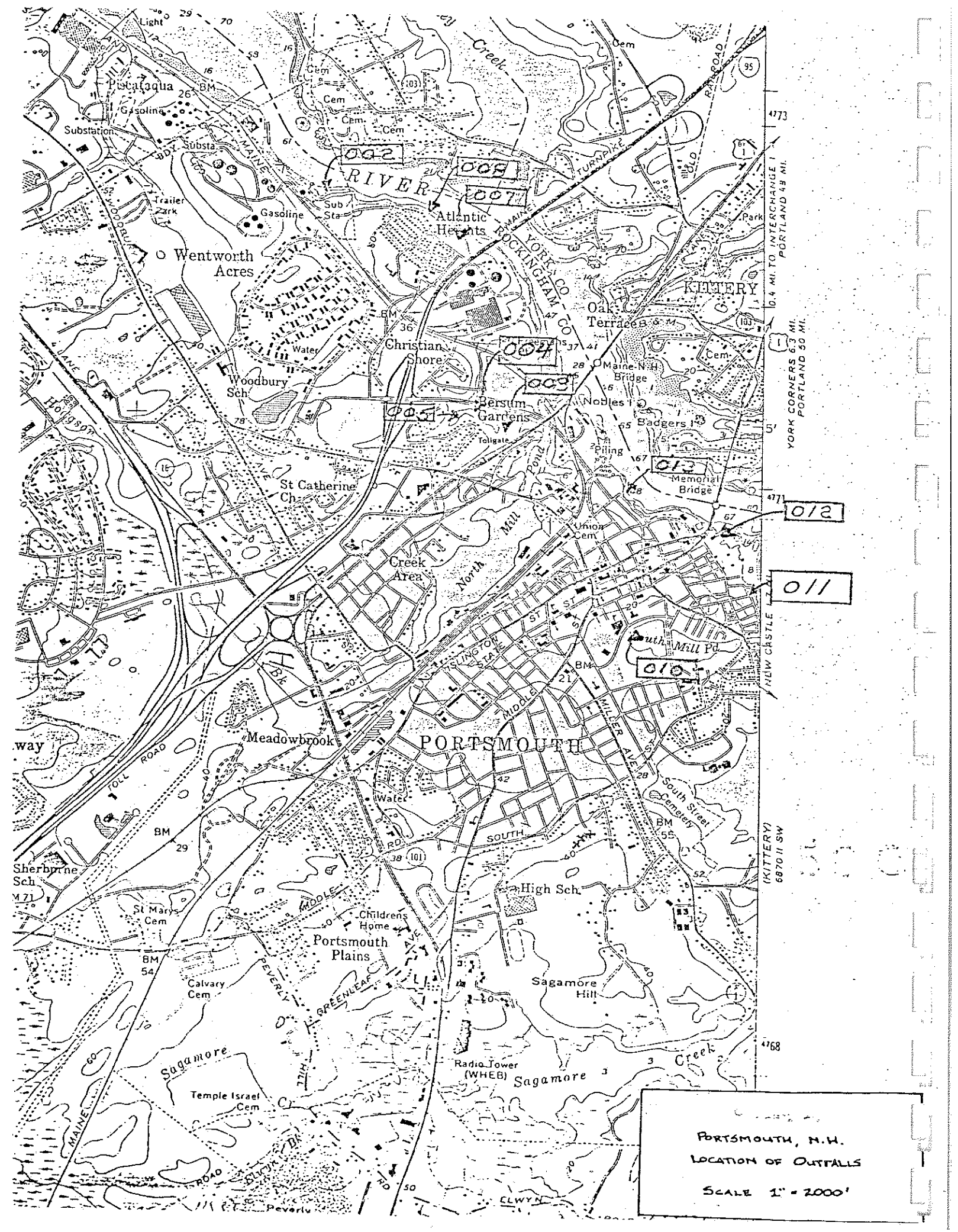
14. Additional Information

114	Item Number	Information

PORTSMOUTH, N. H.

LOCATION OF OUTFALLS

SCALE 1" = 2000



PORTSMOUTH, N.H.
LOCATION OF OUTFALLS
SCALE 1" = 2000'

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OMB No. 158–R0100

STANDARD FORM A–MUNICIPAL

FOR AGENCY USE

SECTION II. BASIC DISCHARGE DESCRIPTION

Complete this section for each present or proposed discharge indicated in Section I, Items 7 and 8, that is to surface waters. This includes discharges to other municipal sewerage systems in which the waste water does not go through a treatment works prior to being discharged to surface waters. Discharges to wells must be described where there are also discharges to surface waters from this facility. Separate descriptions of each discharge are required even if several discharges originate in the same facility. All values for an existing discharge should be representative of the twelve previous months of operation. If this is a proposed discharge, values should reflect best engineering estimates.

ADDITIONAL INSTRUCTIONS FOR SELECTED ITEMS APPEAR IN SEPARATE INSTRUCTION BOOKLET AS INDICATED. REFER TO BOOKLET BEFORE FILLING OUT THESE ITEMS.

1. Discharge Serial No. and Name a. Discharge Serial No. (see instructions)	201a	001
b. Discharge Name Give name of discharge, if any - (see instructions)	201b	Pierce Island Wastewater Plant
c. Previous Discharge Serial No If a previous NPDES permit application was made for this discharge (Item 4, Section I) provide previous discharge serial number.	201c	001
2. Discharge Operating Dates a. Discharge to Begin Date If the discharge has never occurred but is planned for some future date, give the date the discharge will begin.	202a	1964 YR MO
b. Discharge to End Date If the discharge is scheduled to be discontinued within the next 5 years, give the date (within best estimate) the discharge will end. Give reason for discontinuing this discharge in Item 17.	202b	YR MO
3. Discharge Location Name the political boundaries within which the point of discharge is located:		Agency Use
State	203a	New Hampshire — 203d
County	203b	Rockingham — 203e
(If applicable) City or Town	203c	Portsmouth — 203f
4. Discharge Point Description (see instructions) Discharge is into (check one)		
Stream (includes ditches, arroyos, and other watercourses)	204a	☐ STR
Estuary		☒ EST
Lake		☐ LKE
Ocean		☐ OCE
Well (Injection)		☐ WEL
Other		☐ OTH
If 'other' is checked, specify type	204b	
5. Discharge Point — Lat/Long. State the precise location of the point of discharge to the nearest second. (see instructions)		
Latitude	205a	43 DEG. 04 MIN. 24 SEC
Longitude	205b	70 DEG. 44 MIN. 23 SEC

DISCHARGE SERIAL NUMBER

001

FOR AGENCY USE

6. Discharge Receiving Water Name
Name the waterway at the point of discharge.(see instructions)

206a Piscataqua River Estuary

If the discharge is through an outfall that extends beyond the shoreline or is below the mean low water line, complete item 7.

For Agency Use		
Major	Minor	Sub
206b		

206c

For Agency Use
303e

7. Offshore Discharge

a. Discharge Distance from Shore 207a 378 feet

b. Discharge Depth Below Water Surface 207b 78 feet

If discharge is from a bypass or an overflow point or is a seasonal discharge from a lagoon, holding pond, etc., complete items 8, 9 or 10, as applicable, and continue with item 11.

8. Bypass Discharge (see instructions)

a. Bypass Occurrence
Check when bypass occurs

Wet weather 208a1 ☒ Yes ☐ No

Dry weather 208a2 ☒ Yes ☐ No

b. Bypass Frequency Give the actual or approximate number of bypass incidents per year.

Wet Weather 208b1 365 times per year

Dry weather 208b2 365 times per year

c. Bypass Duration Give the average bypass duration in hours.

Wet weather 208c1 24 hours

Dry weather 208c2 12 hours

d. Bypass Volume Give the average volume per bypass incident, in thousand gallons.

Wet weather 208d1 6,000 thousand gallons per incident

Dry weather 208d2 2,000 thousand gallons per incident

e. Bypass Reasons Give reasons why bypass occurs. 208e combined system - inadequate capacity at treatment plant

Proceed to Item 11.

9. Overflow Discharge (see instructions)

a. Overflow Occurrence Check when overflow occurs.

Wet weather 209a1 ☐ Yes ☐ No

Dry weather 209a2 ☐ Yes ☐ No

b. Overflow Frequency Give the actual or approximate incidents per year.

Wet weather 209b1 _____ times per year

Dry weather 209b2 _____ times per year

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c. Overflow Duration Give the average overflow duration in hours.

Wet weather — 209c1 — _____hours

Dry weather — 209c2 — _____Hours

d. Overflow Volume Give the average volume per overflow incident in thousand gallons.

Wet weather — 209d1 — _____thousand gallons per incident

Dry weather — 209d2 — _____thousand gallons per incident

Proceed to Item 11

10. Seasonal/Periodic Discharges

a. Seasonal/Periodic Discharge Frequency If discharge is intermittent from a holding pond, lagoon, etc., give the actual or approximate number of times this discharge occurs per year. — 210a — _____times per year

b. Seasonal/Periodic Discharge Volume Give the average volume per discharge occurrence in thousand gallons. — 210b — _____thousand gallons per discharge occurrence

c. Seasonal/Periodic Discharge Duration Give the average duration of each discharge occurrence in days. — 210c — _____days

d. Seasonal/Periodic Discharge Occurrence—Months Check the months during the year when the discharge normally occurs. — 210d

☐ JAN ☐ FEB ☐ MAR
☐ APR ☐ MAY ☐ JUN
☐ JUL ☐ AUG ☐ SEP
☐ OCT ☐ NOV ☐ DEC

11. Discharge Treatment

a. Discharge Treatment Description Describe waste abatement practices used on this discharge with a brief narrative. (See Instructions) — 211a

All flows receive preliminary treatment. Treatment plant effluent has received primary treatment with chlorination. Bypass flows receive partial chlorination after preliminary treatment.

DISCHARGE SERIAL NUMBER

FOR AGENCY USE

b. Discharge Treatment Codes
Using the codes listed in Table I of the Instruction Booklet, describe the waste abatement processes applied to this discharge in the order in which they occur, if possible.
Separate all codes with commas except where slashes are used to designate parallel operations.

211b: SC, M, GA, C, PG, VV, XN

If this discharge is from a municipal waste treatment plant (not an overflow or bypass), complete items 12 and 13

12. Plant Design and Operation Manuals
Check which of the following are currently available

a. Engineering Design Report — 212a: ☒

b. Operation and Maintenance Manual — 212b: ☐

13. Plant Design Data (see instructions)

a. Plant Design Flow (mgd)	213a	1.5 mgd
b. Plant Design BOD Removal (%)	213b	30 %
c. Plant Design N Removal (%)	213c	0 %
d. Plant Design P Removal (%)	213d	0 %
e. Plant Design SS Removal (%)	213e	50 %
f. Plant Began Operation (year)	213f	1964
g. Plant Last Major Revision (year)	213g	--

DISCHARGE SERIAL NUMBER

001*

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14. Description of Influent and Effluent (see Instructions)

Parameter and Code 214	Influent	Effluent					
	Annual Average Value (1)	Annual Average Value (2)	Lowest Monthly Average Value (3)	Highest Monthly Average Value (4)	Frequency of Analysis (5)	Number of Analyses (6)	Sample Type (7)
Flow Million gallons per day 50050	5.5	5.5	3.9	6.8	Cont.		
pH Units 00400			6.3	6.7	5/7	20	G
Temperature (winter) ° F 74028					0		
Temperature (summer) ° F 74027					0		
Fecal Streptococci Bacteria Number/100 ml 74054 (Provide if available)					0		
Fecal Coliform Bacteria Number/100 ml 74055 (Provide if available)					0		
Total Coliform Bacteria Number/100 ml 74056 (Provide if available)				TNTC	1/30	1	G
BOD 5-day mg/l 00310	114	101	15	176	1/30	1	8 hr. Comp.
Chemical Oxygen Demand (COD) mg/l 00340 (Provide if available)					0		
OR							
Total Organic Carbon (TOC) mg/l 00680 (Provide if available) (Either analysis is acceptable)					0		
Chlorine–Total Residual mg/l 50060	0	2.2	1.5	3.2	5/7		G

*Except for flow all values represent treatment plant portion only.

DISCHARGE SERIAL NUMBER

001

FOR AGENCY USE

14. Description of Influent and Effluent (see instructions) (Continued)

Parameter and Code 214	Influent	Effluent					
	Annual Average Value (1)	Annual Average Value (2)	Lowest Monthly Average Value (3)	Highest Monthly Average Value (4)	Frequency of Analysis (5)	Number of Analyses (6)	Sample Type (7)
Total Solids mg/l 00500							
Total Dissolved Solids mg/l 70300							
Total Suspended Solids mg/l 00530	136	110	78	256	1/30	12	8 hr. Comp.
Settleable Matter (Residue) ml/l 00545	1.8	0.4	0.3	0.6	5/7	250	G
Ammonia (as N) mg/l 00610 (Provide if available)							
Kjeldahl Nitrogen mg/l 00625 (Provide if available)							
Nitrate (as N) mg/l 00620 (Provide if available)							
Nitrite (as N) mg/l 00615 (Provide if available)							
Phosphorus Total (as P) mg/l 00665 (Provide if available)							
Dissolved Oxygen (DO) mg/l 00300	X						

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DISCHARGE SERIAL NUMBER

001

FOR AGENCY USE

15. Additional Wastewater Characteristics

Check the box next to each parameter if it is present in the effluent. (see instructions)

Parameter (215)	Present	Parameter (215)	Present	Parameter (215)	Present
Bromide 71870		Cobalt 01037		Thallium 01059	
Chloride 00940		Chromium 01034	X	Titanium 01152	
Cyanide 00720		Copper 01042	X	Tin 01102	
Fluoride 00951		Iron 01045		Zinc 01092	X
Sulfide 00745		Lead 01051	X	Algicides* 74051	
Aluminum 01105		Manganese 01055		Chlorinated organic compounds* 74052	X
Antimony 01097		Mercury 71900	X	Oil and grease 00550	
Arsenic 01002	X	Molybdenum 01062		Pesticides* 74053	
Beryllium 01012		Nickel 01067	X	Phenols 32730	X
Barium 01007		Selenium 01147	X	Surfactants 38260	
Boron 01022		Silver 01077	X	Radioactivity* 74050	
Cadmium 01027	X				

*Provide specific compound and/or element in Item 17, if known.

Pesticides (Insecticides, fungicides, and rodenticides) must be reported in terms of the acceptable common names specified in *Acceptable Common Names and Chemical Names for the Ingredient Statement on Pesticide Labels*, 2nd Edition, Environmental Protection Agency, Washington, D.C. 20250, June 1972, as required by Subsection 162.7(b) of the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

DISCHARGE SERIAL NUMBER

001

16. Plant Controls Check if the following plant controls are available for this discharge

215

Alternate power source for major pumping facility including those for collection system lift stations ☒ APS

Alarm for power or equipment failure ☒ ALM

FOR AGENCY USE

17. Additional Information

217 Item Number	Information	
15	As: 0.010 mg/l	
	Cd: <0.005 mg/l	
	Cr: <0.03 mg/l	
	Cu: 0.04 mg/l	
	Pb: 0.015 mg/l	
	Hg: <0.001 mg/l	
	Ni: 0.06 mg/l	
	Se: 0.031 mg/l	
	Ag: 0.002 mg/l	
	Zn: 0.08 mg/l	
15	Ethane, 1,1,2,2 - tetrachloro	30 µg/l
	Methane, dichlorobrome	<10
	Phenol	27
	Phenol, 2,4,6 - trichloro	116
	Phenol, 2,4 - dinitro	88

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FOR AGENCY USE

STANDARD FORM A—MUNICIPAL

SECTION III. SCHEDULED IMPROVEMENTS AND SCHEDULES OF IMPLEMENTATION

This section requires information on any uncompleted implementation schedule which has been imposed for construction of waste treatment facilities. Requirement schedules may have been established by local, State, or Federal agencies or by court action. IF YOU ARE SUBJECT TO SEVERAL DIFFERENT IMPLEMENTATION SCHEDULES, EITHER BECAUSE OF DIFFERENT LEVELS OF AUTHORITY IMPOSING DIFFERENT SCHEDULES (ITEM 1b) AND/OR STAGED CONSTRUCTION OF SEPARATE OPERATIONAL UNITS (ITEM 1c), SUBMIT A SEPARATE SECTION III FOR EACH ONE.

FOR AGENCY USE
Sched. No.

1. Improvements Required

a. **Discharge Serial Numbers Affected** List the discharge serial numbers, assigned in Section II, that are covered by this implementation schedule — 300: 001

b. **Authority Imposing Requirement** Check the appropriate item indicating the authority for the implementation schedule. If the identical implementation schedule has been ordered by more than one authority, check the appropriate items. (see instructions) — 301a

	301b
Locally developed plan	☐ LOC
Areawide Plan	☐ ARE
Basin Plan	☐ BAS
State approved implementation schedule	☒ SQS
Federal approved water quality standards implementation plan	☒ WQS
Federal enforcement procedure or action	☐ ENF
State court order	☐ CRT
Federal court order	☐ FED

c. **Improvement Description** Specify the 3-character code for the General Action Description in Table II that best describes the improvements required by the implementation schedule. If more than one schedule applies to the facility because of a staged construction schedule, state the stage of construction being described here with the appropriate general action code. submit a separate Section III for each stage of construction planned. Also, list all the 3-character (Specific Action) codes which describe in more detail the pollution abatement practices that the implementation schedule requires.

3-character general action description	301c	INC
3-character specific action descriptions	301d	PRI, DIS, INI, CSC

2. Implementation Schedule and 3. Actual Completion Dates

Provide dates imposed by schedule and any actual dates of completion for implementation steps listed below. Indicate dates as accurately as possible. (see instructions)

Implementation Steps		2. Schedule (Yr /Mo /Day)		3. Actual Completion (Yr /Mo /Day)	
a. Preliminary plan complete	302a	84 / 1 /	303a	/ /	
b. Final plan complete	302b	84 / 9 /	303b	/ /	
c. Financing complete & contract awarded	302c	85 / 4 /	303c	/ /	
d. Site acquired	302d	60 / /	303d	/ /	
e. Begin construction	302e	85 / 6 /	303e	/ /	
f. End construction	302f	87 / 10 /	303f	/ /	
g. Begin Discharge	302g	/ /	303g	/ /	
h. Operational level attained	302h	88 / 1 /	303h	/ /	

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PORTSMOUTH, NEW HAMPSHIRE

301(h) APPLICATION

I. GENERAL INFORMATION AND BASIC DATA REQUIREMENTS

A. Treatment System Description

1. **Are you applying for a modification based on a current discharge, improved discharge, or altered discharge as defined in 40 CFR 125.58? [40 CFR 125.59(a)]**

   This application is based on plant improvements and additions to the existing wastewater treatment plant on Pierce Island and to the collection system serving this plant. An Imhoff tank in Seacrest Village, which treats approximately 0.3 MGD, will be abandoned and wastewater now treated by this facility will be pumped to the Pierce Island plant. Therefore, this application is based on an improved discharge as defined in 40 CFR 125.58.

2. **Description of the Treatment/Outfall System [40 CFR 125.61(a) and 125.61(e)]**

   a. **Provide detailed descriptions and diagrams of the treatment system and outfall configuration which you propose to satisfy the requirements of section 301(h) and 40 CFR Part 125, Subpart G. What is the total discharge design flow upon which this application is based?**

   Plans and Specifications for upgrading the Pierce Island wastewater treatment plant to provide secondary treatment for 4.5 MGD are presently 95% complete. It is estimated that construction of this activated sludge wastewater plant as presently planned would cost in excess of 15 million dollars. If this application is approved, it is estimated that construction of an upgraded primary plant on Pierce Island could be built for 4.5 million dollars.

   Figure 1 on page 2 depicts the Pierce Island plant and possible additions and changes that would enable this plant to satisfactorily provide primary treatment for a design flow of 4.5 MGD. Improvements would include new primary clarification tanks, anaerobic digesters, and sludge handling facilities. The existing primary tanks would be converted to chlorine detention tanks.

   b. **Provide a map showing the geographical location of the proposed outfall(s) (i.e., discharge). What is the latitude and longitude of the proposed outfall(s)?**

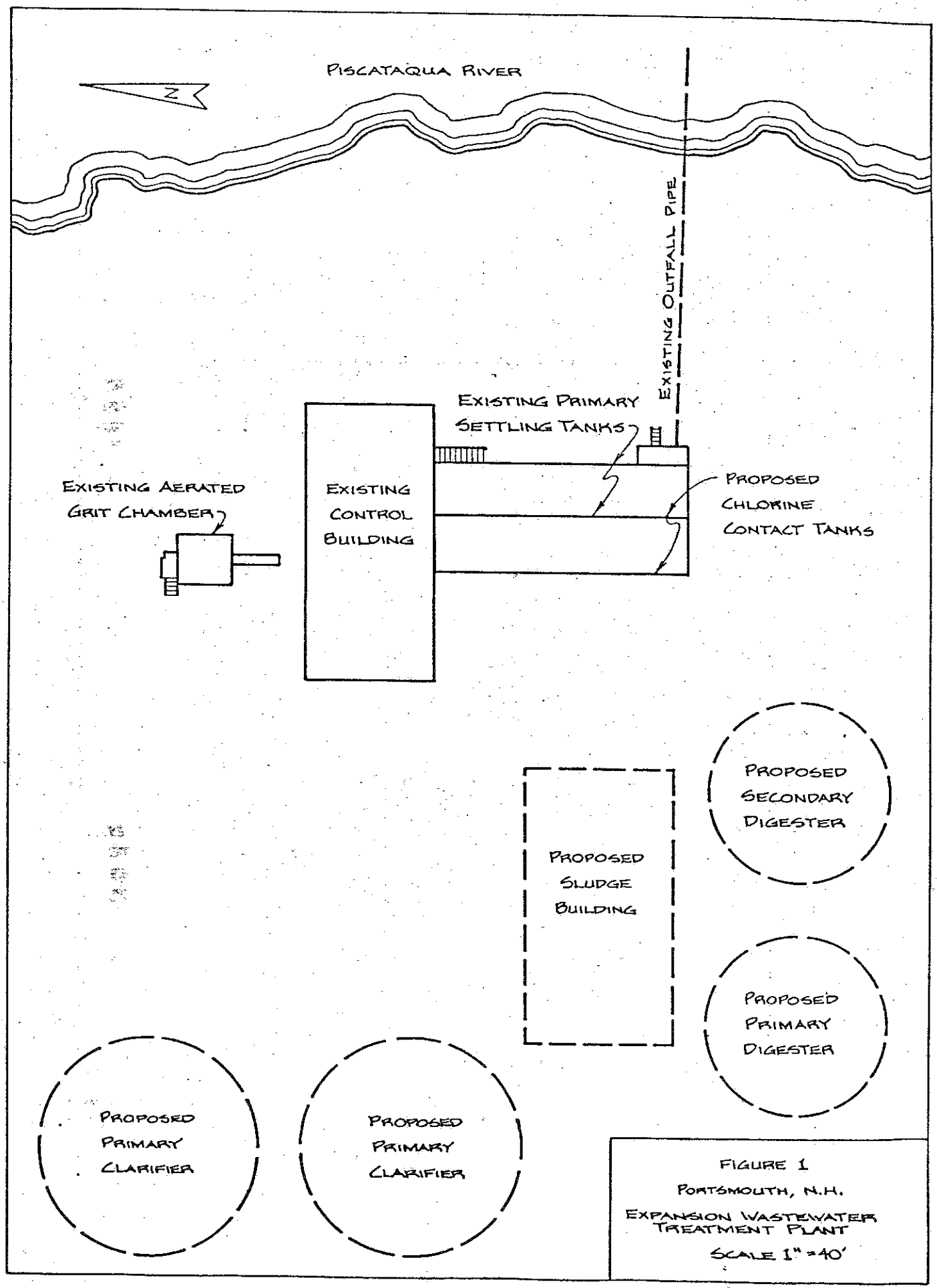


FIGURE 1

PORTSMOUTH, N.H.

EXPANSION WASTEWATER TREATMENT PLANT

SCALE 1" = 40'

Figure 2 on page 4 shows the location of Pierce Island relative to Portsmouth harbor.

Figure 3 on page 5 shows the profile of the existing outfall which which would not be changed. This outfall is located at:

43° 04.24' N latitude
70° 44.23' W longitude

c. For a modification based on an improved or altered discharge, provide a description and diagram of your current treatment system and outfall configuration; also, the outfall latitude and longitude, if different from the proposed outfall.

The existing Pierce Island wastewater treatment plant commenced operation in 1964 providing primary treatment for design flows 1.5 MGD and peak flows of 3.6 MGD. Fifteen (15) combined sewer overflows continued to discharge untreated wastewater directly to the Piscataqua River. Upgrading in 1977 of the two largest pumping stations and minor improvements to tide gates and sewer lines has greatly reduced the frequency of discharge at the combined sewer overflows. However, the increase to 17 MGD in pumping capacity to the Pierce Island plant has greatly exceeded plant treatment capacity. A temporary connection around the plant carries flows in excess of 2.0 MGD directly to the outfall pipe. During 1981 an average daily flow of 5.53 MGD was pumped to Pierce Island.

The Imhoff tank at Seacrest Village was constructed during World War II to provide treatment for temporary housing units. This facility is outdated and in poor physical condition. Treatment outside of chlorination is nonexistent.

The Portsmouth sewage collection system presently consists of approximately 71 miles of sewers. Forty-five (45) miles of these sewers were constructed prior to 1959 and many are throught to be in excess of 100 years old. Many of these old lines are adjacent to tidal ponds and the Piscataqua River. The presence of eels and small fish in the solids on the vacuum filter, plus a correlation between high tides and increased chloride content of the wastewater, leaves little doubt about the problem of infiltration into this collection system.

The nearby island town of New Castle pumps directly to the Pierce Island treatment plant. Flows are currently averag-

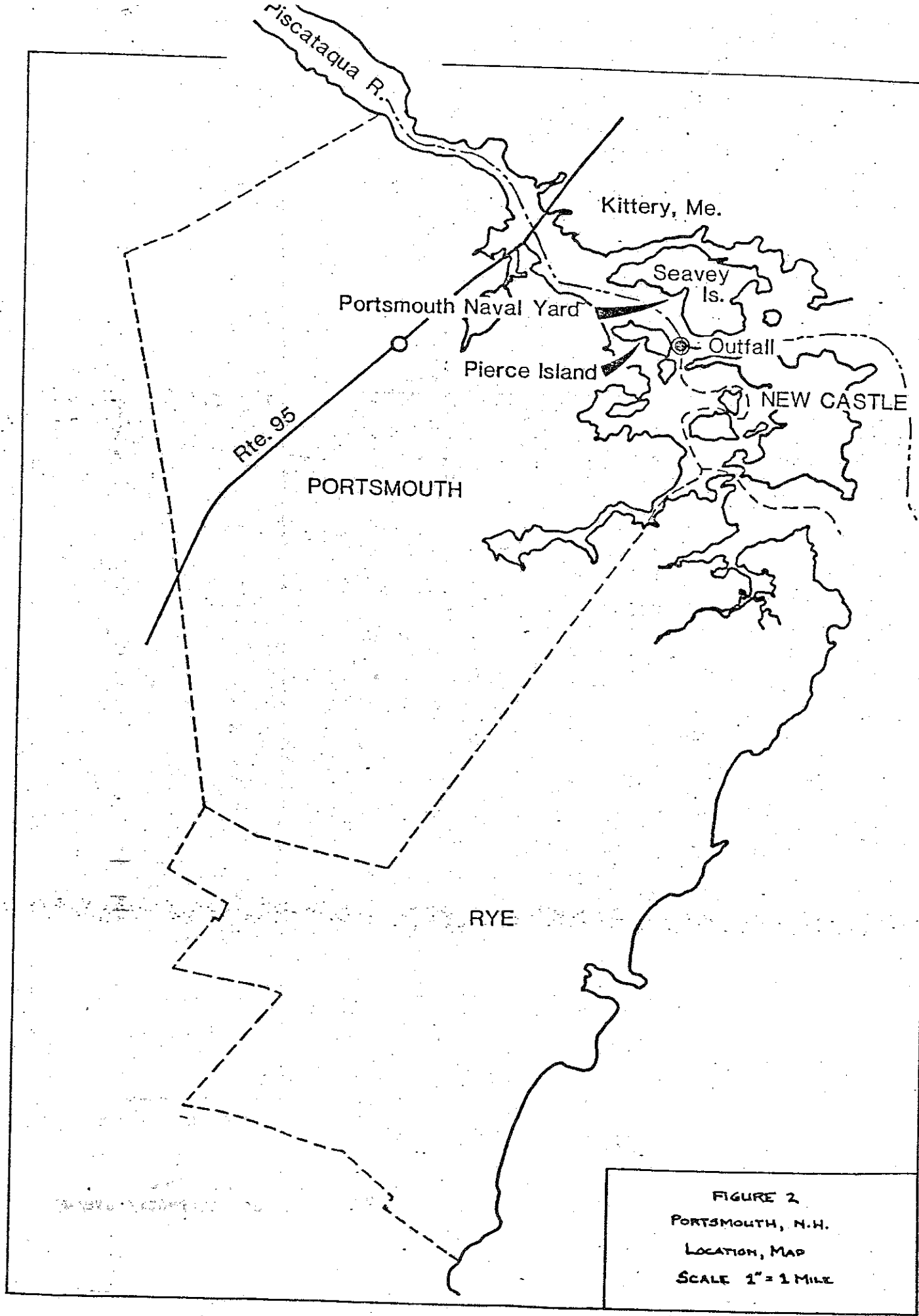


FIGURE 2
PORTSMOUTH, N.H.
LOCATION, MAP
SCALE 1" = 1 MILE

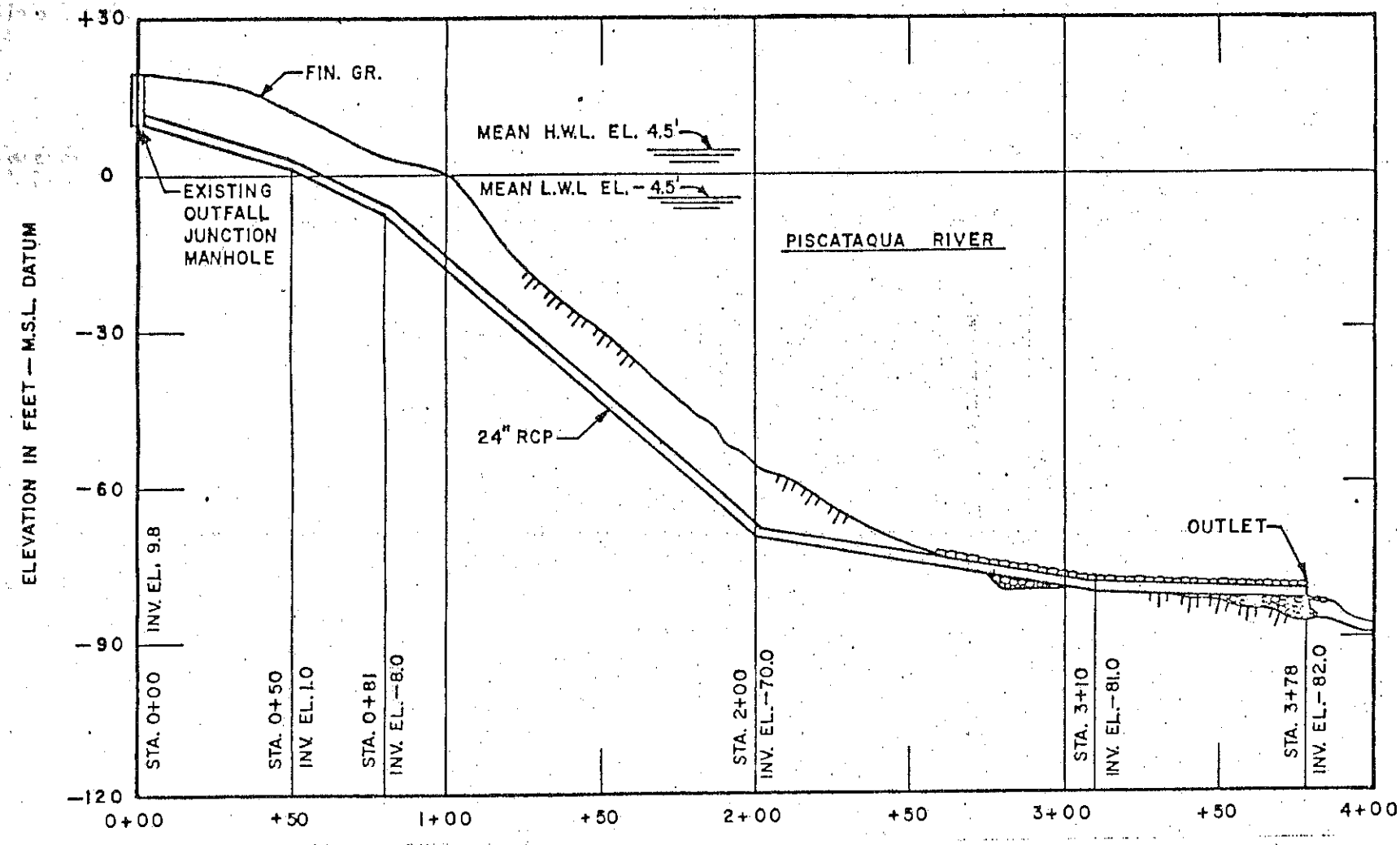


FIGURE 3
PORTSMOUTH, N.H.
PROFILE — OUTFALL SEWER

ing 20,000 gallons/day. Connection of a portion of Rye which is adjacent to the Lafayette Road Pumping Station is planned. This will only add an estimated 32,000 gallons/day to Portsmouth's total flow. No other connections from nearby communities are proposed.

3. Effluent limitations and characteristics [40 CFR 125.60(b) and 125.61(e)(2)]

a. Identify the final effluent limitations for a 5-day biochemical oxygen demand (BOD_5), suspended solids, and pH upon which your application for a modification is based:

BOD_5	175 mg/l
Suspended solids	125 mg/l
pH	6.5-8 (range)

b. Provide available data on the following effluent characteristics for your current discharge; also, for the modified discharge if different from the current discharge:

Table 1
Effluent Characteristics

	Current	Modified (Estimated)
Plant Flow (MGD): Plus Temporary Connection		
- minimum	2.8	1.0
- average dry weather	3.5	4.0
- average wet weather	10.0	8.0
- annual average	5.6	4.5
- maximum	17.3	12.0
Treated Portion of Flow Only BOD_5 (mg/l) for:		
- minimum plant flows	175	175
- average dry weather plant flows	150	160
- average wet weather plant flows	50	125
- maximum plant flow	20	100
- annual average plant flows	100	150
Dissolved Oxygen (mg/l) for:		
- minimum plant flows	1.7	1.0
- average dry weather plant flows	2.5	2.0
- average wet weather plant flows	8.0	5.0
- maximum plant flows	2.01	6.0
- annual average plant flows	5.5	2.5
- immediate dissolved oxygen demand (mg/l)	0.1	0.1

Table 1 (continued)

	Current	Modified
Suspended Solids (mg/l) for:		
- minimum plant flows	130	150
- average dry weather plant flows	120	140
- average wet weather plant flows	75	100
- maximum plant flows	50	75
- annual average plant flows	100	125
Toxic pollutants and pesticides (g/l)		
- Benzene, ethyl	28	28
- Tolunene	48	40
- Phenol	118	50
- Ethane 1,1,2,2 - tetrachloro-	20	20
- Phenol, 2,4,6 - trichloro-	116	50
- Phenol, 2,4 - dinitro-	88	50
pH		
- minimum	5.0	6.5
- maximum	7.8	8.0

4. **Effluent volume and mass emissions [40 CFR 125.61(e)(2) and 125.65(c)]**

Provide analyses showing projections of effluent volume (annual average, m^3 /sec) and mass loadings (kg/year) of BOD_5 and suspended solids for the design life of your treatment facility in 5-year increments. If the application is based upon an improved or altered discharge, the projections must be provided with and without the proposed improvements or alterations.

5. **Average daily industrial flow (m^3/sec) [40 CFR 125.65(c)]**

Provide or estimate the average daily industrial inflow to your treatment facility for the same time increments as in Question II.A.4 above.

Table 2 is based on the facility plan submitted in 1977 and data compiled by Wright-Pierce engineers in 1979 prior to the start of design of a 4.5 MGD secondary wastewater treatment plant for the City of Portsmouth. A review of 1981 water consumption rates by industries in Portsmouth reveals a decline by Booth Fisheries from 235,000 gallons/day to 28,000 gallons/day. Since economic conditions may improve by 1985 for Booth Fisheries and to be on

the conservative side, we have left unchanged Wright-Pierce's estimated flows and loadings. Since the proposed primary treatment expansion is the minimum that must be undertaken and doing nothing is not a viable alternative, we have not provided projections based on no improvements.

Table 2
Effluent Volume and Mass Emissions

	1985 (Initial)	1990	1995	2000	2005 (Design)
Population					
Sewered Population	23,000	25,675	28,350	31,025	33,700
Industrial Equivalent	2,300	5,000	7,700	10,400	13,100
Design Population	25,300	30,675	36,050	41,425	46,800
Wastewater Flows (1) (m^3/sec)					
Sewered Population	0.153	0.092	0.108	0.125	0.141
Industries	0.020	0.029	0.038	0.047	0.056
Total Average Flow	.173	0.121	0.146	0.172	0.197
Organic Loads in Effluent (Kg/year)					
BOD_5 (2)					
Industries	57,946	144,868	231,789	318,710	405,632
Sewered Population	533,116	593,961	654,806	715,651	776,495
Total BOD_5	591,062	738,829	886,595	1,034,361	1,182,127
Suspended Solids (3)					
Industries	52,680	120,032	187,385	254,737	322,089
Sewered Population	526,794	602,241	677,688	753,134	828,581
Total S.S.	579,474	722,273	865,073	1,007,797	1,150,670

(1) Wastewater flows for 1990 and later are based on the completion of sewer rehabilitation and separation work.

(2) BOD_5 loadings are based on 30% removal by primary treatment.

(3) Suspended solids loadings based on 50% removal by primary treatment.

6. Combined sewer overflows [40 CFR 125.65(b)]

a. Does (will) your collection and treatment system include combined sewer overflows?

There are currently ten (10) combined sewer overflows in the City of Portsmouth. Table 3 lists the outfalls and Figures 4 and 4a depict the locations of the outfalls.

b. **If yes, provide a description of your plan for minimizing combined sewer overflows to the receiving water.**

The installation of what will be called the Leslie Drive Lift Station and its related piping will do away with the outfalls designated 003-004-005-007 and 008. It has been estimated that a combined total of 1.0 MGD of raw wastewater is currently discharged from these outfalls. This new station has been designed and the city has agreed as part of its NPDES Permit to file for a construction grant within 60 days of notification by the state of availability of federal and state financial assistance.

The volume and frequency from discharge 009-010-011 and 012 has been dramatically reduced by the installation of larger pumps in 1976 at the Deer Street and Mechanic Street Pumping Stations. Improvements were also made on tide gates to prevent infiltration to the collection system during high tides.

The facilities plan outlines a program which includes 38 miles of separation plus sewer rehabilitation and sealing. It is anticipated that these improvements will be phased in during the next 10-20 years depending on the availability of state and federal funds.

Table 3
Combined Sewer Overflows

Serial Discharge Number	Location	Type of Discharge	Composition of Discharge	Receiving Water
003	Maplewood Avenue at Route 1	Combined Discharge	sanitary/ stormwater	Piscataqua River
004	Leslie Drive	Combined Discharge	sanitary/ stormwater	Piscataqua River
005	Cutts Street at Leslie Drive	Combined Discharge	sanitary/ stormwater	Piscatqua River
007	Preple Way at Ranger Way	Combined Discharge	sanitary/ stormwater	Piscataqua River
008	Crescent Way Near Saratoga Way	Combined Discharge	sanitary/ stormwater	Piscataqua River

FIGURE 42

PORTSMOUTH, N. H.

LOCATION OF OUTFALLS

SCALE 1" = 2000

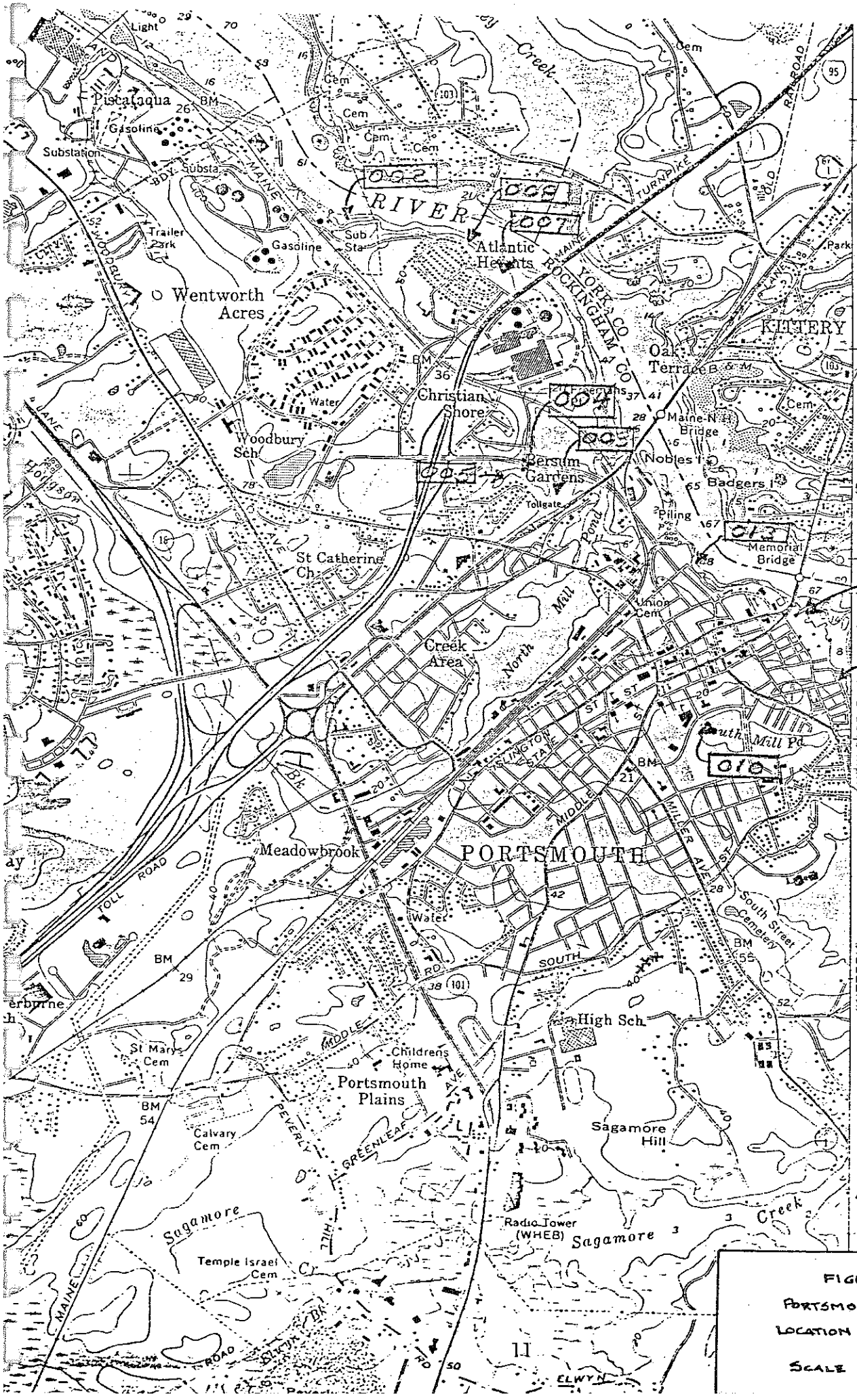


FIGURE 4b

PORTSMOUTH, N.H.

LOCATION OF OUTFALLS

SCALE 1" = 2000'

Table 3 (continued)

Serial Discharge Number	Location	Type of Discharge	Composition of Discharge	Receiving Water
009	Marcy St. Near Saratoga Way	Combined Discharge	sanitary/ stormwater	Piscataqua River
010	Parrot Ave. Near New Castle Ave.	Combined Overflow	sanitary/ stormwater	Piscataqua River
011	Mechanic St. at Gates Street	Combined Overflow	sanitary/ stormwater	Piscataqua River
012	Marcy Street	Combined Overflow	sanitary/ stormwater	Piscataqua River
013	Deer Street at Market Street	Combined Overflow	sanitary/ stormwater	Piscataqua River

7. **Outfall/diffuser design. Provide available data on the following for your current discharge and for the modified discharge, if different: [40 CFR 125.61(a)(1)]**

The outfall which was constructed in 1964 for the existing wastewater treatment plant will be used for the renovated and expanded plant. Figure 3 shows the profile of this outfall. The design features of this outfall are as follows:

Table 4
Outfall Design Features

Outfall length (meters)	115.2144
Diffuser diameter and length (meters)	N/A
Angle of port orientation from horizontal (degrees)	-0° 51'
Port diameter (meters)	0.61
Orfice contraction coefficient	Unknown
Vertical distance from mean low water to port invert (meters)	23.62
Number of ports	1
Port spacing (meters)	N/A
Design flow rate for each port (m^3/sec)	0.59

B. Receiving Water Description

1. **Are you applying for a modification based on a discharge to the ocean or to a saline estuary (40 CFR 125.58(q))? [40 CFR 125.59(a)]**

The Pierce Island outfall is in the mouth of the Piscataqua River which drains the Great Bay estuarine system into the Gulf of Maine. Salinity measurements in the vicinity of the outfall have an annual mean value in excess of 25 parts per thousand. Fresh water discharge up estuary from Pierce Island averages on the order of 1 percent of the tidal flow.

2. **Is your current discharge or modified discharge to stressed water? If yes, what are the pollution sources contributing to the stress? [40 CFR 125.61(f)]**

The current discharge at Pierce Island is not into stressed waters. A balanced indigenous population (BIP) lives within the zone of initial dilution (ZID). This conclusion is based on marine samples collected on rocks when sampling with a Petersen dredge within the (ZID) on July 19, 1982 and from correspondence with the New Hampshire Fish and Game Department.

3. **Provide a description and available data on the seasonal circulation patterns in the vicinity of your current and modified discharge(s). [40 CFR 125.61(a)**

Considerable current velocity data have been collected in Portsmouth Harbor by several investigations including:

Celikkol, B. and R. Reichard. 1976. Hydrodynamic model of the Great Bay Estuary System. Report No. UNH-SG-153. 197 p.

NOAA-NOS. 1979. Tidal current tables. U.S. Department of Commerce Publication.

Parsons, Brinckenhoff, Quade and Douglas, Inc., and Normandeau Associates, Inc. 1978. A candidate Environmental Impact Statement, Dredging, Portsmouth Navel Shipyard, Portsmouth, New Hampshire. Department of the Navy Publication.

Swenson, E., W.S. Brown, R. Trask. 1977. Great Bay Estuarine field program, 1975 Data Report, Part 1: Currents and Sea Levels. UNH-SG-157. 109 pp.

Wright, Pierce, Barnes and Wyman, Inc. and Normandeau Associates, Inc., 1979. Portsmouth Mooring and Docking Facilities Study.

The following is taken from the Portsmouth Mooring and Docking Facilities Study:

> The currents in Portsmouth Harbor, New Hampshire are primarily driven by the tides. The semi-diurnal tide, with a 12.4 hr period, predominates in the Gulf of Maine area. Within Portsmouth Harbor, these tidal currents are confined by the geometry of the harbor. A hydrodynamic model developed by Celikkol and Reichard (1976) has been used to predict typical tidal current patterns in Portsmouth Harbor. Their model indicated strongest flows were in the center of the main channel south of Seavey Island and Badgers Island. This is the location of the Pierce Island wastewater plant outfall.
>
> The maximum tidal-current velocities for Portsmouth Harbor have been reported by NOAA-NOS (1979). The maximum flood currents range from 1.5 kn off Fort Point to 3.0 kn south of Seavey Island and 3.3 kn southwest of Badgers Island. East of Badgers Island the average flood current is 1.1 kn. Off Gangway rock and west of Henderson Point the maximum flood-current speed 2.1 and 2.6 kn, respectively.
>
> The maximum ebb currents range from 2.0 kn off Fort Point to 3.8 kn south of Seavey Island, and 3.7 kn southwest of Badgers Island. East of Badgers Island the maximum ebb current is 0.4 kn. Off Gangway Rock and west of Henderson Point the maximum ebb-current speed is 3.0 and 2.3 kn, respectively.
>
> Figure 5 on page 15 has vector diagrams depicting the maximum ebb and flood velocities in Portsmouth Harbor. Figure 6 on page 16 has plots of vector diagrams during average flow conditions.

4. **Ambient water quality conditions during the period(s) of maximum stratification.**

   a. **Provide available data on the following in the vicinity of the current discharge location and for the modified discharge location if different from the current discharge: [40 CFR 125.60(b)(1)**

   -Dissolved oxygen (mg/l)
   -Suspended solids (mg/l)
   -pH
   -Temperature (C)
   -Salinity (ppt)
   -Transparency (turbidity, percent light transmittance)
   -Other significant parameters (e.g., nutrients, toxic pollutants and pesticides, fecal coliforms).

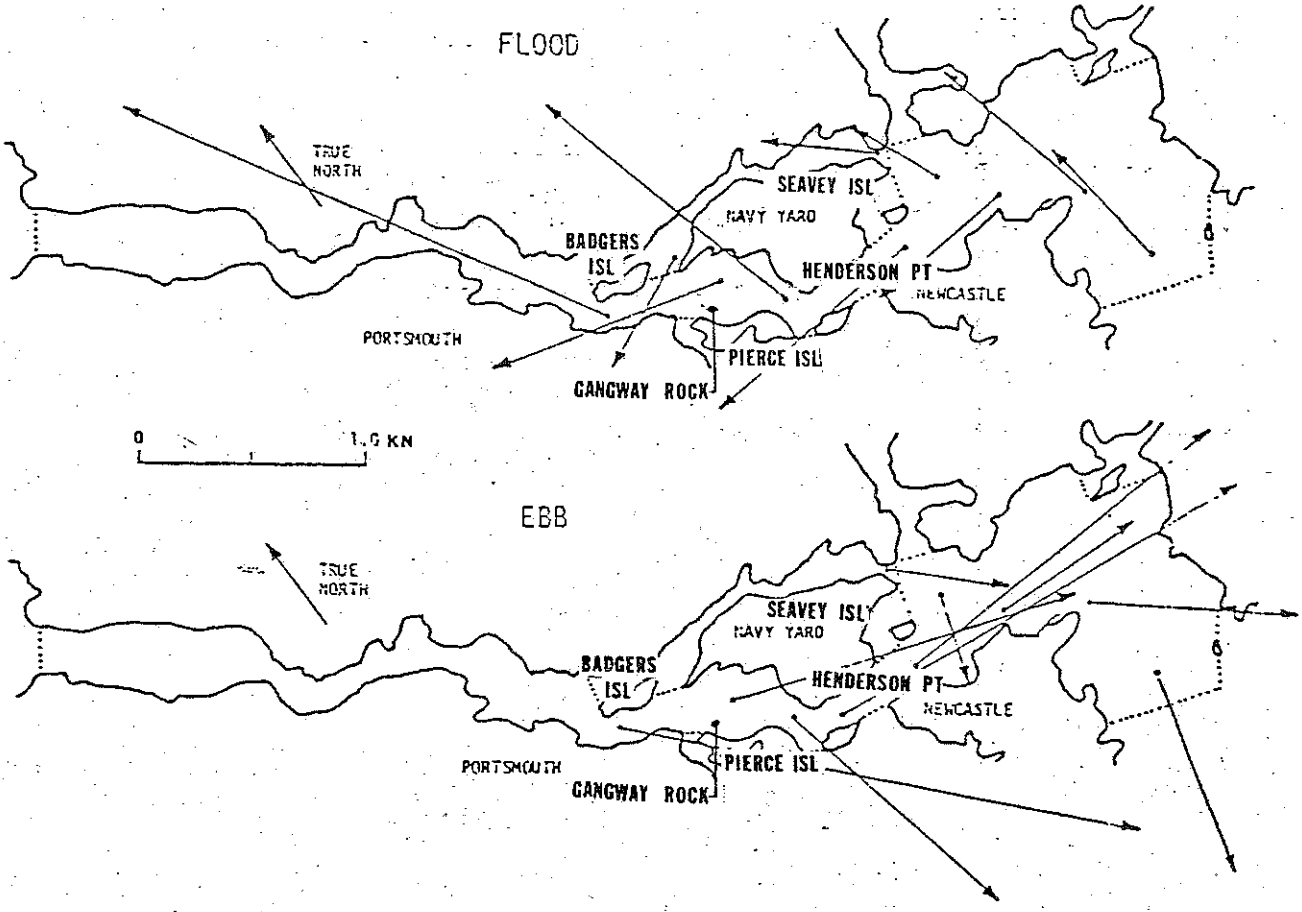


Figure 5. Maximum tidal current vectors for Portsmouth Harbor. (NOAA-NOS, 1979).

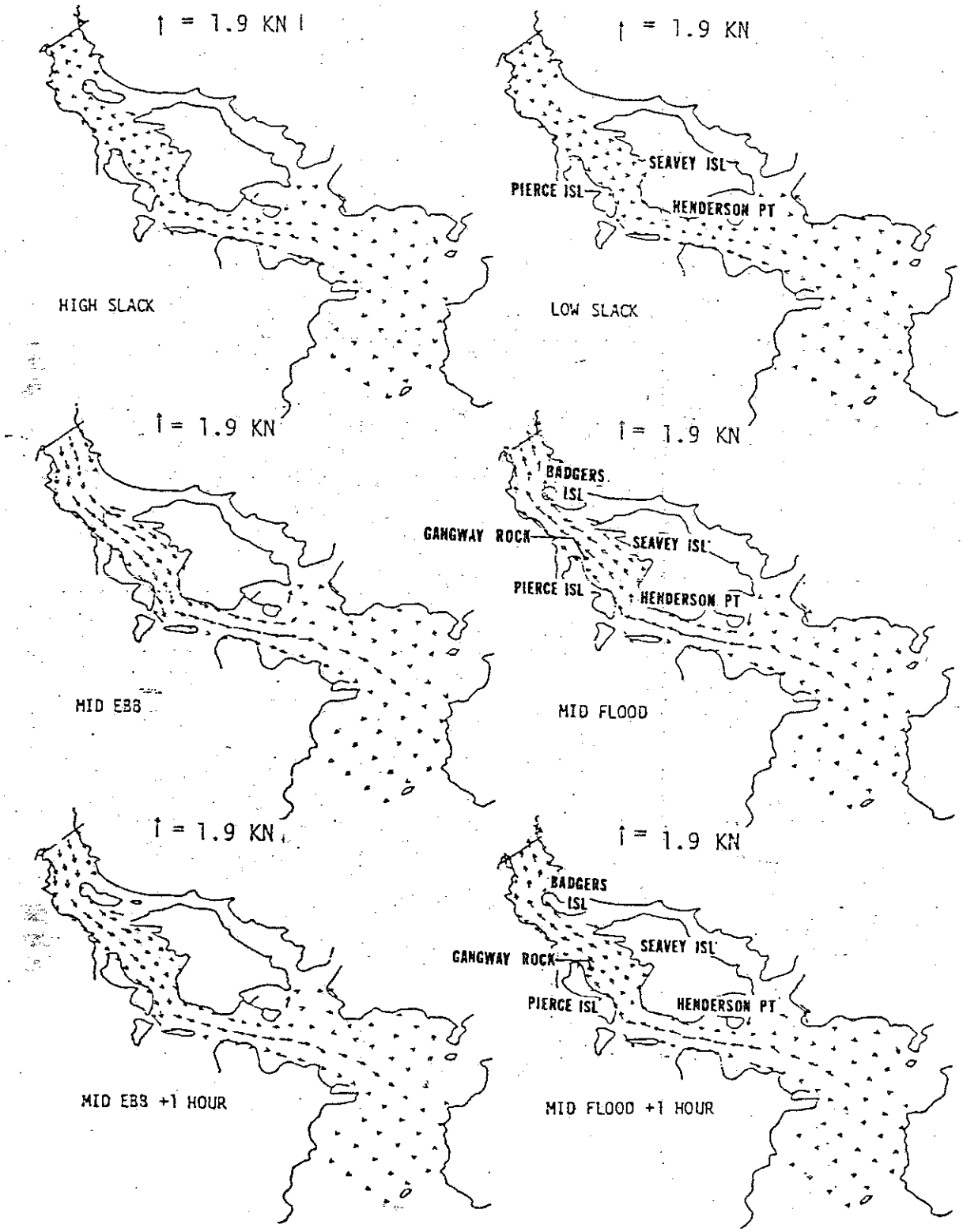


Figure 6. Vector plot of flow patterns for average flow conditions in Portsmouth Harbor. (PBQD-NAI, 1978).

On July 19, 1982 members of the New Hampshire Water Supply and Pollution Control Commission staff sampled in the vicinity of the Pierce Island outfall. The samples were collected between 9:50 a.m. and 10:10 a.m. Eastern Daylight Savings Time. This was approximately one hour prior to high tide. Flow rate at the wastewater treatment plant was 7.2 MGD between 7:30 a.m. and 10:00 a.m. on July 19th. It can be assumed that flows in excess of 2.0 MGD went around the wastewater treatment plant through the temporary connection to the the outfall line. Results of this sampling listed in Table 5 confirm that it is impossible to locate the plume from this outfall by normal sampling and testing procedures.

Table 5
Sampling Results - July 19, 1982
Vicinity Pierce Island Outfall

Test	50 Meters Upstream of Outfall (1)	Vicinity of Outfall (2)	50 Meters Downstream of Outfall (3)
Dissolved O_2	9.9 mg/l	9.8 mg/l	9.8 mg/l
Suspended Solids	60 mg/l	85 mg/l	57 mg/l
pH	8.1	8.1	8.1
Temperature	15 C	15 C	15 C
Salinity	26.8 ppt	27.0 ppt	26.8 ppt
Turbidity	0.9 NTU	1.0 NTU	1.6 NTU
BOD_6	1.2 mg/l	1.3 mg/l	1.5 mg/l

(1) Sample taken 18 m below surface.
(2) Sample taken 18 m below surface.
(3) Sample taken 17 m below surface.

Between April 1, 1982 and October 27, 1982 five samples were collected in the immediate vicinity of the outfall and analyzed for total coliform bacteria. This sampling was conducted as part of the New Hampshire Water Supply and Pollution Control Commission's Coastal Waters Monitoring Program. The results were: 120, 200, 30, 180, and 10 coliforms per 100 ml.

b. Are there other periods when receiving water quality conditions may be more critical than the period(s) of maximum stratification? If so, describe these other critical periods and provide the above available data for other critical periods. [40 CFR 125.61(a)(1)].

Due to the high dilutions and strong current in the vicinity of the outfall there are no critical periods for the receiving waters in the vicinity of Pierce Island.

C. Biological Conditions

1. a. Are distinctive habitats of limited distribution (such as kelp beds or coral reefs) located in areas potentially affected by the modified discharge? [40 CFR 125.61(c)

b. If yes, provide available information on types, extent, and location of habitats

No distinctive habitats are present in this area. This evaluation is based on input from state agencies (Fish and Game Department, Water Supply and Pollution Control Commission), the state university (Sea Grant Program), and from the literature, primarily from the extensive work done by Normandeau Associates Inc. for Public Service Company and the Navy Yard.

2. a. Are commercial or recreational fisheries located in areas potentially affected by the modified discharge? [40 CFR 125.61(c)

b. If yes, provide available information on types, location and value of fisheries.

Both commercial and recreational fisheries are located in the vicinity of the modified discharge. Lobster trapping is the only commercial fishery of the area, and very few traps are actually located in areas that could ever be affected by the discharge.

The recreational fishery includes crabs and a variety of finfish. On page 19 is a listing of finfish that have been found in Portsmouth Harbor and Great Bay. This list was prepared by the New Hampshire Department of Fish and Game. The most popular fishing includes flounder, smelt, striped bass, and coho salmon.

There is no information on the value of the fisheries located in the very limited area that may potentially be affected by the modified discharge.

Table 6
Species of Fish - Portsmouth Harbor and Great Bay

CLASS	CHONDRICHTHYES - CARTILAGINOUS FISHES
ORDER	SQUALIFORMES
FAMILY	SQUALIDAE
	SPINY DOGFISH - SQUALUS ACANTHIAS (LINNAEUS)
ORDER	RAJIFORMES
FAMILY	RAJIDAE - SKATES
CLASS	OSTEICHTHYES - BONY FISHES
ORDER	ANGUILLIFORMES (APODES AND LYOMERI)
FAMILY	FRESHWATER EELS
	AMERICAN EEL - ANGUILLA ROSTRATA (LESUEUR)
FAMILY	CONGRIODAE - CONGER EELS
ORDER	CLUPEIFORMES
FAMILY	CLUPEIDAE - HERRINGS
	BLUEBACK HERRING ALOSA AESTIVALIS (MITCHILL)
	ALEWIFE ALOSA PSEUDOHARENGUS (WILSON)
	AMERICAN SHAD ALSO SAPIDISSIMA (WILSON)
	ATLANTIC MENHADEN BREVOORTIA TYRANNUS (LATROBE)
	ATLANTIC HERRING CLUPEA HARENGUS HARENGUS (LINNAEUS)
ORDER	SALMONIFORMES
FAMILY	SALMONIDAE - TROUTS
	COHO SALMON - ONCORHYNCHUS KISUTCH (WALBAUM)
	RAINBOW TROUT - SALMO GAIRDNERI (RICHARDSON)
FAMILY	OSMERIDAE - SMELTS
	RAINBOW SMELT - OSMERUS MORDAX (MITCHELL)
ORDER	LOPHIIFORMES (PEDICULATI)
FAMILY	LOPHIDAE - GOOSEFISHES
	GOOSEFISH - LOPHIUS AMERICANUS (VALANCIENNES)
ORDER	GADIFORMES - (ANACANTHINI)
FAMILY	GADIDAE - CODFISHES
	CUSK - BROSME BROSME (MULLER)
	ATLANTIC COD - GADUS MORHUA
	HADDOCK - MELANOGRAMMUS BILINEARIS (MITCHELL)
	ATLANTIC TOMCOD - MICROGADUS TOMCOD (WALBAUM)
	POLLOCK - POLLACHIUS VIRENS (LINNAEUS)
	RED HAKE - UROPHYCIS CHUSS (WALBAUM)
	WHITE HAKE - UROPHYCIS TENUIS (MITCHELL)
FAMILY	ZOARCIDAE - EELPOUTS
	OCEAN POUT - MACROZOARCES AMERICANUS (BLOCH & SCHNEIDER)

ORDER	ATHERINIFORMES (BELONIFORMES, SYNENTOGNATHI; CYPRINODONTIFORMES; MICROCYPRINI)
FAMILY	CYPRINODONTIDAE - KILLIFISHES
	MUMMICHOG - FUNDULUS HETEROCLITUS (LINNAEUS)
FAMILY	ATHERINIDAE - SILVERSIDES
	ATLANTIC SILVERSIDE - MENIDIA MENIDIA (LINNAEUS)
ORDER	PERCIFORMES (PERCOMORPHI; ACANTHOPTERYGII)
FAMILY	PERCICHTHYIDAE - TEMPERATE BASSES
	WHITE PERCH - MORONE AMERICANA (GMELIN)
FAMILY	SERRANIDAE - SEA BASSES
	BLACK SEA BASS - CENTROPRISTES PHILADELPHICUS (LINNAEUS)
FAMILY	POMATOMIDAE - BLUEFISHES
	BLUEFISH - POMATOMUS SALTATRIX (LINNAEUS)
FAMILY	LABRIDAE - WRASSES
	TAUTOG - TAUTOGA ONITIS (LINNAEUS)
	CUNNER - TAUTOGOLABRUS ADSPERSUS (WALBAUM)
FAMILY	ANARHICHADIDAE -WOLFFISHES
	ATLANTIC WOLFFISH - ANARHICHAS LUPUS (LINNAEUS)
FAMILY	SCOMBRIDAE - MACKERELS & TUNAS
	ATLANTIC MACKEREL - SCOMBER SCOMBRUS (LINNAEUS)
FAMILY	SCORPAENIDAE - SCORPIONFISHES
	REDFISH OR OCEAN PERCH - SEBASTES MARINUS (LINNAEUS)
FAMILY	CUTTIDAE - SCULPINS
	LONGHORN SCULPIN - MYOXOCEPHALUS OSTODECEMSPINOSUS (MITCHELL)
	SHORTHORN SCULPIN - MYOXOCEPHALUS SCORPIUS (LINNAEUS)
	SEA RAVEN - HEMITRIPTERUS AMERICANUS (GMELIN)
	GRUBBY - MYOXOCEPHALUS AENEUS (MITCHELL)
ORDER	PLEURONECTIFORMES (HETEREOSOMATO)
FAMILY	BOTHIDAE - LEFTEYE FLOUNDERS
	WINDOWPANE - SCOPHTYALUM AQUOSUS (MITCHELL)
FAMILY	PLEURONECTIDAE - RIGHTEYE FLOUNDERS
	ATLANTIC HALIBUT - HIPPOGLOSSUS - HIPPOGLOSSUS (LINNAEUS)
	YELLOWTAIL FLOUNDER - LIMANDA FERRUGINEA (STORER)
	SMOOTH FLOUNDER - LIOPSETTA PUTNAMI (GILL)
	WINTER FLOUNDER - PSEUDOPLEURONECTES AMERICANUS (WALBAUM)
(RARE)	SUMMER FLOUNDER - PARALICHTHYS DENTATUS (LINNAEUS)
FAMILY	MOLIDAE - MOLAS

D. State and Federal Laws [40 CFR 125.60]

1. Are there water quality standards applicable to the following pollutants for which a modification is requested:

- Biochemical oxygen demand or dissolved oxygen?
- Suspended solids, turbidity, light transmittance, or maintenance of the euphotic zone?
- pH of the receiving water?

The Piscataqua River and adjacent estuarine waters have been classified as "B" waters by the state. The "B" standards will not be violated by the proposed primary treatment plant at Pierce Island. No modifications of "B" standards will be required.

2. If yes, what is the water use classification for your discharge area? What are the applicable, numerical standards for your discharge area for each of the parameters for which a modification is requested? Provide a copy of the applicable standards or indicate where they can be found.

Standards for classification of surface waters in New Hampshire can be found in RSA 149:3.

3. Will your modified discharge comply with applicable provisions of the Coastal Zone Management Act, Marine Protection, Research and Sanctuaries Act, and the Endangered Species Act? If yes, provide the required certifications of compliance. [40 CFR 125.59(b)(3)]

Letters from the Office of State Planning, the U.S. Fish and Wildlife Service, and the Northeast Regional Office of National Marine Fisheries Service which state Portsmouth will be in compliance with the above mentioned acts are in Appendix A.

4. Are you are aware of any State or Federal Law or regulations (other than the Clean Water Act or the three statutes identified in item 3 above) or an Executive Order which is applicable to your discharge? If yes, provide sufficient information to demonstrate that your modified discharge will comply with such law(s) or order(s). [40 CFR 125.59(b)(3)]

We are not aware of any State of Federal Laws or regulations other than the three statutes identified in item 3 above or Executive Order which is applicable to this discharge. A copy of a letter from the New Hampshire Water Supply and Pollution Control Commission certifying that the City of Portsmouth will be in compliance with all state statutes is in Appendix B.

II. TECHNICAL EVALUATION

A. Physical Characteristics of Discharge [40 CFR 125.61(a)] [40 CFR 125.60(b)]

1. **What is the lowest initial dilution for your current and modified discharge(s) during the period(s) of maximum stratification and any other critical period(s) of discharge volume/composition, water quality, biological seasons, or oceanographic conditions?**

The most critical period of discharge for the Pierce Island outfall is assumed to be at low tide during the late summer. At this time water temperatures would be at their highest and dissolved oxygen levels correspondingly low. From the information contained in the report submitted by PBQD-NA for the Department of the Navy, there does not appear to be any significant stratification of waters in the vicinity of Pierce Island.

The critical dilution (Sa) has been computed to be 22.5. Table 7 lists the values assumed for this calculation.

Table 7
Lowest Initial Dilution Data

H	= Water depth, m	23.62
Q	= Effluent flow, m^3/sec	0.197
d	= Port diameter, m	0.61
n	= Number of ports	1
T	= Temp. - bottom receiving water	16°
S	= Salinity - bottom receiving water	25.5
T	= Temp. - surface receiving water	18°
S	= Salinity - surface receiving water	25.0

Table 7
Lowest Initial Dilution Data
(continued)

K	$= q/\sqrt{d^5}$	.677
Fr	$= (K) \frac{12.855}{\sqrt{\sigma B}}$	2.023
σB	= Sea water density (bottom)	18.498
σS	= Sea water density (surface)	17.676
S	$= \sigma B/(\sigma B - \sigma B)$	22.5
B	= (Figure III-1, Tech. Support Manual)	27
Hr	$= Bq^{0.4}$	14.098

Since Hr is less than H, S = Sa = 22.5

2. **What are the dimensions of the zone of initial dilution for your modified discharge?**

The zone of initial dilution (ZID) was considered to be a circular area equal in radius to the water column height above the end of the outfall pipe.

$ZID = \pi \times (23.62)^2 = 1753$ sq. meters

3. **Will there be significant sedimentation of suspended solids in the vicinity of the modified discharge?**

The mass emission rate of solids in Kg/day is computed as follows:

$$\frac{\text{Flow (MGD)} \times 8.34 \text{ lbs/gal} \times \text{Suspended Solids (mg/l)}}{2.205 \text{ lgs/Kg}}$$

For Portsmouth:

$$\frac{4.5 \text{ MG} \times 8.34 \text{ lbs/gal} \times 125 \text{ mg/l}}{2.205 \text{ lbs/Kg}} = 2125 \text{ Kg/day}$$

Using Figure III-4 in the Technical Support Manual a loading of 2125 Kg/day with an Hr value of 14 plots just above the dashed line. This would indicate that futher analysis of biological

effects is needed. However, Figure III-4 is based on current velocities of 2.5 cm/sec. The average current velocities in the vicinity of the Pierce Island outfall are in excess of 100 cm/sec (2 knots). We strongly feel that further analysis of biological effects are not needed.

B. Compliance with Applicable Water Quality Standards [40 CFR 125.60(b)]

1. **What is the concentration of dissolved oxygen immediately following initial dilution for the period(s) of maximum stratification and any other critical period(s)?**

Using Table III-2 in the Technical Support Document the estimated dissolved oxygen depression following initial dilution is between 0.35 - 0.45 mg/l for primary treated waste with an initial dilution of 22.5. Since the receiving waters have been found to be near or above 100 percent saturation by other investigations (3), a depression of 0.35 - 0.45 mg/l would not affect water quality standards.

2. **What is the farfield dissolved oxygen depression and resulting concentration due to BOD exertion of the wastefield during the period(s) of maximum stratification and any other critical period(s)?**

The following formula has been given in the Technical Support Document for computing the fairfield dissolved oxygen depression for semi-enclosed embayments (estuaries).

$$DO = BOD_5/10(Sa)$$

Where:

DO = fairfield oxygen depression, mg/l

BOD_5 = 5 day BOD concentration in the effluent, mg/l

Sa = initial dilution

For Pierce Island:

$$DO = 150 \text{ mg/l}/10(22.5)$$

$$DO = 0.67 \text{ mg/l}$$

It is not likely that the fairfield oxygen depression will ever approach the calculated value of 0.67 mg/l because the Pierce Island outfall is not in a semi-enclosed embayment. A value as high as 0.67 mg/l however, would not affect the receiving waters as they are always close to saturation with dissolved oxygen.

3. **What is the increase in receiving water suspended solids concentration immediately following initial dilution of the modified discharge(s)?**

The Technical Support Document gives the following formula for computing change in suspended solids.

$$SS = SSe/Sa$$

Where:

SS = change in suspended solids, mg/l

SSe = suspended solids concentrations in effluent, mg/l

Sa = initial dilution

Currently, only 40 percent of the effluent from the Pierce Island plant is receiving primary treatment, the remaining 60 percent is bypassed around the plant via the temporary connection to the outfall because of treatment plant limitations.

Assuming that the current average concentration of suspended solids (treated and untreated) in the effluent is 150 mg/l and after all wastewater receives primary treatment the suspended solids will be 125 mg/l the net decrease would be:

$$\frac{150 \text{ mg/l} - 125 \text{ mg/l}}{22.5} = \frac{25}{22.5} = 1.11 \text{ mg/l}$$

4. **Does (will) the modified discharge comply with applicable water quality standards for:**

Dissolved oxygen?
Suspended solids or surrogate standards?
pH

The modified discharge will comply with all applicable water quality standards for Class B waters which is the classification of the Piscataqua River in the vicinity of the outfall. Class B waters are defined under RSA 149:3 II.

5. **Provide the determination required by 40 CFR 125.60(b)(2) or a copy of a letter to the appropriate agency(s) requesting the required determination.**

A letter from Mr. Stephen H. Roberts, Director, Permits and Surveillance of the New Hampshire Water Supply and Pollution Control Commission follows in Appendix B. This letter certifies that the modified discharge at Pierce Island will comply with applicable provisions of State law including water quality standards.

C. Impact on Public Water Supplies [40 CFR 125.61(b)]

1. **Is there a planned or existing public water supply (desalinization facility) intake in the vicinity of the current or modified discharge?**

There are no existing or planned public water supply intakes in the vicinity of the current or modified discharge.

In Appendix C is a copy of the letter which was sent to nearby communities and military installations inquiring about possible future water supply intakes in the vicinity of Pierce Island. The list of letter recipients and their reply to the NewHampshire Water Supply and Pollution Control Commission, if sent,is in Appendix C.

D. Biological Impact of Discharge [40 CFR 125.61(c)]

1. **Does (will) a balanced indigenous population of shellfish, fish, and wildlife exist:**

   a. **immediately beyond the ZID of the current and modified discharge(s)?**

   b. **in all other areas beyond the ZID where marine life is actually or potentially affected by the current and modified discharge(s)?**

A balanced indigenous population (B.I.P.) of shellfish, fish, and wildlife currently exists both immediately beyond the ZID and in all other areas potentially affected by the discharge. This statement is based on literature data, as well as data and

observations of state agency and university personnel. Because the modified discharge is an upgrading of the current partially treated primary discharge, the B.I.P. will continue to exist after the upgrading.

The outfall and receiving waters meet the four criteria outlined in the Technical Support Document (p. III-31) that obviate the need for field studies to document the presence of a BIP (we are assuming no or little toxic substances are present, as was verified by our sampling). However, to verify the absence of any sludge deposit in the area, grab samples were collected on July 19, 1982, with a Petersen dredge, at the site of the present outfall; and at the upstream and downstream edges of the ZID. No evidence of any sludge accumulation was found at any of these sites. This confirms the observations of state and university officials that, because of the tremendous volumes and velocities of water passing this point on each tidal cycle, the existing discharge has no significant adverse effect on the benthic organisms or other area fauna and flora.

2. **Have distinctive habitats of limited distribution been impacted adversely by the current discharge and will such habitats be impacted adversely by the modified discharge?**

No distinctive habitats are present to be impacted adversely.

3. **Have commercial or recreational fisheries been impacted adversely (e.g., warnings, restrictions, closures, or mass mortalities) by the current discharge and will they be impacted adversely by the modified discharge?**

The current discharge has caused no discernible negative effects on the commercial and recreational fisheries; the upgraded modified discharge should clearly cause no adverse effect.

Because of the relatively small volume of discharge water in relation to the flushng rate of the area, it is virtually impossible to detect the presence of any effluent plume. A sampling station of the Water Supply and Pollution Control Commission (#94), located over the current discharge pipe, has shown no elevated levels of total coliform bacteria. As discussed above [D(1)(a & b)] no sludge deposit was found in the vicinity of the current discharge to adversely effect the benthic fisheries.

A 10-year (1970 - 1980) Piscataqua River ecological study, conducted by Normandeau Associates, Inc., for Public Service Company, demonstrated a healthy population of indigenous and migratory finfish 2-1/2 miles upstream of the discharge. Clearly

the discharge has not affected the finfish of the region, nor interfered with their migration past the discharge site. The New Hampshire Fish and Game Department concurs that the present discharge has little effect on the fisheries in the area, and the improved modified discharge will only reduce the already limited impact.

4. For discharges into saline estuarine waters: [40 CFR 125.61(c)(4)]

   a. does or will the current or modified discharge cause substantial differences in the benthic population within the ZID and beyond the ZID?

   b. does or will the current or modified discharge interfere with migratory pathways within the ZID?

   c. does or will the current or modified discharge result in bioaccumulation of toxic pollutants or pesticides at levels which exert adverse effects on the biota within the ZID?

Answers to the above questions are required for estuarine areas only, because these areas tend to be more productive, more sensitive to pollutants, and less flushed than open coastal waters. The Portsmouth discharge is to a saline estuarine area, but it is at the mouth of the Piscataqua River where the flushing rate is much greater than in a typical estuarine area, or even most coastal areas. This area is actually LESS sensitive to pollutant discharges than most open coastal areas.

The methodology used in the Technical Support Document to determine suspended solids deposition, and thus the need for further biological analyses, assumes a current velocity of 2.5 cm/sec. As indicated previously in Section III(A), the average velocity at the Portsmouth discharge site is in excess of 100 cm/sec., with maximal velocities on both the ebb and flood tides in excess of 200 cm/sec. Clearly, this is a unique site that is unaccounted for in the Technical Support Document. General information of the area is deemed sufficient to adequately address the above questions, without the need for additional field studies.

a. The current discharge does not cause a substantial difference in the benthic population within and beyond the ZID, and the modified discharge, which is an improved discharge, will not cause a substantial change in the benthic

population. While precise data does not exist to make this evaluation, there is no evidence of any sludge accumulation in the vicinity of the current discharge (see Section III(D)(1) above).

The discharge site is in an area of bedrock outcropping, with the bottom mostly gravelly-pebbly-rocky. The following organisms were collected with the Petersen dredge when sampling for the presence of a sludge deposit on July 19, 1982.

Table 8
Biology Sampling

Within the ZID:

barnacle (Balanus balanoides) (1)
hydroid (probably Tubularia crocea) (1 clump)
red algae (Corralina spp.) (clump)
(Lithothamnion spp.) (clump)

Outside ZID (Two stations: 1 upstream and 1 downstream):

Blood star (Henricia sanguinolenta) (1)
Limpet (Acmaea testudinalis) (1)
hermit crab (Pagurus spp.) (1)
periwinkle (Littorina spp.) (1 - home for hermit crab)
sponge
red algae (Lithothanunion spp.) (clump)
(Ceramium spp.) (clump)

The sample number and population size is clearly inadequate to statistically evaluate the effects of the current discharge on the benthic organisms. The results do indicate, however, the types of organisms present and their scarcity. There was no visual indication that any of the organisms collected were stressed.

b. Neither the current nor modified discharge does or will interfere with migratory pathways. As discussed in Section III(D)(3), little evidence of a plume has been detected at the Water Supply and Pollution Control Commission sampling station located over the existing discharge. In addition, Normandeau Associates, Inc. have shown the presence of migratory fish 2-1/2 miles upstream, clearly indicating the successful passage of fish by the current discharge. The improved modified discharge should only improve the existing conditions.

c. No information exists concerning the possible bioaccumulation of toxic pollutants or pesticides in the biota within the ZID. Sampling to date on the treatment plant effluent indicates that toxics may be present, but at very low levels which would not cause accumulative effects. This was substantiated by the biota collected within the ZID which was living, and showed no visual signs, such as growth abnormalities, or adverse effects from possible toxic accumulations.

5. **For improved discharges, will the proposed improved discharge(s) comply with the requirements of 40 CFR 125.61(a) through 125.61(d)? [40 CFR 125.61(e)]**

No adverse ecological impacts were observed that could be attributed to the current discharge. The improved discharge should only reduce any possible limited impacts that may exist but weren't observed.

6. **For altered discharge(s), will the altered discharge(s) comply with the 40 CFR 125.61(a) through 125.61(d)? [40 CFR 125.61(e)]**

The proposed modified discharge is not an altered discharge.

7. **If your current discharge is to stressed waters, does or will your current or modified discharge: [40 CFR 125.61(f)]**

a. **contribute to, increase, or perpetuate such stressed condition?**

b. **contribute to further degradation of the biota or water quality if the level of human perturbation from other sources increases?**

c. **retard the recovery of the biota or water quality if human perturbation from other sources decreases?**

The current discharge is not to stressed waters (see Section II(B)(2) above).

E. Impacts of Discharge on Recreational Activities [40 CFR 125.61(d)]

1. Describe the existing or potential recreational activities likely to be affected by the modified discharge(s) beyond the zone of initial dilution?

Extensive examination by the New Hampshire Water Supply and Pollution Control Commission, and consultants for Public Service Company of New Hampshire, who at one time considered constructing a nuclear electrical generating station adjacent to the Piscataqua River, have found no evidence of degradation to the river or shores or beaches related to the discharge of Portsmouth's primary wastewater treatment plant which has been in operation for eighteen years.

The current primary discharge has not degraded the waters. Therefore, the requested waiver of secondary treatment, which includes plans for upgrading the existing primary plant, could not create further degradation where none exists.

Figure 7 on page 32 depicts the location of recreation areas in the vicinity of Pierce Island.

2. What are the existing and potential impacts of the modified discharge(s) on recreational activities?

None.

3. Are there any Federal, State or local restrictions on recreational activities in the vicinity of the modified discharge(s)? If yes, describe the restrictions and cite available references.

4. If recreational restrictions exist, would such restrictons be lifted or modified if you were discharging a secondary treatment effluent?

The only federal, state, or local restrictions in the area is that created by the security necessary for the strategic operation of the Portsmouth Naval Shipyard located on Seavey and Clark Islands in Portsmouth Harbor. This restriction is totally unrelated to water quality.

F. Establishment of a Monitoring Program (40 CFR 125.62)

1. Describe the biological, water quality, and effluent monitoring programs, which you propose to meet the criteria of 40 CFR 125.62?

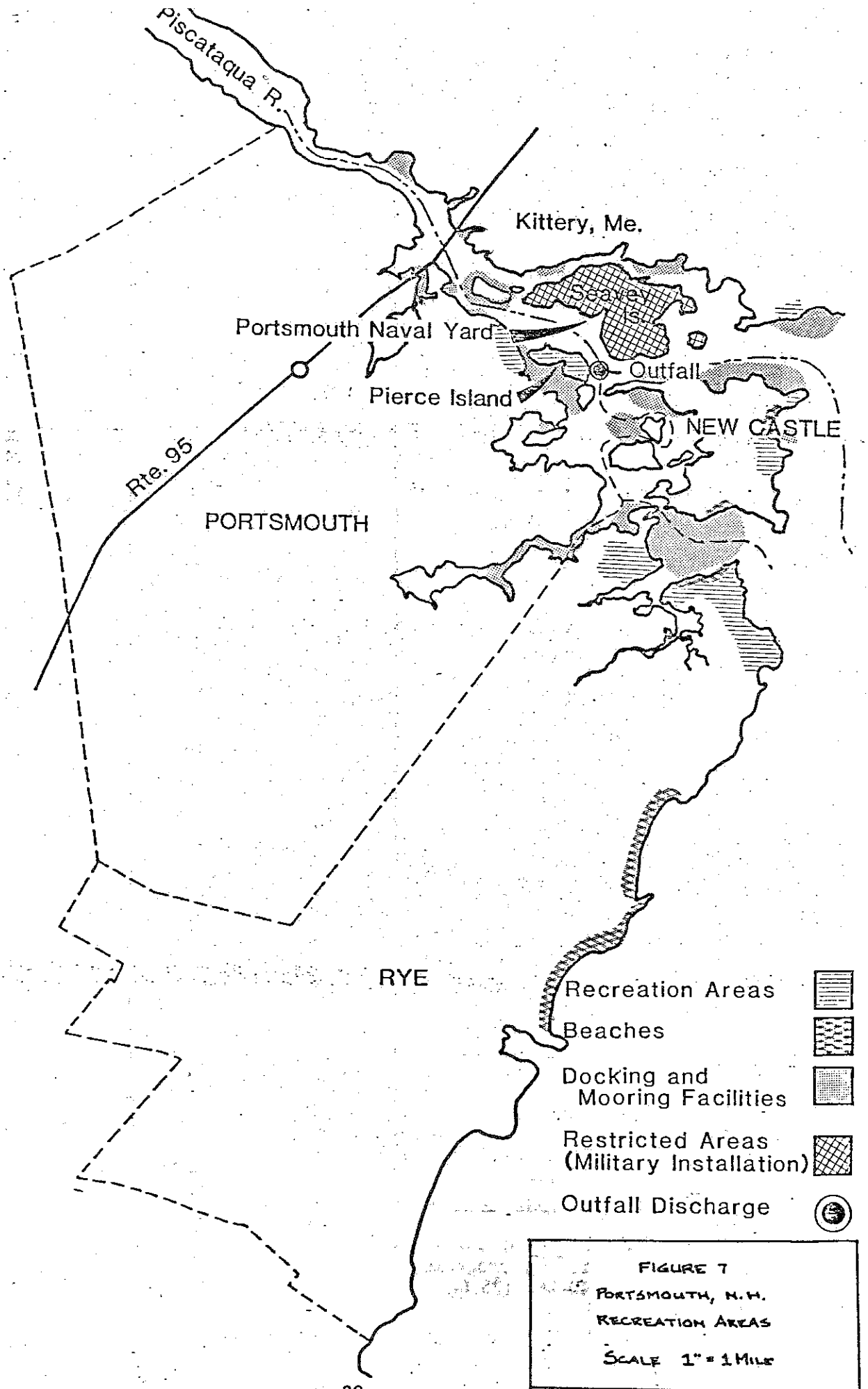


FIGURE 7
PORTSMOUTH, N.H.
RECREATION AREAS
SCALE 1" = 1 MILE

2. **Describe the sampling techniques, schedules, and locations, analytical techniques, quality control and verification procedures to be used.**

The purposes of the monitoring program are to determine compliance with the NPDES permit requirements, to assess the treatment plant performance, to ensure compliance with state water quality standards, and to verify the existence of conditions suitable for the protection and propagation of a BIP outside the ZID. Because of the tremendous volumes and velocities of water passing the discharge site, and because of the characteristics of the modified discharge (in water depths greater than 10 meters, and low predicted suspended solids accumulation), little or no adverse effects are anticipated from the modified discharge. In fact, no adverse effects could be attributed to the current discharge, and the modified discharge is an improvement. For the above reasons, the proposed monitoring program is limited in its intensity and complexity. All analyses will be in accordance with the latest addition of Standard Methods, and proper quality control procedures will be followed. The City of Portsmouth is responsible for implementing the proposed monitoring program.

EFFLUENT MONITORING:

The effluent will be sampled downstream of the disinfection unit, as near as possible to the outfall pipe. The sample frequency and parameters to be measured are as follows:

Table 9
Effluent Monitoring

flow	continuous
chlorine residual	twice a day
total coliform bacteria	weekly
BOD_5	weekly
total suspended solids	weekly
settleable solids	daily
pH	daily

Two 24 hour composite samples (one dry weather, one wet weather) of the effluent will be analyzed for possible toxic pollutants and pesticides (see Table 3, p. 15-21, "Design of 301(h) Monitoring Programs for Municipal Wastewater Discharges to Marine Waters").

In addition to the above program, New Hampshire Water Supply and Pollution Control Commission personnel will annually analyze a 24 hour composite sample, if funding permits.

WATER QUALITY MONITORING:

Two receiving water stations will be sampled: one immediately outside the ZID; and a second, located outside the influence of the modified discharge, or any other discharge, to be used as a control station. The control station will be located over a similar depth of water and in a similar current regime as the near-ZID station. In order to determine conditions during critical times, samples will be collected during a summertime ebb slack tide. Because of the conditions and effluent charateristics, one sampling trip should be sufficient. If, as anticipated, no significant differences can be ascertained between the near-ZID station and the control station, the control station can be eliminated in the future.

The following parameters will be measured at the two receiving water stations:

Table 10
Receiving Water Monitoring

temperature - vertical profile	
dissolved oxygen - vertical profile	
total residual oxidant	Two samples collected: one surface and one near bottom
total coliform bacteria	
suspended solids	
pH	
Turbidity	
BOD_5	

BIOLOGICAL MONITORING:

When small discharges are located in water depths greater than 10 meters, and have a low predicted solids accumulation, the 301(h) regulations require only that the biological monitoring program include a periodic survey of the biological communities which are most likely affected by the discharge. The regulations further allow for the deletion of study requirements when not practicable. We contend that no biological communities will be adversely effected by the discharge, and propose that no routine biological sampling be required.

Since the sampling for the toxic pollutants has shown only low levels of toxics, a bioaccumulation study using caged mussels (Mytilus edulis) will not be necessary. The regulations suggest that the sediments also be analyzed for the accumulation of toxic substances. Given the rocky bottom in the area of the discharge, this is not feasible.

3. **Describe the personnel and financial resources available to implement the monitoring program upon issuance of a modified permit and to carry it out for the life of the modified permit.**

The effluent monitoring which is required under the NPDES permit will be the responsibility of the City of Portsmouth. Wastewater plant personnel will monitor flow, chlorine residual, settleable solids, pH, coliform bacteria, BOD_5, and total suspended solids.

The receiving water monitoring will be the responsibility of the New Hampshire Water Supply and Pollution Control Commission provided that there is not a drastic cutback in Federal funding to the Commission. Currently, the Commission staff is comprised of 164 employees. Approximately 65 percent of the Commission employees hold degrees in technical fields relating to water and wastewater management, such as: engineering, biology, and chemistry. The Commission has been monitoring over 100 stations for over 20 years. A 36 foot Jonesport type lobster boat and an 18 foot V-hulled Pointer are available to carry out this sampling. The Commission laboratory is staffed with 15 scientists and is fully equipped with such items as gas chromatograph, and 2 atomic absorption units. Five of our biologists are accomplished in scuba diving.

G. Effect of Discharge on Other Point and Nonpoint Sources (40 CFR 125.63)

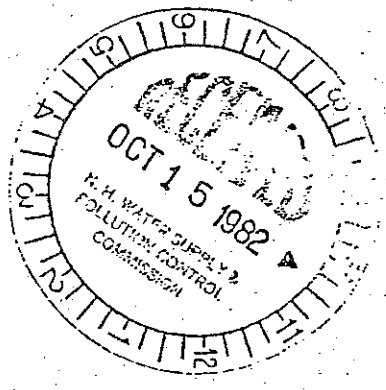
1. **Does (will) your modified discharge(s) cause additional treatment or control requirements for any other point or nonpoint pollution source(s)?**

2. **Provide the determination required by 40 CFR 125.63(b) or a copy of a letter to the appropriate agency(s) requesting the required determination.**

APPENDIX A

State and Federal Laws
[40 CFR 125.60]

OFFICE OF STATE PLANNING
STATE OF NEW HAMPSHIRE
2 BEACON STREET — CONCORD 03301
TELEPHONE 603-271-2155



October 13, 1982

Gordon Page
Water Supply & Pollution Control Commission
Hazen Drive
Concord, NH 03301

Dear Mr. Page:

We have completed our federal consistency review of your Section 301(h) applications for secondary treatment at Pierce Island and Seacrest Village in Portsmouth and in the Town of Rye.

The New Hampshire Coastal Program, in consulatation with state and regional agencies, concurs with your assessment that there will be no anticipated adverse impacts on the coastal zone with the granting of a waiver. We find the proposed projects encourage the development of public water supply and sewage disposal where densities make such action appropriate. Further, the projects will not degrade surface or subsurface waters.

Finally, we believe the Rye waiver is essential for beginning the rectification of the long-standing water quality problems in the Rye Beach/Jenness Beach area.

If I may be of any further assistance, do not hesitate to contact me.

Sincerely,

Tina Bernd-Cohen

Tina Bernd-Cohen

TBC:mb

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

Mr. Gordon L. Page
N.H. Water Supply & Pollution
Control Commission
Post Office Box 95
Concord, New Hampshire 03301

OCT 1 1982

Dear Mr. Page:

You recently advised us that your office is currently assisting the Town of Rye and the City of Portsmouth in the filing of 301(b) applications. This action allows the discharge of primary treatment into marine waters as an alternate to secondary treatment.

We do have reservations with the continued use of our marine waters for a wide range of disposal purposes. Some disposal within the assimilative capacity of the receiving water may be a recognized use of public waters, but there is presently an undefined limit beyond which such use would no longer be in the public interest. We consider the proposed disposal use of our coastal waters as an interim solution until all facets of the problem are appropriately identified, understood and addressed in a long term program. We are concerned that with a primary system, toxic material can be dumped into the system without being detected either through plant operation or normal monitoring. Chlorination is always a concern since any malfunctioning system can result in residual levels of chlorine that are lethal to aquatic organisms. Also the long term residual effects are not fully appreciated.

It appears that the criteria used for selection of the areas off Rye Ledge (Town of Rye) and Pierce Island (City of Portsmouth) should avoid or minimize impacts in the discharge localities. We are just beginning to understand the possible effects of pathogenic microorganisms on wildlife species in freshwater systems, but this knowledge is inadequate to identify specific concerns at this time in the marine environment. Since the understanding of dispersal pathways and possible bioaccumulation are incomplete, we do recommend that periodically the state of the art be reviewed to determine whether the continuation of ocean discharge should be allowed or the installation of secondary treatment is warranted.

We appreciate the opportunity to comment and look forward to continued coordination with your agency.

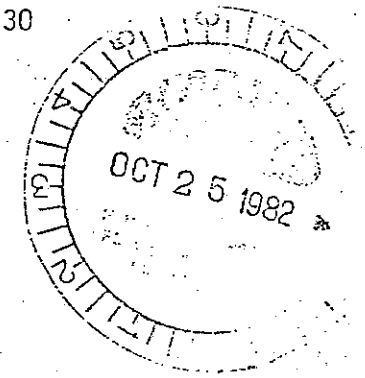
Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Fisheries Services Division
Habitat Protection Branch
7 Pleasant Street
Gloucester, MA 01930

October 21, 1982



Mr. Gordon L. Page
N.H. Water Supply and Pollution Control Commission
Post Office Box 95
Concord, New Hampshire 03301

Dear Mr. Page:

This is in reference to your letter of September 28, 1982, requesting our comments on applications by the City of Portsmouth and the Town of Rye, New Hampshire, to waive (Section 301(h)) the requirements of the Clean Water Act for secondary treatment of sewage discharge.

The proposal calls for the City of Portsmouth to upgrade the existing primary treatment facility on Pierce Island and to continue discharging effluent from that facility into the Piscataqua River. In addition, the Town of Rye plans to construct a primary treatment facility and discharge its effluent off Rye Ledge into the Atlantic Ocean.

We have reviewed the information presented and find that it is fairly limited and does not allow for an adequate assessment of potential impacts to living marine resources. However, we do recognize that the receiving waters for both Rye and Portsmouth may have a capacity to assimilate a certain amount of sewage effluent. At present, the assimilative capacity of these areas is poorly understood, and continued use of marine waters for disposal of sewage waste can cause future pollution problems. We are concerned that primary treatment alone may not be sufficient over the long term to comply with the goals of the Clean Water Act.

Although it appears that both the Town of Rye and the City of Portsmouth have taken steps to minimize impacts at the discharge site, certain data should be collected and analyzed to make a more accurate determination. Such data at the discharge site include fate of sediment material, potential for increases in toxicity and BOD, effects on fisheries, and impacts both inside and outside the zone of initial dilution. Further, since seasonal data were not provided on circulation, currents, water quality, and mixing features, it is difficult to determine the rates of dispersion, sedimentation, and dilution of the effluent. If these factors are not understood, sewage waste released at a single point anywhere in the ocean may overwhelm the assimilative capacity of the area and cause extensive local damage, particularly to bottom life.

Since the understanding of the above information is incomplete, we consider the proposed disposal of sewage waste in coastal waters as an interim solution until all facets of the problem are identified, understood, and addressed in a long-term monitoring program.

We also recommend that the State of New Hampshire periodically review the state-of-the-art for waste disposal and the results of the monitoring program relative to the anticipated long-term impacts. The above information should be analyzed to determine whether the continuation of ocean discharge of primary sewage waste should be continued or whether a secondary treatment facility should be constructed.

If you have any questions, please contact Chris Mantzaris at Tel. 617-281-3600, ext. 298.

Sincerely,

Ruth Rehfus

Ruth Rehfus
Branch Chief

APPENDIX B

Compliance With Water Quality Standards
40 CFR 125.60 (b)(2)

The State of New Hampshire

Water Supply and Pollution Control Commission

Hazen Drive — P.O. Box 95

Concord, N.H. 03301

Mr. Gordon L. Page, P.E.
Director of Support Services
New Hampshire Water Supply and Pollution
Control Commission
P. O. Box 95, Hazen Drive
Concord, New Hampshire 03301

Subject: 301h Ocean Discharge Application
City of Portsmouth, New Hampshire

Dear Mr. Page:

Item II.B.5. of the 301h Ocean Discharge application being prepared for the City of Portsmouth, New Hampshire requires that the New Hampshire Water Supply and Pollution Control Commission provide a determination under 40 CFR 125.60(b)(2) that the modified discharge will comply with applicable water quality standards.

This letter serves to certify that Portsmouth's proposed ocean discharge will comply with this State's Class B water quality standards assigned the receiving Piscataqua River estuary.

Sincerely,

Stephen H. Roberts

Stephen H. Roberts, P.E., Director
Permits and Surveillance Division

SHR/csc

APPENDIX C

Impact on Public Water Supplies
[40 CFR 125.61 (b)]

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

May 20, 1982

Dear Sir:

The City of Portsmouth, New Hampshire is applying for a variance from secondary treatment requirements for its wastewater plant effluent as authorized under Section 301(h) of the Clean Water Act. This section of the Act allows publicly owned treatment works (POTWs) discharging into marine waters to file such an application.

One question on the application deals with planned or existing public water supply (desalinization facility) intake in the vicinity of the existing or modified wastewater plant discharge.

The City of Portsmouth does not plan to change the current point of wastewater plant discharge which is now located approximately 275 feet off the east end of Pierce Island in 82 feet of water.

If your office has knowledge of anyone planning a water supply intake in the vicinity of the Pierce Island Wastewater Facility please advise us in writing by July 1, 1982.

Sincerely yours,

Gordon L. Page, P.E.
Associate Sanitary Engineer

GLP/csc

PORTSMOUTH
Impact on Public Water Supplies
Communities Receiving Notification

Board of Selectmen
Town Office
Kittery, Maine 03904

Mr. Rance Collins
Water Works Superintendent
c/o Department of Public Works
700 Islington Street
Portsmouth, New Hampshire 03801

Office of Selectmen
10 Central Road
Rye, New Hampshire 03266

Office of Selectmen
P.O. Box 71
North Hampton, New Hampshire 03862

Office of Selectmen
Town Office
New Castle, New Hampshire 03854

Mr. Pierre Lavoie
Water Works Superintendent
Department of Public Works
River Street
Dover, New Hampshire 03820

Mr. George Crombie, Superintendent
Department of Public Works
Durham, New Hampshire 03824

Office of Selectmen
Town Office, Route 151
Newington, New Hampshire 03801

Office of Selectmen
Town Office
Portsmouth Avenue
Greenland, New Hampshire 03840

Office of Selectmen
7 Mill Hill Road
Madbury, New Hampshire 03820

Office of Selectmen
Town Office
York, Maine 03909

Office of Selectmen
Town Office
South Berwick, Maine 03908

Office of Selectmen
Town Office
Eliot, Maine 03903

Commander
Portsmouth Naval Shipyard
Kittery, Maine 03904

Commander
Pease Air Force Base
Newington, New Hampshire 03801

Mr. Bernard D. Lucey, P.E.
N.H. Water Supply & Pollution
Control Commission
Hazen Drive, P.O. Box 95
Concord, New Hampshire 03301

Board of Selectmen
136 Winnacunnet Road
Hampton, New Hampshire 03842

Board of Selectmen
Box 115
Stratham, New Hampshire 03885

Board of Selectmen
Town Office, Main Street
Newmarket, New Hampshire 03857

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

December 15, 1982

Mr. Gordon L. Page, P.E.
Director of Support Services
Water Supply and Pollution
Control Commission
P.O. Box 95, Hazen Drive
Concord, New Hampshire 03301

Subject: CITY OF PORTSMOUTH - 301(h) APPLICATION
PUBLIC WATER SUPPLY INTAKES

Dear Mr. Page:

At your request we herewith state for the record that there are no public water supplies with intakes into salt water on the New Hampshire seacoast and none are expected in the foreseeable future.

Sincerely,

Bernard Lucey

Bernard D. Lucey, P.E.
Chief, Water Supply Division

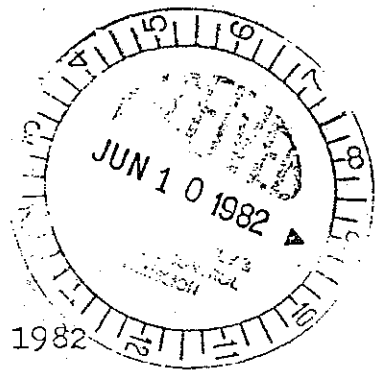
BDL/mjc

SETTLED 1623
INCORPORATED 1693

Town of New Castle

New Hampshire

OFFICE OF THE SELECTMEN



June 8, 1982

State of N. H.
Water Supply and Pollution Control Commission
P. O. Box 95
Concord, NH 03301

Att: Gordon L. Page, P. E.

Dear Sir,

The Town of New Castle has no objections to the City of Portsmouth, NH applying for a variance from the secondary treatment requirements for its wastewater plant effluent as authorized under Section 301 (h) of the Clean Water Act.

The Town of New Castle is not planning a water supply intake in the vicinity of the Pierce Island Wastewater Facility.

Sincerely,

Peter Gamester

Peter Gamester, Chairman
Board of Selectmen

Portsmouth Water Works

City of Portsmouth

700 ISLINGTON STREET - - - PORTSMOUTH, NEW HAMPSHIRE 03801

MAY 24, 1982

N. H. WATER SUPPLY & POLLUTION CONTROL COMMISSION
HAZEN DRIVE, P.O. BOX 95
CONCORD, N. H. 03301
ATTN: MR. GORDON L. PAGE, P.E.

DEAR MR. PAGE:

THIS IS IN RESPONSE TO YOUR CORRESPONDENCE OF MAY 20TH, 1982 REGARDING THE CITY OF PORTSMOUTH'S REQUEST FOR VARIANCE FROM SECONDARY TREATMENT REQUIREMENTS FOR ITS WASTE WATER PLANT EFFLUENT.

THERE ARE NO SHORT OR LONG TERM PLANS FOR A DESALINIZATION FACILITY TO BE LOCATED IN THE CITY OF PORTSMOUTH.

PLEASE LET US KNOW IF WE CAN BE OF ANY ASSISTANCE IN EXPIDIING THE VARIANCE, AS WE FEEL THAT THE REDUCED CAPITAL INVESTMENT WOULD BE IN THE BEST INTEREST OF ALL CONCERNED.

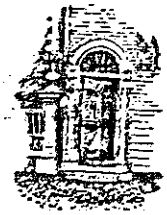
VERY TRULY YOURS,

Rance G. Collins

RANCE G. COLLINS, SUPERINTENDENT
PORTSMOUTH WATER DEPARTMENT

RGC/DR

CC: CITY MANAGER
PUBLIC WORKS DIRECTOR
CITY ENGINEER



"City of the Open Door"

STATE OF MAINE

Department of Environmental Protection

MAIN OFFICE: RAY BUILDING, HOSPITAL STREET, AUGUSTA
MAIL ADDRESS: State House Station 17, Augusta, 04333

JOSEPH E. BRENNAN
GOVERNOR

HENRY E. WARREN
COMMISSIONER

June 2, 1982

Mr. Gordon L. Page, P.E.
Associate Sanitary Engineer
Water Supply and Pollution Control Commission
Hazen Drive, P.O. Box 95
Concord, NH 03301

Dear Mr. Page:

This is in answer to your letter of May 20, 1982, concerning Portsmouth's Wastewater Treatment Plant effluent.

This office has no knowledge of anyone planning a water supply intake in the vicinity of the Pierce Island Wastewater Facility.

Sincerely,

Richard F. Swasey

RICHARD F. SWASEY
Director,
Division of Operation and Maintenance
Bureau of Water Quality Control

RFS:mst

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 509TH BOMBARDMENT WING (SAC)
PEASE AIR FORCE BASE, NEW HAMPSHIRE 03801

28 MAY 1982

Mr Gordon L. Page, P.E.
Associate Sanitary Engineer
State of New Hampshire Water
Supply and Pollution Control Commission

JUN 4 1982
N.H. WATER SUPPLY & POLLUTION CONTROL COMMISSION

Dear Mr Page

Pease Air Force Base is not currently planning any projects to construct a water supply intake in the vicinity of the Pierce Island Wastewater Facility.

Sincerely

JOHN T. HIGH, III, Lt Col, USAF
Base Civil Engineer

Peace . . . . is our Profession

APPENDIX D

Effect of Discharge on Other Point and Nonpoint Sources
[40 CFR 125.63]

The State of New Hampshire

Water Supply and Pollution Control Commission

Hazen Drive — P.O. Box 95

Concord, N.H. 03301

December 15, 1982

Mr. Gordon L. Page, P.E.
Director of Support Services
New Hampshire Water Supply and Pollution
Control Commission
P. O. Box 95, Hazen Drive
Concord, New Hampshire 03301

Subject: 301h Ocean Discharge Application
City of Portsmouth, New Hampshire

Dear Mr. Page:

The 301h Ocean Discharge application being prepared for the City of Portsmouth, New Hampshire requires that the New Hampshire Water Supply and Pollution Control Commission provide a determination under 40 CFR 125.63 that the modified discharge will not impose additional treatment requirements on any other point or non-point source.

As you are aware, the planned expansion of the existing primary treatment plant will result in a higher quality discharge than currently exists. This letter serves to satisfy Item II.G.2. of Portsmouth's 301h application by certifying that their proposed ocean discharge will not result in any additional treatment, pollution control, or other requirement at any other point or non-point source.

Sincerely,

Stephen H. Roberts

Stephen H. Roberts, P.E., Director
Permits and Surveillance Division

SHR/csc

APPENDIX E

Toxics Control Program
[40 CFR 125.64]

The State of New Hampshire

Water Supply and Pollution Control Commission

Hazen Drive — P.O. Box 95

Concord, N.H. 03301

December 15, 1982

Mr. Gordon L. Page, P.E.
Director of Support Services
Water Supply and Pollution
Control Commission
P.O. Box 95, Hazen Drive
Concord, New Hampshire 03301

Subject: CITY OF PORTSMOUTH - REQUEST FOR CERTIFICATION OF NO KNOWN INDUSTRIAL SOURCES OF TOXIC POLLUTANTS OR PESTICIDES

Dear Mr. Page:

As requested, a review of sampling results for toxic pollutants in the City of Portsmouth, New Hampshire, with respect to the area to be served as described in its 301(h) application has been made. The test results found no significant sources of toxic pollutants or pesticides.

Therefore, allow this letter to fulfill certification requirements of 40CFR 125-64(a)(2) and 125.64(c)(2).

Sincerely,

Lynn A. Woodard

Lynn A. Woodard, P.E.
Chief, Industrial Waste Division

LAW/mjc
cc: Thomas W. Seigle, P.E., NHWS&PCC

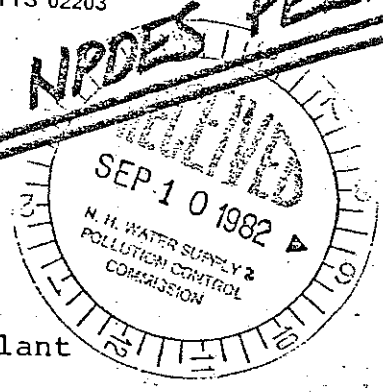
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

FINAL NPDES PERMIT



September 7, 1982

Mr. Calvin A. Canney
City Manager
700 Islington Street
Portsmouth, New Hampshire 03801

Re: NPDES Application No. NH0100234
City of Portsmouth Wastewater Treatment Plant

Dear Mr. Canney:

Enclosed is your final National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to the referenced application. The Consolidated Permit Regulations, at 40 C.F.R. §124.15, 45 Fed. Reg. 33490 (May 19, 1980), require this permit to become effective on the date specified in the permit. As outlined in the public notice and fact sheet for this permit, EPA will issue an Administrative Order containing interim effluent limitations and a compliance schedule for achieving the permit limitations soon after the permit effective date.

Also enclosed is a copy of the Agency's response to the comments received on the draft permit and information relative to hearing requests and stays of NPDES permits.

We appreciate your cooperation throughout the development of this permit. Should you have any questions concerning the permit, feel free to contact Alison Brewster, of my staff at 617/223-5610.

Sincerely,

Clyde F. Schufelt for

Edward K. McSweeney, Chief
Water Quality Branch

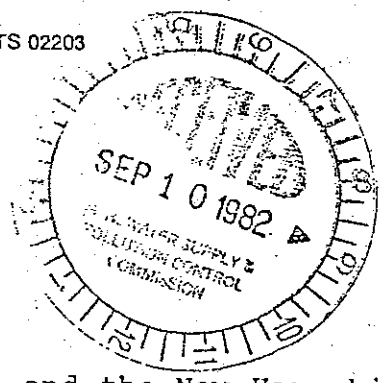
Enclosures

cc: State Water Pollution Control Agency
All Interested Parties

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203



Response to Public Comments

From October 30, 1981 to November 30, 1981, EPA and the New Hampshire Water Supply and Pollution Control Commission solicited comments on a Draft Permit NH100234 for the discharge from the Portsmouth's Pierce Island and Seacrest Village wastewater treatment plants. During the public comment period the only comments received on the Draft Permit were from the City of Portsmouth requesting that EPA delete the requirement for development of a local pretreatment program. A survey performed by the City indicates that only six (6) industrial users discharge process wastewater to the sewer system. The City believes that the existing sewer use ordinance provides adequate control over these discharges.

Based on the information provided, EPA agrees that a pretreatment program for Portsmouth does not appear necessary at this time and has therefore deleted this requirement from the final permit. A copy of the final permit may be obtained by writing or calling the EPA Water Quality Branch, JFK Federal Building, Boston, MA 02203, Telephone: (617) 223-5061.

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

FROM Michael D. Pazdon
Quality Assurance Officer

DATE April 15, 1982
AT (OFFICE) Water Supply & Pollution Control Commission

SUBJECT PORTSMOUTH WASTEWATER TREATMENT PLANT EFFLUENT

TO Gordon L. Page, P.E.
Associate Sanitary Engineer

Michael Donahue, P.E.
Robert Cruess, P.E.

I had some difficulty analyzing this sample for Base/Neutral extractables due to emulsions. I suggest this be resampled in order to spend a little more time with this analysis.

MDP/csc

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: April 12, 1982

SUBJECT: Sample numbers: 44960, 44958, 44959, 44961, 44962, and 44957

FROM: William M. Rice
Michael D. Pazdon MP

TO: Gordon L. Page, P.E.

COPIES TO: James Roantree, P.E.
Michael P. Donahue, P.E.
Robert Cruess, P.E.

ANALYTICAL PROCEDURES: Purge Trap - GC Mass Spectrometer
Method #624
Method #604 (modified) - run on HPLC
Method #608

METHOD OF QUANTIFICATION: An internal standard is added to the sample and the mixture is analyzed by a purge trap/GC/MS. Other methods are as in the Federal Register, Vol. 44, #223, Monday, December 3, 1979.

CHAIN OF CUSTODY

DATE SAMPLE RECEIVED : March 18, 1982

PERSON(S) RELINQUISHING SAMPLES: Don Greenwood

PERSON(S) RECEIVING SAMPLES : Barbara McKay

DATE SAMPLES ANALYZED: March 26, 1982

ANALYST(S): William M. Rice
Michael D. Pazdon
Sheila Heath
Sandra J. Czibik

NOTEBOOK NUMBER: All records are in the file for this sample set.

ADDITIONAL COMMENTS: Sample 44957 was tested for extractables. Samples 44961 and 44962 were not tested because the holding time was exceeded. 44957 exhibited tremendous emulsions on extraction.

SAMPLE NO. _____

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN PPB)

PESTICIDES

	44957
Acrolein	NT
Aldrin	ND
α-BHC (Alpha)	"
β-BHC (Beta)	"
γ-BHC (Lindane) (gamma)	"
δ-BHC (Delta)	"
Chlordane	"
DDD	"
DDE	"
DDT	"
Dieldrin	"
α-Endosulfan (Alpha)	"
β-Endosulfan Sulfate (Beta)	"
Endosulfan sulfate	"
Endrin	"
Endrin aldehyde	"
Heptachlor	"
Heptachlor epoxide	"
Isophorone	"
TCDD	NT
Toxaphene	ND

PCB's

PCB-1016 (Aroclor 1016)	NT
PCB-1221 (Aroclor 1221)	"
PCB-1232 (Aroclor 1232)	"
PCB-1242 (Aroclor 1242)	"
PCB-1248 (Aroclor 1248)	"
PCB-1254 (Aroclor 1254)	"
PCB-1260 (Aroclor 1260)	"
2-Chloronaphthalene	"

HALOGENATED ALIPHATICS

	44958	44959	44960
Methane, bromo-			
Methane, chloro-			
Methane, dichloro-			8
Methane, chlorodibromo-			
Methane, dichlorobromo-		4	2
Methane, tribromo-			
Methane, trichloro-		3	1
Methane, tetrachloro-			
Methane, trichlorofluoro-			
Methane, dichlorodifluoro-			

HALOGENATED ALIPHATICS
continued

	44958	44959	44960			
Ethane, chloro-						
Ethane, 1,2-dichloro-						
Ethane, 1,1,1-trichloro-						
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-						
Ethane, hexachloro-						
Ethene, chloro- (vinyl chloride)						
Ethene, 1,1-dichloro-						
Ethene, trans-dichloro-						
Ethene, trichloro-						
Ethene, tetrachloro-						
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
Butadiene, hexachloro-						
Cyclopentadiene, hexachloro-						

ETHERS

Ether, bis (choromethyl)						
Ether, bis (2-chloroethyl)						
Ether, bis (2-chloroisopropyl)						
Ether, 2-chloroethyl vinyl						
Ether, 4-bromophenyl phenyl						
Ether, 4-chlorophenyl phenyl						
Bis (2-chloroethoxy) methane						

MONOCYCLIC AROMATICS

Benzene			4			
Benzene, chloro-						
Benzene, 1,2-dichloro-						
Benzene, 1,3-dichloro-						
Benzene, 1,4-dichloro-						
Benzene, 1,2,4-trichloro-						
Benzene, hexachloro-						
Benzene, ethyl-	28	49	6			
Benzene, nitro-						
Toluene	38	67	42			
Toluene, 2,4-dinitro-						
Toluene, 2,6-dinitro						

PHENOLS AND CRESOLS

				44957		
Phenol				118 µg/l		
Phenol, 2-chloro-				ND		
Phenol, 2,4-dichloro-				"		
Phenol, 2,4,6-trichloro-				"		
Phenol, pentachloro-				"		
Phenol, 2-nitro-				"		
Phenol, 4-nitro				"		
Phenol, 2,4-dinitro-				"		
Phenol, 2,4,-dimethyl-				"		
m-Cresol, p-chloro-				"		
o-Cresol, 4,6-dinitro-				"		

PHTHALATE ESTERS

	44957
Phthalate, dimethyl-	ND
Phthalate, diethyl-	"
Phthalate, di-n-outyl-	"
Phthalate, di-n-octyl-	"
Phthalate, bis (2-ethylhexyl)-	"
Phthalate, butyl benzyl-	"

PAH's

Acenapthene	"
Acenaphthylene	"
Anthracene	"
Benzo (a) anthracene	"
Benzo (b) fluoranthene	"
Benzo (k) fluoranthene	"
Benzo (ghi) perylene	"
Benzo (a) pyrene	"
Chrysene	"
Dibenzo (a,H) anthracene	ND
Fluoranthene	"
Fluorene	"
Indeno (1,2,3-cd) pyrene	"
Naphthalene	"
Phenanthrene	"
Pyrene	"

N-COMPOUNDS

Nitrosamine, dimethyl- (DMN)	"
Nitrosamine, diphenyl-	"
Nitrosamine, di-n-propyl-	"
Benzidine	"
Benzidine, 3,3'-dichloro-	"
Hydrazine, 1,2-diphenyl-	"
Acrylonitrile	NT

OTHER

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE July 14, 1982

FROM Stephen H. Roberts, P.E., Director
Ground Water Permit Division

AT (OFFICE) Water Supply & Pollution Control Commission

SUBJECT Priority Pollutant Monitoring - Portsmouth, New Hampshire

TO Gordon L. Page, P.E.
Associate Sanitary Engineer

Please find attached results of priority pollutant analyses which were performed on primary-treated effluent of the Pierce Island (Portsmouth) wastewater treatment facility. Composite and discrete samples, as appropriate, were collected by Donald Greenwood of this office during the period ~~July~~ June 9 through 10, 1982.

SHR/bb
Attachments

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
LABORATORY ANALYSIS

STATION #
SAMPLE COLLECTED By: Van Lingwood
Date: 6/10/82
Time: 1545

SOURCE: Portsmouth WWTF / Portsmouth NH
LOCATION: (Priority Pollutant)

LAB # 48376-A
RECEIVED IN LAB
By:
Date:
Time:

All results in mg/l unless otherwise noted

ON SITE OBSERVATIONS
- DEPTH (Sample):M
- FLOW: L-M-H (cfs)
- SALINITY: °/oo
- SECCHI DISC: cm
- TEMPERATURE (Air):°C
- TEMPERATURE (Sample):°C
- WEATHER: Std Abbr
- REMARKS:

BIOLOGICAL ANALYSES
- CHLOROPHYL "A": mg/M^3
- COLIFORM, TOT: MPN/100ml
- COLIFORM, TOT: cts/100ml
- COLIFORM, FECAL: cts/100ml
- FECAL STREP: cts/100ml

DEMAND ANALYSES
- X BOD 46
- COD
- OXYGEN, DIS
- TOC

NUTRIENT ANALYSES
- NITROGEN, TKN, N:
- NITROGEN, NH_3, N:
- NITROGEN, NO_2+NO_3, N:
- PHOSPHATE, DIS, ORTHO, P:
- PHOSPHORUS, TOTAL, P:

METALS ANALYSES
- ALUMINUM, Al:
- X ARSENIC, As: 0.010
- BARIUM, Ba:
- X CADMIUM, Cd: <0.005
- CALCIUM, Ca:
- X CHROMIUM, Cr: <0.03
- X COPPER, Cu: 0.04
- IRON, Fe:
- X LEAD, Pb: 0.015
- MAGNESIUM, Mg:
- MANGANESE, Mn:
- X MERCURY, Hg: <0.001
- X NICKEL, Ni: 0.06
- POTASSIUM, K:
- X SELENIUM, Se: 0.031
- X SILVER, Ag: 0.002
- SODIUM, Na:
- TIN, Sn:
- X ZINC, Zn: 0.08

PHYSICAL/MINERAL ANALYSES
- ALKALINITY, $CaCO_3$:
- CHLORIDE, Cl:
- COLOR (Apparent): Units
- FLUORIDE, F:
- HARDNESS, $CaCO_3$
- X pH: Units 7.0
- X SPEC. CONDUCT: uMHOs [redacted] 5560
- SILICA, DIS, SiO_2:
- SULFATE, SO_4
- SULFIDE, S:
- SULFITE, SO_3:
- TURBIDITY: NTU

RESIDUE ANALYSES
- FIXED (105°)
  - X TOTAL: [redacted] 3720
  - X FILTERABLE (Dis)
  - X NON-FILTERABLE (Susp): 0
  - X SETTLEABLE: ml/L/Hr 0.2
- VOLATILE (550°C)
  - TOTAL:
  - FILTERABLE (Dis):
  - NON-FILTERABLE (Susp):

ORGANIC ANALYSES
- CYANIDE, CN:
- MBAS (Surfactants):
- OIL & GREASE (Freon Ext):
- PHENOLICS, Phenol:

SPECIAL ANALYSES (See Separate Sheet)
- PLANKTON
- ORGANICS (Qualitative)
- PESTICIDES
- RADIOLOGICAL
- OTHERS (Specify):

NOTES: Priority Pollutant Sample

BOD est — 150

RESULTS REVIEWED IN CSB
By: D. Haworth Date: 13 July 82
COMMENTS:

COPY TO: Steve Roberts Date: 13 July 82

Recd 9:45 4/PM

CHAIN OF SECURITY RECORD REQUIRED (SEE OTHER SIDE)

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: 6/10/82

SUBJECT: Priority Pollutant sample - Portsmouth Water Portsmouth, NH.

FROM: Don Greenwood

TO: Stephen Roberts

COPIES TO:

ANALYTICAL PROCEDURES:
HPLC analysis (Phenol extraction) : HPLC, Hewlett-Packard 1080 Q

METHOD OF QUANTIFICATION:

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED

SAMPLE #	TYPE OF ANALYSES DESIRED
a) JUN1082	48377A - Duplicates - For Base/Neutrals (2)
b) 48377B	- Base/Neutrals extraction (2)
c) 48377C	- Phenols (2)
d)	
e)	
f)	

PERSON(S) AND DIVISION RELINQUISHING SAMPLES

Con-Greenwood Permits & Surveillance

PERSON(S) RECEIVING SAMPLES

DATE SAMPLES ANALYZED 06-29-82, 06-30-82

ANALYST(S) Sandra J. Gibbs

NOTEBOOK AND/OR REFERENCE NUMBER #6, Pg 20.

ADDITIONAL COMMENTS

Phenol Samples extracted and prepared for analysis on 06-18-82

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/l)

SAMPLE NUMBER	483776					
PHENOLS AND CRESOLS						
Phenol	27					
Phenol, 2-chloro-	↕ ND					
Phenol, 2,4-dichloro-						
Phenol, 2,4,6-trichloro-	116					
Phenol, pentachloro-	↕ ND					
Phenol, 2-nitro-						
Phenol, 4-nitro						
Phenol, 2,4-dinitro-	88					
Phenol, 2,4-dimethyl-	↕ ND					
m-Cresol, p-chloro-						
O-Cresol, 4,6-dinitro-						
N-COMPOUNDS						
Nitrosamine, dimethyl- (DMN)	↑					
Nitrosamine, diphenyl-						
Nitrosamine, di-n-propyl-						
Benzidine	ND					
Benzidine, 3,3'-dichloro-						
Hydrazine, 1,2-diphenyl-						
Acrylonitrile	↓					
OTHER						

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

SAMPLE NUMBERS	48347					
ETHERS						
Ether, bis (chloromethyl)						
Ether, bis (2-chloroethyl)						
Ether, bis (2-chloroisopropyl)						
Ether, 2-chloroethyl vinyl						
Ether, 4-bromophenyl phenyl						
Ether, 4-chlorophenyl phenyl						
Bis (2-chloroethoxy) methane						
MONOCYCLIC AROMATICS						
Benzene, 1,2-dichloro-						
Benzene, 1,3-dichloro-						
Benzene, 1,4-dichloro-						
Benzene, 1,2,4-trichloro-						
Benzene, hexachloro-						
Benzene, nitro-						
Toluene, 2,4-dinitro-						
Toluene, 2,6- dinitro						
PHTHALATE ETHERS						
Phthalate, dimethyl-						
Phthalate, diethyl-						
Phthalate, di-n-octyl-						
Phthalate, di-n-octyl-						
Phthalate, bis (2-ethylhexyl)-						
Phthalate, butyl benzyl-						
PAH's						
Acenapthene						
Acenaphthylene						
Anthracene						
Benzo (a) anthracene						
Benzo (b) fluoranthene						
Benzo (k) fluoranthene						
Benzo (ghi) perylene						
Benzo (a) pyrene						
Chrysene						
Dibenzo (a,H) anthracene						
Fluoranthene						
Fluorene						
Indeno (1,2,3-cd) pyrene						
Naphthalene						
Phenanthrene						
Pyrene						
OTHER						

ND

ND

ND

ND

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: 6/10/82

SUBJECT: Portsmouth WWTF

FROM: Don Greenwood

TO: Stephen Roberts

COPIES TO:

ANALYTICAL PROCEDURES: GC/MS IPT

METHOD OF QUANTIFICATION: IS

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED 6-10-82

SAMPLE #	TYPE OF ANALYSES DESIRED
a) 48371	Trip Blank – VOA screening (1)
b) 48372	Portsmouth WWTF – 1305 – VOA screening (4)
c) 48373 –	Portsmouth WWTF – 1510 – VOA screening (2)
d) 48374 –	Portsmouth WWTF – 0945 – VOA screening (2)
e) 48375 –	Portsmouth WWTF – 1245 – VOA screening (2)
f)	

PERSON(S) AND DIVISION RELINQUISHING SAMPLES

Jon Greenwood, Permits & Surveillance Division

PERSON(S) RECEIVING SAMPLES B McKay 6-10-82

DATE SAMPLES ANALYZED

ANALYST(S) MP Azlon

NOTEBOOK AND/OR REFERENCE NUMBER

ADDITIONAL COMMENTS

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

SAMPLE NUMBERS	48372	48374	48375			
HALOGENATED ALIPHATICS						
Methane, bromo-	ND	ND	ND			
Methane, chloro-						
Methane, dichloro-						
Methane, chlorodibromo-						
Methane, dichlorobromo-	<10	<10	<10			
Methane, tribromo-			ND			
Methane, trichloro-						
Methane, tetrachloro-		ND				
Methane, trichlorofluoro-						
Methane, dichlorodifluoro-	ND					
Ethane, chloro-						
Ethane, 1,2-dichloro-						
Ethane, 1,1,1-trichloro-						
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-	50	<10	<10			
Ethane, hexachloro-			ND			
Ethene, chloro (vinyl chloride)		ND				
Ethene, 1,1-dichloro-	ND					
Ethene, trans-dichloro-						
Ethene, trichloro-						
Ethene, tetrachloro-						
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
MONOCYCLIC AROMATICS						
Benzene						
Benzene, chloro-						
Benzene, ethyl-	15	14	13			
Toluene	37	28	23			
OTHER						

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE October 15, 1982

FROM Richard P. Berry
Water Pollution Sanitarian

AT (OFFICE) Water Supply & Pollution Control Commission

SUBJECT Sewer Sampling, Portsmouth, New Hampshire

TO Stephen H. Roberts, P.E., Director
Permits and Surveillance Division

Situation

On Wednesday, October 6, 1982, the writer, accompanied by Gordon Page, P.E., Chief, Support Services Division, proceeded to Portsmouth for the purpose of sampling the City's sewer system. The intent of said sampling was an attempt to ferret out the source of volatile organics. These constituents were known to exist based on analytical results of previous sampling of the Portsmouth (Pierce Island) Wastewater Treatment Facility effluent.

Discussion

Arriving in Portsmouth, Mr. Page and I met with Mr. Rance Collins, Portsmouth Public Works Department, and with Mr. Russell Foster of Peck Environmental Laboratories.

Mr. Collins arranged for one of his foremen and 2 workers to accompany Mr. Page, Mr. Foster, and myself as several strategic locations along the Portsmouth sewer system were sampled. The aforementioned sampling locations were predetermined by the Portsmouth Public Works Department based on their knowledge of the City's sewer system.

Samples for volatile organics and phenols analyses were obtained with the aid of a nickel-plated brass sewage sampler. Said sampler was lowered into manholes and wet wells with the aid of a rope, retrieved, and the first sample "wasted". By rising the sampler in this manner, it was hoped that cross-contamination could be eliminated or at least minimized. All samples were "split" with Peck Environmental Laboratories. Those samples retained for analyses at the New Hampshire Water Supply and Pollution Control Commission laboratory were transported in adherence to chain-of-security procedures (see inter-departmental communication dated November 13, 1978 from Michael P. Donahue, P.E., Director, Permits and Surveillance, to Permits and Surveillance Division staff).

The following is a synopsis of the writer's field notes.

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE October 15, 1982

FROM **AT (OFFICE)**

SUBJECT Sewer Sampling, Portsmouth, New Hampshire - Page Two

TO

Station Number	Time	Location	Type of Analyses Desired	Laboratory I.D. Number
1	1004	Wet Well - Rye Line Pumping Station - Off Route 1	VOA-Phenols	04257
2	1022	Manhole - Vicinity of Colonial Pines Estates - Near Ricci Avenue	VOA	04258
3	1035	Manhole - Front Lawn of McDonald's Restaurant - Route 1	VOA	04259
4	1103	Wet Well - Lift Station No. 3 - Lafayette Park Shopping Plaza - Route 1	VOA-Phenols	04260
5	1125	Manhole - End of Sherburne Road - Vicinity of Liberty Mutual Insurance and Booth Fisheries	VOA-Phenols	04261
6	1147	Wet Well - Gosling Meadows Pumping Station	VOA-Phenols	04262
7	1223	Wet Well - Lift Station No. 2 - Deer Street Pumping Station	VOA-Phenols	04263
8	1240	Wet Well - Lift Station No. 1 - Mechanic Street Pumping Station	VOA-Phenols	04264

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE October 15, 1982

FROM

AT (OFFICE)

SUBJECT Sewer Sampling, Portsmouth, New Hampshire - Page Three

TO

Station Number	Time	Location	Type of Analyses Desired	Laboratory I.D. Number
9	1252	Effluent - Portsmouth (Pierce Island) WWTF	VOA-Phenols	04265
		Duplicates		
1	1004	Wet well - Rye Line Pumping Station - off Route 1	VOA	04266
7	1223	Wet Well - Lift Station No. 2 - Deer Street Pumping Station	VOA	04267
		Trip Blank	VOA	04256

Analytical results of samples collected in conjunction with this effort will be forwarded upon receipt from the laboratory.

RPB/bb

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: 10/6/82

SUBJECT: Portsmouth Sewage Samples

FROM: Rick Berry

TO: Bill Rice

COPIES TO: Rick Berry

ANALYTICAL PROCEDURES:

Purge and Trap - GC Mass Spectrometer

METHOD OF QUANTIFICATION:

EPA method # 624

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED

SAMPLE #	TYPE OF ANALYSES DESIRED
a) TRIP BLANK 04256	VOA
b) ① 04257	VOA, Phenols
c) ② 04258	VOA
d) ③ 04259	VOA
e) ④ 04260	VOA, Phenols
f) ⑤ 04261	VOA, Phenols

PERSON(S) AND DIVISION RELINQUISHING SAMPLES Richard P. Berry Permits & Surveillance

PERSON(S) RECEIVING SAMPLES Barbara McKay 10-6-82

DATE SAMPLES ANALYZED 10-12-82

ANALYST(S) WMR

NOTEBOOK AND/OR REFERENCE NUMBER #2 + File

ADDITIONAL COMMENTS

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

SAMPLE NUMBERS	#1	#2	#3	#4	#5
	04256	04257	04258	04259	04260	04261
HALOGENATED ALIPHATICS						
Methane, bromo-						
Methane, chloro-						
Methane, dichloro-						
Methane, chlorodibromo-						
Methane, dichlorobromo-						
Methane, tribromo-						
Methane, trichloro-				<10	<10	
Methane, tetrachloro-						
Methane, trichlorofluoro-						
Methane, dichlorodifluoro-						
Ethane, chloro-	ND	ND				
Ethane, 1,2-dichloro-						
Ethane, 1,1,1-trichloro-			<10		<10	
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-						
Ethane, hexachloro-						
Ethene, chloro (vinyl chloride)						
Ethene, 1,1-dichloro-						
Ethene, trans-dichloro-						
Ethene, trichloro-						
Ethene, tetrachloro-			<10			
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
MONOCYCLIC AROMATICS						
Benzene					302	<10
Benzene, chloro-				<10	<10	12
Benzene, ethyl-						
Toluene						
OTHER						
Xylenes						

881 10

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED

SAMPLE #	TYPE OF ANALYSES DESIRED
a) (6) 04262	VOA, Phenols
b) (7) 04263	VOA, Phenols
c) (8) 04264	VOA, Phenols
d) (9) 04265	VOA, Phenols
e) (10) Duplicate 04266	VOA
f) (11) Duplicate 04267	VOA

PERSON(S) AND DIVISION RELINQUISHING SAMPLES

Richard P. Berry Permits & Surveillance

PERSON(S) RECEIVING SAMPLES Barbara McKay 10-10-82

DATE SAMPLES ANALYZED 10-12-82

ANALYST(S) WMR

NOTEBOOK AND/OR REFERENCE NUMBER

#2 + File

ADDITIONAL COMMENTS

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

	#6	#7	#8	#9	#1	#7
SAMPLE NUMBERS	04262	04263	04264	04265	04266	04267
HALOGENATED ALIPHATICS						
Methane, bromo-						
Methane, chloro-						
Methane, dichloro-		35	97	15		37
Methane, chlorodibromo-						
Methane, dichlorobromo-						
Methane, tribromo-						
Methane, trichloro-	14	27	13	<10		31
Methane, tetrachloro-						
Methane, trichlorofluoro-						
Methane, dichlorodifluoro-						
Ethane, chloro-						
Ethane, 1,2-dichloro-					ND	
Ethane, 1,1,1-trichloro-		<10	<10			<10
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-						
Ethane, hexachloro-						
Ethene, chloro (vinyl chloride)						
Ethene, 1,1-dichloro-						
Ethene, trans-dichloro-		<10				
Ethene, trichloro-						
Ethene, tetrachloro-		15	<10			<10
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
MONOCYCLIC AROMATICS						
Benzene		<10	<10	<10		<10
Benzene, chloro-						
Benzene, ethyl-		12	<10	<10		
Toluene	19	38	19	13		34
OTHER						
Xylenes	ND	61	31	18	ND	53

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE November 22, 1982

FROM Richard P. Berry
Water Pollution Sanitarian

AT (OFFICE) Water Supply & Pollution Control Commission

SUBJECT SEWAGE SAMPLES, PORTSMOUTH, NEW HAMPSHIRE

TO Stephen H. Roberts, P.E.
Director, Permits & Surveillance Division

SITUATION

On Wednesday, November 17, 1982, the writer, accompanied by Gordon Page, P.E., Chief, Support Services Division obtained samples from several locations along the Portsmouth sewer network. An additional sample was obtained from the effluent of the Portsmouth, Pierce Island WWTF, on Thursday, November 18, 1982.

DISCUSSION

The aforementioned sampling was carried out as a follow-up investigation to that conducted on October 6, 1982 (see inter-departmental communication dated October 15, 1982 from Richard P. Berry, Water Pollution Sanitarian to Stephen H. Roberts, P.E., Director, Permits & Surveillance Division).

As on the previous sampling run, Mr. Page and I met with Mr. Rance Collins of the Portsmouth Public Works Department.

Accompanied by employees of the Portsmouth Public Works Department the writer obtained samples from several locations, selected by the Public Works Department. Samples were collected in the same manner as those of the October 6, 1982 sampling run, and chain-of-custody procedures were adhered to.

Field Notes - Wednesday, November 17, 1982

Station Number	Time	Location	Type of Analyses Desired	Laboratory I.D. Numbe
1	1100	Manhole - Greenleaf Ave. Vicinity of Portsmouth Dodge	VOA Phenols - acid base extractables, Base Neutral Extractables	05661
2	1110	Manhole - Lafayette Rd. Vicinity of Bournival AMC, across from Lafayette Rd. pumping station	VOA Phenols - acid base extractables, Base Neutral Extractables	05662

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE November 22, 1982

FROM

AT (OFFICE)

SUBJECT SEWAGE SAMPLES, PORTSMOUTH, NEW HAMPSHIRE - Page Two

TO

Field Notes - Wednesday, November 17, 1982 (continued)

Station Number	Time	Location	Type of Analyses Desired	Laboratory I.D. Number
3	1135	Manhole - field behind Portsmouth Lincoln/Mercury Dealer, U.S. Rte. 1	VOA Phenols - acid base extractables, Base Neutral Extractables	05663
4	1150	Wet well - Lift Station No. 3, Lafayette Park Shopping Plaza, Lafayette Rd.	VOA Phenols - acid base extractables, Base Neutral Extractables	05664
5	1210	Manhole - on lawn of Portsmouth Hospital, Jenkins Ave.	VOA Phenols - acid base extractables, Base Neutral Extractables	05665
4-Duplicate	1150	Wet well - Lift Station No. 3, Lafayette Park Shopping Plaza, Lafayette Rd.	VOA Phenols - acid base extractables, Base Neutral Extractables	05666
Trip Blank		New Hampshire Water Supply and Pollution Control Commission	VOA	05660

Field Notes - Thursday, November 18, 1982

Station Number	Time	Location	Type of Analyses Desired	Laboratory I.D. Number
1	1500	Effluent - Portsmouth, Pierce Island WWTF	VOA Phenols - acid base extractables, Base Neutral Extractables	05737

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE November 22, 1982

FROM

AT (OFFICE)

SUBJECT SEWAGE SAMPLES, PORTSMOUTH, NEW HAMPSHIRE - Page Three

TO

Field Notes - Thursday, November 18, 1982 (continued)

Station Number	Time	Location	Type of Analyses Desired	Laboratory I.D. Numbe
-Duplicate	1500	Effluent - Portsmouth, Pierce Island WWTF	VOA	05738
rip Blank		New Hampshire Water Supply and Pollution Control Commission	VOA	05736

Analytical results of samples collected in conjunction with this study will be forwarded upon receipt of same from the laboratory.

RPB/mjc

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: 11/17/82

SUBJECT: Portsmouth Sewage Samples

FROM: Rick Berry

TO: Bill Rice

COPIES TO: Rick Berry

ANALYTICAL PROCEDURES:

Purge + Trap - GC/MS
Extraction ⇒ HPLC

METHOD OF QUANTIFICATION:

EPA method #624
Phenols - Comparison with external standards

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED 11-17-82 3pm

SAMPLE #		TYPE OF ANALYSES DESIRED
a) Trip Blank	05660	VOA, ~~Phenols~~
b) ①	05661	VOA, Phenols*
c) ②	05662	VOA, Phenols
d) ③	05663	VOA, Phenols
e) ④	05664	VOA, Phenols
f) ⑤	05665	VOA, Phenols

* no preservative in phenol samples (reason for)

PERSON(S) AND DIVISION RELINQUISHING SAMPLES Richard P. Beny Permits & Surveillance

PERSON(S) RECEIVING SAMPLES Sandra J. Gilik

DATE SAMPLES ANALYZED 11/23/82

ANALYST(S) WMR

NOTEBOOK AND/OR REFERENCE NUMBER 2

ADDITIONAL COMMENTS Phenols Vol II pg 80

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

SAMPLE NUMBERS	5660	5661	5662	5663	5664	5665
HALOGENATED ALIPHATICS						
Methane, bromo-						
Methane, chloro-						
Methane, dichloro-					<10	
Methane, chlorodibromo-						
Methane, dichlorobromo-						
Methane, tribromo-						
Methane, trichloro-		<10				13
Methane, tetrachloro-			r	32	13	
Methane, trichlorofluoro-						
Methane, dichlorodifluoro-						
Ethane, chloro-						
Ethane, 1,2-dichloro-	ND			18		
Ethane, 1,1,1-trichloro-				227	125	
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-						
Ethane, hexachloro-						
Ethene, chloro (vinyl chloride)						
Ethene, 1,1-dichloro-						
Ethene, trans-dichloro-						
Ethene, trichloro-				11		
Ethene, tetrachloro-				399	111	
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
MONOCYCLIC AROMATICS						
Benzene						
Benzene, chloro-						
Benzene, ethyl-						
Toluene			<10			
OTHER						
XYLENES			<10			

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: 11/17/82

SUBJECT: Portsmouth Sewage Samples

FROM: Rick Berry

TO: Bill Rice

COPIES TO: Rick Berry

ANALYTICAL PROCEDURES:

GC/Mass Spec.
Ep traction ⇒ HPLC

METHOD OF QUANTIFICATION:

EPA method-624

Phenols Comparason to epternal standards

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED 11-17-82 3pm

SAMPLE #	TYPE OF ANALYSES DESIRED
a) 4-Duplicate 05666	VOA, Phenols *
b)	
c)	
d)	
e)	
f)	

* no preservative in phenol sample (mason jar)

PERSON(S) AND DIVISION RELINQUISHING SAMPLES
Richard P. Berry Permits & Surveillance

PERSON(S) RECEIVING SAMPLES Sandra J. Gelsik

DATE SAMPLES ANALYZED 11/21/82

ANALYST(S) WMR SMGT

NOTEBOOK AND/OR REFERENCE NUMBER
2

ADDITIONAL COMMENTS Phenols Vol II pg 80

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

SAMPLE NUMBERS	3666					
HALOGENATED ALIPHATICS						
Methane, bromo-						
Methane, chloro-						
Methane, dichloro-						
Methane, chlorodibromo-						
Methane, dichlorobromo-						
Methane, tribromo-						
Methane, trichloro-						
Methane, tetrachloro-	15					
Methane, trichlorofluoro-						
Methane, dichlorodifluoro-						
Ethane, chloro-						
Ethane, 1,2-dichloro-						
Ethane, 1,1,1-trichloro-	123					
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-						
Ethane, hexachloro-						
Ethene, chloro (vinyl chloride)						
Ethene, 1,1-dichloro-						
Ethene, trans-dichloro-						
Ethene, trichloro-						
Ethene, tetrachloro-	109					
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
MONOCYCLIC AROMATICS						
Benzene						
Benzene, chloro-						
Benzene, ethyl-						
Toluene						
OTHER						

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/l)

SAMPLE NUMBER	05661	05662	05663	05664	05665	05666
PHENOLS AND CRESOLS						
Phenol	ND	ND	Sample Lost	ND	ND	ND
Phenol, 2-chloro-						
Phenol, 2,4-dichloro-						
Phenol, 2,4,6-trichloro-						
Phenol, pentachloro-						
Phenol, 2-nitro-						
Phenol, 4-nitro						
Phenol, 2,4-dinitro-						
Phenol, 2,4-dimethyl-						
m-Cresol, p-chloro-						
O-Cresol, 4,6-dinitro-	ND	ND		ND	ND	ND
N-COMPOUNDS						
Nitrosamine, dimethyl- (DMN)						
Nitrosamine, diphenyl-						
Nitrosamine, di-n-propyl-						
Benzidine						
Benzidine, 3,3'-dichloro-						
Hydrazine, 1,2-diphenyl-						
Acrylonitrile						
OTHER						

The State of New Hampshire

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

DATE: 11/18/82

SUBJECT: Portsmouth WWTF EFFLUENT SAMPLE

FROM: Rick Berry

TO: Michael Pazdon

COPIES TO: Rick Berry

ANALYTICAL PROCEDURES:

GC/Mass. Spectrometer

Phenols - Extraction → HPLC

METHOD OF QUANTIFICATION:

EPA Method # 624

Phenols - Comparison to an external standard

CHAIN OF CUSTODY

DATE SAMPLE(S) RECEIVED

SAMPLE #	TYPE OF ANALYSES DESIRED
a) 05736 TRIP BLANK	VOA
b) 05737 ①	VOA, Phenols, Base Neutral Extractables
c) 05738 ① - Duplicate	VOA
d)	
e)	
f)	

PERSON(S) AND DIVISION RELINQUISHING SAMPLES Richard P. Berry Permits & Surveillance

PERSON(S) RECEIVING SAMPLES Barbara McKay 11-18-82

DATE SAMPLES ANALYZED 11/23/82 ; 12/18/82 (Phenols)

ANALYST(S) WMR Sheila Heath

NOTEBOOK AND/OR REFERENCE NUMBER #2 vol III pg. 81

ADDITIONAL COMMENTS

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/liter)

SAMPLE NUMBERS	5736	5737	5738			
HALOGENATED ALIPHATICS						
Methane, bromo-						
Methane, chloro-						
Methane, dichloro-		<10	<10			
Methane, chlorodibromo-						
Methane, dichlorobromo-						
Methane, tribromo-						
Methane, trichloro-		12	12			
Methane, tetrachloro-						
Methane, trichlorofluoro-						
Methane, dichlorodifluoro-						
Ethane, chloro-						
Ethane, 1,2-dichloro-	ND					
Ethane, 1,1,1-trichloro-		<10	<10			
Ethane, 1,1,2-trichloro-						
Ethane, 1,1,2,2-tetrachloro-						
Ethane, hexachloro-						
Ethene, chloro (vinyl chloride)						
Ethene, 1,1-dichloro-						
Ethene, trans-dichloro-						
Ethene, trichloro-						
Ethene, tetrachloro-		165	163			
Propane, 1,2-dichloro-						
Propene, 1,3-dichloro-						
MONOCYCLIC AROMATICS						
Benzene						
Benzene, chloro-						
Benzene, ethyl-						
Toluene		13	20			
OTHER						
Total Xylenes		74	59			

NEW HAMPSHIRE WATER SUPPLY AND POLLUTION CONTROL COMMISSION
ORGANICS/PRIORITY POLLUTANTS ANALYSIS

(ALL CONC. IN µg/l)

SAMPLE NUMBER	5737					
PHENOLS AND CRESOLS						
Phenol						
Phenol, 2-chloro-						
Phenol, 2,4-dichloro-						
Phenol, 2,4,6-trichloro-						
Phenol, pentachloro-						
Phenol, 2-nitro-						
Phenol, 4-nitro						
Phenol, 2,4-dinitro-						
Phenol, 2,4-dimethyl-						
m-Cresol, p-chloro-						
O-Cresol, 4,6-dinitro-						
N-COMPOUNDS						
Nitrosamine, dimethyl- (DMN)						
Nitrosamine, diphenyl-						
Nitrosamine, di-n-propyl-						
Benzidine						
Benzidine, 3,3'-dichloro-						
Hydrazine, 1,2-diphenyl-						
Acrylonitrile						
OTHER						