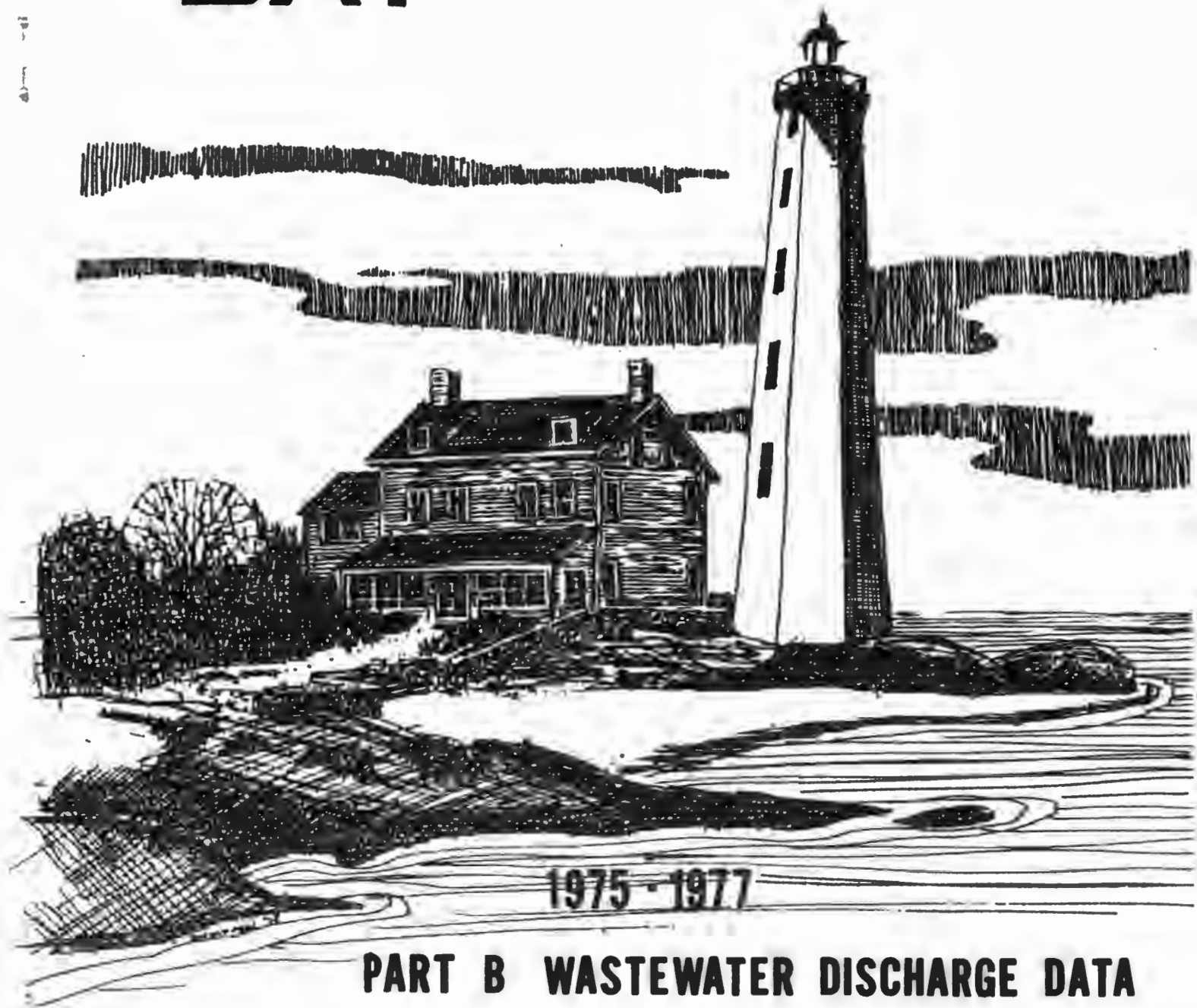


BUZZARDS BAY



1975 - 1977

PART B WASTEWATER DISCHARGE DATA

department of environmental quality engineering.

DIVISION OF WATER POLLUTION CONTROL

thomas c. mcMahon, director

BUZZARDS BAY

1975 - 1977

WASTEWATER DISCHARGE SURVEY DATA

Prepared by

Water Quality and Research Section
Massachusetts Division of Water Pollution Control

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FOREWORD

This report presents data collected from major industrial and municipal wastewater discharges within the Buzzards Bay Basin. All discharges were sampled during the period of October 20 to October 23, 1975. Selected discharges were again sampled during the period of September 27 to September 30, 1976 and September 19 to September 21, 1977. Sampling was conducted by personnel of the Water Quality and Research Section in Westborough with assistance from the Division's Southeast Regional Office in Pembroke.

Whenever possible, composite samples were collected. When this procedure proved impractical or unnecessary, grab samples were taken. In most cases, samples were collected in accordance with the monitoring requirements outlined in each discharger's National Pollutant Discharge Elimination System (N.P.D.E.S.) permit. Flow rates were obtained from plant personnel or from N.P.D.E.S. permits.

All samples were conveyed to the Lawrence Experiment Station of the Massachusetts Department of Environmental Quality Engineering for analysis. Samples collected in 1975 were analyzed in accordance with the procedures set forth in the APHA's Standard Methods for the Examination of Water and Wastewater, 13th Edition, 1971, New York. Procedures set forth in the 14th Edition, 1976, were used for samples collected in 1976. The data have been compiled and placed in tabular form by personnel of the Division of Water Pollution Control.

BUZZARDS BAY BASIN

WASTE DISCHARGES

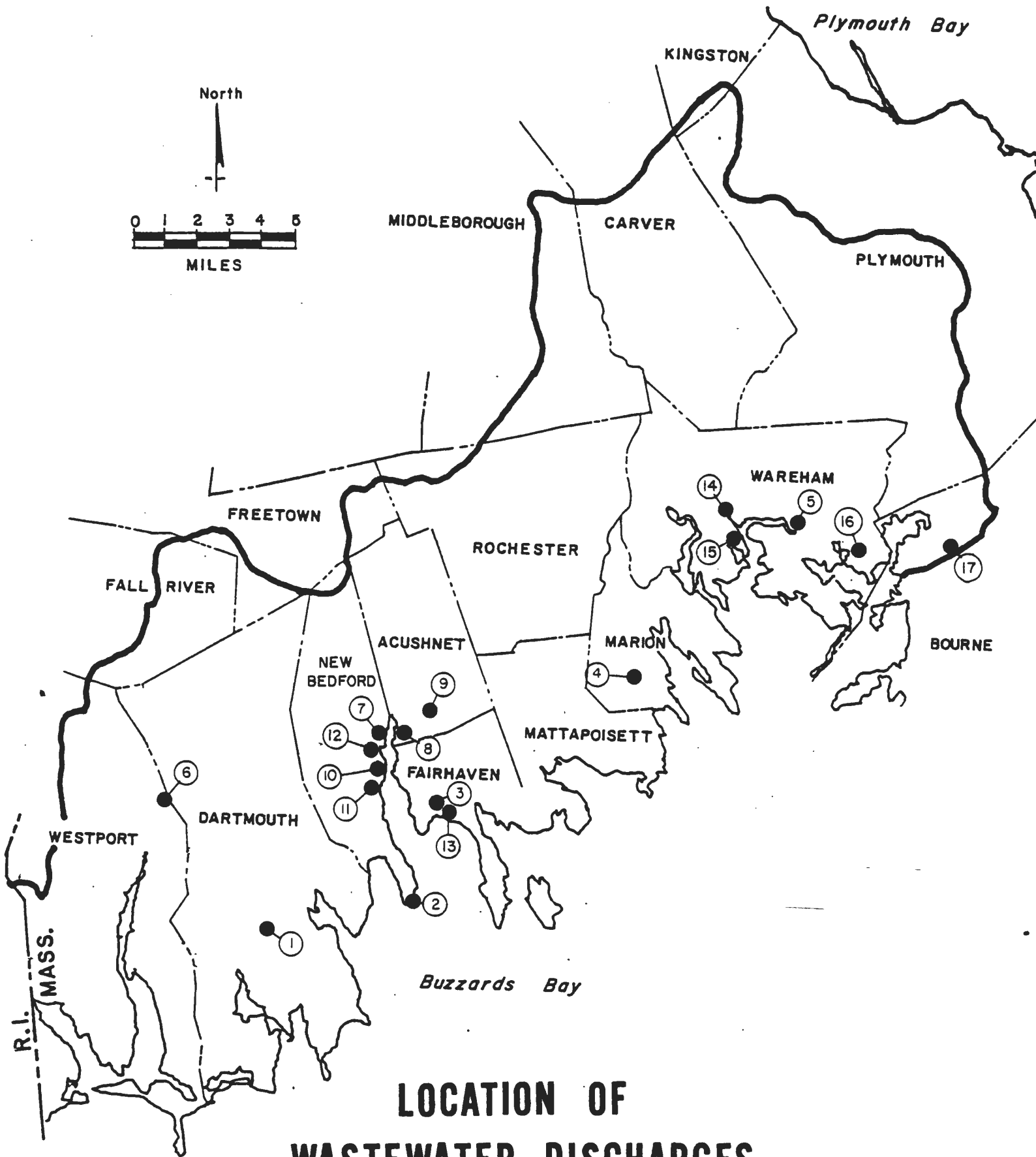
Municipal Wastewater Discharges

NUMBER

- 1 Dartmouth Wastewater Treatment Plant
- 2 New Bedford Wastewater Treatment Plant
- 3 Fairhaven Wastewater Treatment Plant
- 4 Marion Wastewater Treatment Plant
- 5 Wareham Wastewater Treatment Plant

Industrial, Business, Institutional Wastewater Discharges

- 6 Lincoln Park Amusement Company, Dartmouth
- 7 Acushnet Company, Rubber Division, New Bedford
- 8 Acushnet Company, Golf Division, Acushnet
- 9 Warren Brothers, Blue Stone Quarry, Acushnet
- 10 Revere Copper and Brass, New Bedford
- 11 Cameo Curtains of New Bedford, New Bedford
- 12 Chamberlain Manufacturing Corporation, New Bedford
- 13 Atlas Tach Company, Fairhaven
- 14 Tremont Nail Corporation, Wareham
- 15 Franconia Fuel Company, Wareham
- 16 Ocean Spray Cranberry Company, Wareham
- 17 Massachusetts Maritime Academy, Bourne



Dartmouth Wastewater Treatment Plant

Location: Slocums Road
Dartmouth, Massachusetts

Receiving Water: Buzzards Bay

Treatment Process: Extended Aeration, Chlorination

Capacity: 2.1 MGD

Flow Measurement: Plant's flow meter

Sludge Disposal: Landfilled at municipal site

Future Status: Sufficient capacity for near future

Dartmouth Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

	INFLUENT	INFLUENT	EFFLUENT	EFFLUENT
Date of Collection	10/21-22/75	10/22-23	10/21-22	10/22-23
Time of Collection	1100-1100	1100-1100	1100-1100	1100-1100
Type of Sample	24-hr. comp.	24-hr. comp.	24-hr. comp.	24-hr. comp.
COD	240	240	51	45
BOD ₅	96	66	26	12
pH (Standard Units)	7.0	6.8	7.4	7.4
Total Alkalinity	128	113	131	108
Suspended Solids	108	99	6.5	5.5
Total Solids	426	382	322	278
Ammonia-N	12	12	9.8	8.3
Nitrate-N	0.4	0.1	0.2	0.9
Total P	4.3	4.1	2.0	1.3
Total Coliform (per 100 ml.)	---	---	---	---
Fecal Coliform (per 100 ml.)	---	---	---	91
Flow (MGD)	0.958	1.019	0.958	1.019
(cfs)	1.482	1.576	1.482	1.576

Dartmouth Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/29-30/76	EFFLUENT 9/27-28	EFFLUENT 9/28-29	EFFLUENT 9/29-30
Time of Collection	1100-1000	1100-1000	1100-1000	1100-1000
Type of Sample	24-hr. comp.	24-hr. comp.	24-hr. comp.	24-hr. comp.
BOD ₅	300	150	130	73
pH (Standard Units)	7.0	7.3	7.1	7.2
Suspended Solids	200	118	110	62
Settleable Solids (ml/l)	---	18	15	5.5
Ammonia-Nitrogen	21	14	15	14
Nitrate-Nitrogen	0.3	0.3	0.5	0.7
Total Phosphorus	8.0	9.6	5.2	4.2
Total Coliform (per 100 ml.)	---	<36	430	<36
Fecal Coliform (per 100 ml.)	---	<36	91	<36
Chlorine Residual:				
Free	---	2.0	---	---
Total	---	3.0	2.0	2.5
Flow (MGD)	0.666	0.651	0.656	0.666
(cfs)	1.030	1.007	1.015	1.030

Dartmouth Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/20-21/77	EFFLUENT 9/20-21/77
Time of Collection	0800-0700	0800-0700
Type of Sample	24-hr. composite	24-hr. composite
BOD ₅	200	10
pH (Standard Units)	7.1	7.8
Suspended Solids	246	12
Settleable Solids (ml/l)	--	0.0
Total Solids	600	368
Ammonia-N	15	0.33
Nitrate-N	0.1	9.1
Total P	7.8	4.1
Total Coliform (per 100 ml.)	--	400
Fecal Coliform (per 100 ml.)	--	20
Chlorine Residual:		
Total	--	1.4
Flow (MGD)	--	0.84
(cfs)	--	1.30

New Bedford Wastewater Treatment Plant

Location: Fort Rodman
New Bedford, Massachusetts

Receiving Water: Buzzards Bay

Treatment Process: Primary, chlorination

Capacity: 30 MGD

Flow Measurement: Plant's flow meter

Sludge Disposal: Landfilled on site

Future Status: To be upgraded to secondary treatment

New Bedford Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 10/20-21/75	EFFLUENT 10/20-21	EFFLUENT 10/21-22	EFFLUENT 10/22-23
Time of Collection	1130-1130	1200-1200	1230-1230	1200-1200
Type of Sample	24-hr. comp.	24-hr. comp.	24-hr. comp.	24-hr. comp.
COD	760	560	490	560
BOD ₅	90	66	78	114
pH (Standard Units)	7.0	6.9	6.9	7.0
Total Alkalinity	93	88	96	116
Suspended Solids	414	125	113	117
Total Solids	2,500	2,300	2,000	2,200
Ammonia-N	7.5	6.8	8.2	7.0
Nitrate-N	0.5	0.6	0.1	0.1
Total P	2.9	2.6	2.7	2.7
Total Coliform (per 100 ml.)	2,400	---	---	---
Fecal Coliform (per 100 ml.)	91	---	---	---
Flow (MGD)	26.7	26.7	26.0	23.8
(cfs)	41.3	41.3	40.2	36.8

New Bedford Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/27-28/76	EFFLUENT 9/27-28/76
Time of Collection	1100-1000	1100-1000
Type of Sample	24-hr. comp.	24-hr. comp.
BOD ₅	170	160
pH (Standard Units)	6.8	6.7
Suspended Solids	210	206
Settleable Solids (ml/l)	---	1.5
Ammonia-N	6.1	7.3
Nitrate-N	0.3	0.1
Total P	3.6	3.2
Total Coliform (per 100 ml.)	---	4,300
Fecal Coliform (per 100 ml.)	---	430
Chlorine Residual:		
Free	---	0.8
Total	---	2.8
Flow (MGD)	34.8	34.8
(cfs)	53.8	53.8

New Bedford Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/19-20/77	EFFLUENT 9/19-20/77
Type of Sample	24-hr. composite	24-hr. composite
BOD ₅	57	60
pH (standard Units)	7.6	7.1
Suspended Solids	29	35
Total Solids	3,230	3,142
Ammonia-N	11	51
Nitrate-N	0.0	5.6
Total P	4.2	3.6
Total Coliform (per 100 ml.)	--	4.0x10 ⁷
Fecal Coliform (per 100 ml.)	--	4.0x10 ⁶
Chlorine Residual:		
Total	--	0.0
Flow (MGD)	--	21.7
(cfs)	--	33.57

Fairhaven Wastewater Treatment Plant

Location: Arsene Road
 Fairhaven, Massachusetts

Receiving Water: Inner New Bedford Harbor

Treatment Process: Extended aeration, chlorination

Capacity: 2.1 MGD

Flow Measurement: Plant's flow meter

Sludge Disposal: Landfilled at municipal site

Future Status: Expansion of plant will be necessary should
 community of Mattapoisett connect to
 collection facilities

Fairhaven Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 10/21-22/75	EFFLUENT 10/20-21	EFFLUENT 10/21-22	EFFLUENT 10/22-23
Time of Collection	1400-1400	1430-1430	1430-1430	1430-1430
Type of Sample	24-hr. comp.	24-hr. comp.	24-hr. comp.	24-hr. comp.
COD	450	225	220	230
BOD ₅	60	10	6.8	5.6
pH (Standard Units)	6.9	7.2	7.1	7.1
Total Alkalinity	108	73	80	76
Suspended Solids	126	9.5	4.0	2.0
Total Solids	2,300	1,900	1,900	1,900
Ammonia-N	8.8	2.8	2.7	1.8
Nitrate-N	0.1	1.8	0.1	1.2
Total P	5.2	1.6	2.1	2.0
Total Coliform (per 100 ml.)	---	430	---	---
Fecal Coliform (per 100 ml.)	---	91	---	---
Flow (MGD)	1.13	1.43	1.13	1.04
(cfs)	1.75	2.21	1.75	1.61

Fairhaven Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/27-28/76	EFFLUENT 9/27-28/76	EFFLUENT 9/28-29/76	EFFLUENT 9/29-30/76
Time of Collection	0830-0730	1200-1100	1000	1000-0900
Type of Sample	24-hr. comp.	24-hr. comp.	Grab	24-hr. comp.
BOD ₅	240	9.9	---	13
pH (Standard Units)	7.3	7.3	---	7.3
Suspended Solids	38	5.0	---	36
Settleable Solids (ml/l)	---	0.1	---	7.5
Ammonia-N	18	1.8	---	2.2
Nitrate-N	0.1	8.0	---	8.7
Total P	7.6	5.8	---	4.2
Total Coliform (per 100 ml.)	---	230	230	930
Fecal Coliform (per 100 ml.)	---	<36	36	36
Chlorine Residual:				
Free	---	0.3	0.5	---
Total	---	0.6	1.0	1.0
Flow (MGD)	1.09	1.09	0.96	1.0
(cfs)	1.69	1.69	1.49	1.55

Fairhaven Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT	EFFLUENT
	9/19-20/77	9/19-20/77
Type of Sample	24-hr. composite	24-hr. composite
BOD ₅	110	8.4
pH (Standard Units)	7.5	7.7
Suspended Solids	2,902	6.0
Ammonia-N	14	0.22
Nitrate-N	0.1	4.3
Total P	6.8	3.9
Total Coliform (per 100 ml.)	--	1,800
Fecal Coliform (per 100 ml.)	--	20
Chlorine Residual:		
Total	--	1.3
Flow (MGD)	--	1.504
(cfs)	--	2.33

Marion Wastewater Treatment Plant

Location: 43 Pumping Station Road
Marion, Massachusetts

Receiving Water: Aucoot Cove

Treatment Process: Stabilization ponds, sand filters,
chlorination

Capacity: 0.34 MGD

Flow Measurement: Plant's flow meter

Sludge Disposal: Landfilled at municipal site

Future Status: Expansion will be required

Marion Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 10/23/75	EFFLUENT 10/21/75	EFFLUENT 10/22/75	EFFLUENT 10/23/75
Time of Collection	1315	1300	1110	1330
Type of Sample	Grab	Grab	Grab	Grab
COD	270	61	61	66
BOD ₅	115	1.2	7.6	14
pH (Standard Units)	6.5	6.2	6.4	6.3
Total Alkalinity	74	27	27	29
Suspended Solids	51	4.0	12	9.0
Total Solids	592	308	362	340
Ammonia-N	5.0	0.08	0.5	0.20
Nitrate-N	1.0	1.4	1.2	1.1
Total P	3.0	1.1	1.4	1.2
Total Coliform (per 100 ml.)	---	91	---	---
Fecal Coliform (per 100 ml.)	---	<36	---	---
Flow (MGD)	0.430	0.477	0.462	0.430
(cfs)	0.665	0.737	0.715	0.665

Marion Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/28-29/76	EFFLUENT 9/27-28/76	EFFLUENT 9/28-29/76	EFFLUENT 9/29-30/76
Time of Collection	1400-1300	1200-1100	1400-1300	1130-1030
Type of Sample	24-hr. comp.	24-hr. comp.	24-hr. comp.	24-hr. comp.
BOD ₅	130	18	8.4	9.9
pH (Standard Units)	6.9	6.8	6.6	6.7
Suspended Solids	38	25	10	27
Settleable Solids (ml/l)	---	0.5	4.0	1.0
Ammonia-N	17	0.05	0.15	0.10
Nitrate-N	0.3	2.1	0.7	0.7
Total P	4.8	6.0	2.5	2.6
Total Coliform (per 100 ml.)	---	36	<36	<36
Fecal Coliform (per 100 ml.)	---	<36	<36	<36
Chlorine Residual:				
Free	---	0.4	---	---
Total	---	1.0	0.8	2.1
Flow (MGD)	0.233	0.233	0.256	0.276
(cfs)	0.360	0.360	0.396	0.427

Marion Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

	INFLUENT	EFFLUENT
Date of Collection	9/20-21/77	9/20-21/77
Time of Collection	1200-1100	1200-1100
Type of Sample	24-hr. composite	24-hr. composite
BOD ₅	57	10
pH (Standard Units)	7.2	6.5
Suspended Solids	44	40
Settleable Solids (ml/l)	--	1.5
Total Solids	520	298
Ammonia-N	10	2.4
Nitrate-N	0.4	5.0
Total P	3.6	3.4
Total Coliform (per 100 ml.)	--	<10
Fecal Coliform (per 100 ml.)	--	<5
Chlorine Residual:		
Total	--	1.5
Flow (MGD)	--	0.525
(cfs)	--	0.812

Wareham Wastewater Treatment Plant

Location: Route 6
Wareham, Massachusetts

Receiving Water: Agawam River

Treatment Process: Extended aeration, chlorination, sand filters

Capacity: 1.75 MGD

Flow Measurement: Sum of flows recorded at pump stations

Sludge Disposal: Landfilled at municipal site

Future Status: Sufficient capacity for near future

Wareham Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 10/22/75	EFFLUENT 10/21/75	EFFLUENT 10/22/75	EFFLUENT 10/23/75
Time of Collection	1030	1200	1530	1400
Type of Sample	Grab	Grab	Grab	Grab
COD	640	46	56	35
BOD ₅	174	0.4	0.2	1.0
pH (Standard Units)	6.9	5.9	5.2	5.2
Total Alkalinity	160	8.0	3.0	4.0
Suspended Solids	244	2.0	2.0	2.0
Total Solids	528	512	354	392
Ammonia-N	26	2.3	3.6	2.8
Nitrate-N	0.0	11	13	14
Total P	9.5	0.17	0.39	0.22
Total Coliform (per 100 ml.)	---	2400/<36*	---	---
Fecal Coliform (per 100 ml.)	---	91/<36*	---	---
Flow (MGD)	0.186	0.194	0.186	0.194
(cfs)	0.288	0.300	0.288	0.300

* Effluent to river/before application to sand beds

Wareham Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

	INFLUENT	*EFFLUENT	*EFFLUENT	*EFFLUENT
Date of Collection	9/28-29/76	9/27-28/76	9/28-29/76	9/29-30/76
Time of Collection	1430-1330	1400-1300	1400-1300	1400-1300
Type of Sample	24-hr. comp.	24-hr. comp.	24-hr. comp.	24-hr. comp.
BOD ₅	300	17	9.3	7.8
pH (Standard Units)	6.9	4.3	4.3	4.2
Suspended Solids	124	12	10	64
Settleable Solids (ml/l)	18	0.2	0.1	0.2
Ammonia-N	28	4.0	4.3	4.1
Nitrate-N	0.1	28	26	28
Total P	9.6	9.0	8.4	8.8
Total Coliform (per 100 ml.)	---	<36	<36	<36
Fecal Coliform (per 100 ml.)	---	<36	<36	<36
Chlorine Residual:				
Free	---	0.4	1.0	---
Total	---	1.5	3.0	2.8
Flow (MGD)	0.26	0.26	0.26	0.26
(cfs)	0.40	0.40	0.40	0.40

* Effluent sampling was conducted prior to application to sand beds.

Wareham Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

	*EFFLUENT 9/28/76	*EFFLUENT 9/30/76
Date of Collection		
Time of Collection	1530	0745
Type of Sample	Grab	Grab
BOD ₅	6.0	1.5
pH (Standard Units)	5.2	5.0
Suspended Solids	2.5	19
Settleable Solids (ml/l)	0.0	0.0
Ammonia-N	3.5	4.4
Nitrate-N	20	25
Total P	0.40	0.70
Total Coliform (per 100 ml.)	<36	<36
Fecal Coliform (per 100 ml.)	<36	<36

Due to groundwater losses, the actual discharge to the Agawam River is less than reported. Due to tidal effects it is impossible to determine.

* Effluent sampling was conducted at #3 Outfall following application to sand beds.

Wareham Wastewater Treatment Plant

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 9/21/77	EFFLUENT ¹ 9/20-21/77	EFFLUENT ² 9/21/77
Time of Collection	1400	1300-1200	1400
Type of Sample	Grab	24-hr. composite	Grab
BOD ₅	220	3.0	1.8
pH (Standard Units)	7.2	4.7	6.1
Suspended Solids	62	7.0	0.0
Settleable Solids (ml/l)	--	0.0	--
Total Solids	598	504	432
Ammonia-N	20	5.3	3.9
Nitrate-N	0.3	22	20
Total P	9.6	7.0	9.2
Total Coliform (per 100 ml.)	--	<10	<10
Fecal Coliform (per 100 ml.)	--	<5	<5
Chlorine Residual:			
Total	--	3.0	--
Flow (MGD)	--	--	0.299
(cfs)	--	--	0.460

¹ Before application to sand beds.

² After application to sand beds.

Lincoln Park Amusement Company

Location: Route 6
Dartmouth, Massachusetts

Receiving Water: East Branch of Westport River

Treatment Process: Clarifier, Imhoff tank, trickling filter,
floculation tank, chlorinator, sand filters,
aerated lagoon

Capacity: 0.05 MGD

Flow Measurement: Plant's flow meter

Sludge Disposal: Landfilled at municipal site

Future Status: No expected change

Lincoln Park Amusement Company

Results of Laboratory Analyses (mg/l)

	INFLUENT	EFFLUENT
Date of Collection	10/21/75	10/21/75
Type of Sample	Grab	Grab
COD	90	46
BOD ₅	13	1.2
pH (Standard Units)	6.9	7.4
Total Alkalinity	61	41
Suspended Solids	35	1.5
Total Solids	268	192
Ammonia-N	5.6	3.6
Nitrate-N	3.5	2.5
Total P	1.4	0.42
Flow (MGD)	0.005	0.005
(cfs)	0.008	0.008

Acushnet Company, Rubber Division

Location: 744 Belleville Avenue
New Bedford, Massachusetts

Receiving Water: Acushnet River

Nature of Wastewater: Contact and non-contact cooling water, floor drainage carrying oil from hydraulic presses, batch discharges of caustic solutions and chromic acid used for cleaning processes

Treatment Process: None

Flow Measurement: V-notch weir

Future Status: Weston and Sampson Consulting Engineers have recommended construction of appropriate pre-treatment facilities to permit tie into municipal collection system.

Acushnet Company, Rubber Division

Results of Laboratory Analyses (mg/l)

	DISCHARGE 001
Date of Collection	10/22-23/75
Time of Collection	1130-1130
Type of Sample	24-hr. comp.
COD	81
pH (Standard Units)	9.2
Total Alkalinity	35
Phth Alkalinity	5.0
Suspended Solids	5.0
Total Solids	124
Chromium	0.00
Oil and grease	4.9
Flow (MGD)	0.500
(cfs)	0.773

Acushnet Company, Rubber Division

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 001 9/27-28/76
Time of Collection	1330-1230
Type of Sample	24-hr. comp.
Suspended Solids	2.0
Chromium	0.00
Oil and Grease	7.2
Flow (MGD)	0.544
(cfs)	0.842

Acushnet Company, Golf Division

Location: Slocum Street
Acushnet, Massachusetts

Receiving Water: Acushnet River

Discharge 008

Nature of Wastewater: Sanitary waste, cooling water from
air conditioning system

Treatment Process: None

Flow Measurement: Obtained from water use records

Future Status: To connect to municipal collection system
when available

Discharge 010

Nature of Wastewater: Sanitary waste, non-contact cooling water,
process waste (wash water used in the cleaning
of golf balls), and floor drainage from
processes requiring water for the suppression
of electrical sparking.

Treatment Process: None

Flow Measurement: Obtained from water use records

Future Status: Discharges other than cooling water to be
separated and connected to municipal
collection system when available. Approp-
riate pre-treatment facilities will be
constructed should an engineering study
indicate the requirement.

Acushnet Company, Golf Division

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 008 10/22/75	DISCHARGE 010 10/21-22/75
Time of Collection	1600	1000-1000
Type of Sample	Grab	24-hr. comp.
COD		41
BOD ₅	15	---
pH (Standard Units)	6.5	6.6
Total Alkalinity	32	31
Suspended Solids	7.0	4.5
Total Solids	136	104
Ammonia-N	2.3	0.2
Nitrate-N	0.4	0.1
Total P	0.60	---
Zinc	---	0.03
Oil and grease	---	1.5
Flow (MGD)	0.013	0.828
(cfs)	0.020	1.281

Acushnet Company, Golf Division

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 010 9/28-29/76
Time of Collection	1500-1400
Type of Sample	24-hr. comp.
COD	29
pH (Standard Units)	6.5
Suspended Solids	9.5
Ammonia-Nitrogen	0.01
Zinc	0.01
Oil and Grease	1.0
Flow (MGD)	1.2 (summer), 0.8 (winter)
(cfs)	1.86 (summer), 1.24 (winter)

Acushnet Company, Golf Division

Results of Laboratory Analyses (mg/l)

Date of Collection	Discharge 010 9/20-21/77
Time of Collection	1400-1300
Type of Sample	24-hr. composite
COD	110
pH (Standard Units)	6.8
Suspended Solids	5.5
Ammonia-N	0.11
Nitrate-N	0.1
Zinc	0.12 (grab)
Oil and Grease	1.4 (grab)
Flow (MGD)	1.2 (summer), 0.8 (winter)
(cfs)	1.86 (summer), 1.24 (winter)

Warren Brothers, Blue Stone Quarry

Location: South Main Street
Acushnet, Massachusetts

Receiving Water: Inner New Bedford Harbor

Nature of Wastewater: Drainage from quarry

Treatment Process: None

Flow Measurement: None possible

Future Status: No expected change

Warren Brothers, Blue Stone Quarry

Results of Laboratory Analyses (mg/l)

Date of Collection	10/21/75
Type of Sample	Grab
COD	61
pH (Standard Units)	7.4
Total Alkalinity	73
Suspended Solids	16
Total Solids	232
Flow (MGD)	---
(cfs)	---

Revere Copper and Brass, Incorporated

Location: 24 North Front Street
New Bedford, Massachusetts

Receiving Water: Acushnet River

Discharge 002

Nature of Wastewater: Contact cooling water, non-contact cooling water, metal plating wastes

Treatment Process: None

Flow Measurement: Obtained from water use records

Future Status: Pre-treatment facilities for removal of heavy metals to be completed by May 1976

Discharge 004

Nature of Wastewater: Metal plating wastes, municipal wastewater

Treatment Process: Oil separator

Flow Measurement: Obtained from water use records

Future Status: Metal plating wastes to be separated from Discharge 004 and connected to pre-treatment facility (Discharge 002)

Revere Copper and Brass, Incorporated

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 002 10/21/75	DISCHARGE 004 10/21/75
Type of Sample	Grab	Grab
COD	36	130
pH (Standard Units)	6.9	6.6
Total Alkalinity	30	39
Suspended Solids	7.5	28
Total Solids	132	330
Chromium	---	0.00
Copper	1.5	0.00
Zinc	1.5	0.03
Nickel	---	0.00
Oil and grease	0.5	7.2
Flow (MGD)	0.035	0.394
(cfs)	0.054	0.609

Revere Copper and Brass, Incorporated

Results of Laboratory Analyses (mg/l)

	Discharge 002 9/20/77	Discharge 002A 9/21/77	Discharge 004B 9/20/77
Date of Collection			
Time of Collection	0830	0900	0930
Type of Sample	Grab	Grab	Grab
Temperature (°F)	60	--	--
pH (Standard Units)	6.0	--	7.1
Oil and Grease	1.3	--	21
Zinc	0.70	0.05	--
Copper	0.55	0.04	--
Flow (GPD)	16,000	9,190	269,000



Cameo Curtains of New Bedford

Location: Riverside Avenue
New Bedford, Massachusetts

Receiving Water: Acushnet River

Discharge 001

Nature of Wastewater: Compressor cooling water

Treatment Process: None necessary

Flow Measurement: Pump rate x operation time

Future Status: No change

Discharges 002, 003, 004

Nature of Wastewater: Sanitary

Treatment Process: None

Flow Measurement: Obtained from water use record

Future Status: To connect to municipal collection system
when available

Cameo Curtains of New Bedford

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 001 10/22/75	DISCHARGES 002, 003, 004 10/22/75
Time of Collection	1530	1530
Type of Sample	Grab	Grab
COD	15	---
BOD ₅	---	30
pH (Standard Units)	---	7.5
Total Alkalinity	---	190
Suspended Solids	1.0	22
Total Solids	86	---
Ammonia-N	0.01	7.2
Nitrate-N	0.0	0.9
Total P	---	1.9
Flow (MGD)	0.003	0.002
(cfs)	0.005	0.003

Chamberlain Manufacturing Corporation

Location: 117 King Street
New Bedford, Massachusetts 02740

Receiving Water: Nash Road Pond and Copper Brook

Discharge 001

Nature of Wastewater: Non-contact cooling water

Treatment Process: None necessary

Flow Measurement: Obtained from water use records

Future Status: No change

Discharge 002

Nature of Wastewater: Metal finishing discharge

Treatment Process: Pretreatment for removal of metals

Flow Measurement: Obtained from water use records

Future Status: No change

Chamberlain Manufacturing Corporation

Results of Laboratory Analyses (mg/l)

Date of Collection	Discharge 002 9/20/77	Discharge 001 9/20/77
Type of Sample	Grab	Grab
BOD ₅	2.4	--
Suspended Solids	4.5	--
Oil & Grease	1.6	--
Chromium	0.00	--
Chromium+ ⁶	0.000	--
Zinc	0.09	--
Temperature (°F)	--	62°
Flow (MGD)	0.075	0.040
(cfs)	0.116	0.0618

Atlas Tach Company

Location: Pleasant Street
Fairhaven, Massachusetts

Receiving Water: Outer New Bedford Harbor

Nature of Wastewater: Rinse water

Treatment Process: Settling lagoon

Flow Measurement: Obtained from water use record

Future Status: Presently negotiating with Town of Fairhaven
for connection to municipal collection
system.

Atlas Tach Company

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 001 10/22/75
Time of Collection	1215
Type of Sample	Grab
COD	730
pH (Standard Units)	6.7
Total Alkalinity	21
Suspended Solids	118
Total Solids	262
Aluminum	0.85
Hexavalent Chromium	0.00
Total Chromium	0.00
Copper	0.05
Nickel	0.00
Zinc	0.15
Cyanide	3.2
Oil and grease	10.0
Flow (MGD)	0.011
(cfs)	0.017

Tremont Nail Company

Location: 21 Elm Street
Wareham, Massachusetts

Receiving Water: Wareham River

Discharge 001

Nature of Wastewater: Contact cooling water used in quenching
of nails

Treatment Process: None

Flow Measurement: Obtained from consulting engineer's report

Future Status: Negotiating with community of Wareham for
connection to municipal collection system

Discharge 002

Nature of Wastewater: Rinse water from pickling operation

Treatment Process: None

Flow Measurement: Obtained from consulting engineer's report

Future Status: Pickling operation to be eliminated

Tremont Nail Company

Results of Laboratory Analyses (mg/l)

Date of Collection	DISCHARGE 001 10/21/75	DISCHARGE 002 10/21/75
Time of Collection	1000	1000
Type of Sample	Grab	Grab
COD	---	30
pH (Standard Units)	6.5	12.5
Total Alkalinity	5.0	3,220
Phth. Alkalinity	---	2,850
Suspended Solids	3.0	2,500
Total Solids	56	2,800
Iron - Filtered	550	---
Unfiltered	550	7.0
Temperature (°F)	66	---
Flow (MGD)	0.081	0.008
(cfs)	0.125	0.012

Franconia Fuel Company

Location: 379 Main Street
Wareham, Massachusetts

Receiving Water: Wankinco River

Nature of Wastewater: Yard drainage

Treatment Process: None

Flow Measurement: None possible

Future Status: Oil separator to be constructed

Franconia Fuel Company

Results of Laboratory Analyses (mg/l)

Date of Collection	10/23/75
Time of Collection	1500
Type of Sample	Grab
pH (Standard Units)	6.5
Total Alkalinity	109
Settleable Solids (ml/l)	0.6
Oil and grease	467

Ocean Spray Cranberry Company

Location: Sandwich Road
Wareham, Massachusetts

Receiving Water: Buzzards Bay

Nature of Wastewater: Cranberry juice and sugar from the
manufacture of cranberry sauce

Treatment Process: pH control, screening, chlorination

Flow Measurement: Obtained from water use records

Future Status: Company has relocated thus eliminating
the discharge.

Ocean Spray Cranberry Company

Results of Laboratory Analyses (mg/l)

Date of Collection	10/22/75
Time of Collection	0930
Type of Sample	Grab
BOD ₅	1,560
pH (Standard Units)	4.6
Total Alkalinity	2.0
Suspended Solids	52
Total Coliform (/100 ml.)	230
Fecal Coliform (/100 ml.)	91
Flow (MGD)	0.097
(cfs)	0.150

Massachusetts Maritime Academy

Location: Academy Road
Bourne, Massachusetts

Receiving Water: Cape Cod Canal

Treatment Process: Extended aeration, chlorination

Capacity: 125,000 gallons per day

Flow Measurement: Plant's flow meter

Sludge Disposal: Removed by contractor and landfilled at
municipal site

Future Status: Sufficient capacity for near future

Massachusetts Maritime Academy

Results of Laboratory Analyses (mg/l)

Date of Collection	INFLUENT 10/21/75	EFFLUENT 10/21/75
Time of Collection	1100	1100
Type of Sample	Grab	Grab
COD	780	110
BOD ₅	350	32
pH (Standard Units)	8.3	6.7
Total Alkalinity	300	64
Suspended Solids	596	11
Total Solids	1,100	386
Ammonia-N	65	22
Nitrate-N	0.1	20
Total P	17	13
Total Coliform (/100 ml.)	---	9,300
Fecal Coliform (/100 ml.)	---	430
Flow (MGD)	0.015	0.015
(cfs)	0.023	0.023

Massachusetts Maritime Academy

Results of Laboratory Analyses (mg/l)

	INFLUENT 9/13/77	EFFLUENT 9/13/77
Date of Collection		
Time of Collection	1000	1000
Type of Sample	Grab	Grab
BOD ₅	540	39
pH (Standard Units)	6.7	7.2
Suspended Solids	368	72
Ammonia-N	38	0.22
Nitrate-N	0.1	3.2
Total P	16	14
Total Coliform (per 100 ml.)	--	4.0x10 ⁶
Fecal Coliform (per 100 ml.)	--	6.0x10 ⁵
Chlorine Residual:		
Total	--	0.0
Flow (MGD)	--	0.03 (winter), 0.02 (summer)
(cfs)	--	0.046 (winter), 0.031 (summer)

1975 WASTEWATER DISCHARGE DATA
 AVERAGE POUNDS PER DAY OF SELECTED PARAMETERS

<u>PARAMETER</u>	<u>DARTMOUTH</u>	<u>NEW BEDFORD</u>	<u>FAIRHAVEN</u>	<u>MARION</u>	<u>WAREHAM</u>
Flow (MGD)	0.989	25.5	1.20	0.456	0.191
Flow (cfs)	1.529	39.4	1.86	0.706	0.296
COD	396	114,200	2,250	240	73
BOD ₅	157	18,300	75	29	0.85
Suspended Solids	49	25,170	52	32	3.2
Total Solids	2,475	461,000	19,000	1,280	670
Ammonia-Nitrogen	75	1,560	24	1.0	4.6
Nitrate-Nitrogen	4.5	57	10	4.7	20
Total Phosphorus	13.6	570	19	3.5	0.4

1976 WASTEWATER DISCHARGE DATA

AVERAGE POUNDS PER DAY OF SELECTED PARAMETERS

<u>PARAMETER</u>	<u>DARTMOUTH</u>	<u>NEW BEDFORD</u>	<u>FAIRHAVEN</u>	<u>MARION</u>	<u>WAREHAM</u>	
					<u>BEFORE SANDBEDS</u>	<u>AFTER SANDBEDS</u>
Flow (MGD)	0.658	34.8	1.05	0.255	0.26	*0.26
Flow (cfs)	1.017	53.8	1.62	0.394	0.40	*0.40
BOD ₅	646	46,450	100	26	25	8.1
Suspended Solids	530	59,800	180	44	62	23
Ammonia-Nitrogen	79	2,100	18	0.2	9.0	8.6
Nitrate-Nitrogen	2.7	29	73	2.5	59	49
Total Phosphorus	35	930	44	7.9	19	1.2

* Assumed

1977 WASTEWATER DISCHARGE DATA

AVERAGE POUNDS PER DAY OF SELECTED PARAMETERS

<u>PARAMETER</u>	<u>DARTMOUTH</u>	<u>NEW BEDFORD</u>	<u>FAIRHAVEN</u>	<u>MARION</u>	<u>WAREHAM</u>	
					<u>BEFORE SANDBEDS</u>	<u>AFTER SANDBEDS</u>
Flow (MGD)	0.84	21.7	1.504	0.525	0.299*	0.299
Flow (cfs)	1.30	33.57	2.33	0.812	0.460*	0.460
BOD ₅	70	10,859	105	44	7.5	4.5
Suspended Solids	84	6,334	75	175	17	0
Ammonia-Nitrogen	2.3	9,230	2.8	11	13	10
Nitrate-Nitrogen	64	1,013	54	22	55	50
Total Phosphorus	29	652	49	15	17	23

* Assumed

GLOSSARY

Acidity - The quantitative capacity of aqueous solutions to react with hydroxyl ions. It is measured by titration with a standard solution of a base to a specified end point. Usually expressed as milligrams per liter of calcium carbonate.

Alkalinity - The capacity of water to neutralize acids, a property imparted by the water's content of carbonates, bicarbonates, hydroxides, and occasionally borates, silicates, and phosphates. It is expressed in milligrams per liter of equivalent calcium carbonate.

Anaerobic Waste Treatment - Waste stabilization brought about through the action of microorganisms in the absence of air or elemental oxygen. Usually refers to waste treatment by methane fermentation.

Biochemical Oxygen Demand (BOD) - The quantity of oxygen used in the biochemical oxidation of organic matter in a specified time, at a specified temperature, and under specified conditions.

Biological Wastewater Treatment - Forms of wastewater treatment in which bacterial or biochemical action is intensified to stabilize, oxidize, and nitrify the unstable organic matter present. Intermittent sand filters, contact beds, trickling filters, and activated sludge processes are examples.

Chemical Oxygen Demand (COD) - A measure of the oxygen-consuming capacity of inorganic and organic matter present in water or wastewater. It is expressed as the amount of oxygen consumed from a chemical oxidant in a specific test. It does not differentiate between stable and unstable organic matter and thus does not necessarily correlate with biochemical oxygen demand.

Chlorination - The application of chlorine to water or wastewater, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results.

Clarification - Any process or combination of processes, the primary purpose of which is to reduce the concentration of suspended matter in a liquid.

Coliform - Bacteria found in abundance in the intestinal tract of warm-blooded animals. They are not harmful in themselves, but their presence indicates that pathogenic bacteria may be present. Since they can be detected by relatively simple test procedures, coliforms are used to indicate the extent of bacterial pollution from sewage. Bacterial tests usually measure the fecal and total coliforms. Fecal coliform make up about 90 percent of the coliforms discharged in fecal matter. Non-fecal coliforms may originate in soil, grain, or decaying vegetation.

Comminution - The process of cutting and screening solids contained in the wastewater flow before it enters the flow pumps or other units in the treatment plant.

Composite Wastewater Sample - A combination of individual samples of water or wastewater taken at selected intervals, generally hourly, for some specified period, to minimize the effect of the variability of the individual sample. Individual samples may have equal volume or be proportioned to the flow at the time of sampling.

Data - Records of observations and measurements of physical facts, occurrences, and conditions, reduced to written, graphical, or tabular form.

Fats (wastes) - Triglyceride esters of fatty acids; erroneously used as synonymous with grease.

Flocculation - In water and wastewater treatment, the agglomeration of colloidal and finely divided suspended matter after coagulation by gentle stirring by either mechanical or hydraulic means. In biological wastewater treatment where coagulation is not used, agglomeration may be accomplished biologically.

Grab Sample - A single sample of wastewater taken at neither set time nor flow.

Grease - In wastewater, a group of substances including fats, waxes, free fatty acids, calcium and magnesium soaps, mineral oils, and certain other nonfatty materials. The type of solvent and method used for extraction should be stated for quantification.

Grit Chamber - A detention chamber or enlargement of a sewer designed to reduce the velocity of flow of the liquid to permit the separation of mineral from organic solids by differential sedimentation.

Hardness - A characteristic of water imparted by salts of calcium, magnesium, and iron such as bicarbonates, carbonates, sulfates, chlorides, and nitrates, that cause curdling of soap, deposition of scale in boilers, damage in some industrial processes, and sometimes objectionable taste. It is expressed as equivalent calcium carbonate.

Heavy Metals - These elements are toxic when present in sufficient quantities and can be fatal. They can adversely affect sewage treatment systems and the biological systems of waterbodies. They include cadmium, chromium, copper, iron, lead, manganese, nickel, and zinc.

Industrial Wastes - The liquid wastes from industrial processes, as distinct from domestic or sanitary wastes.

Inorganic Matter - Chemical substances of mineral origin, or, more correctly, not of basically carbon structure.

Lagoon - A pond containing raw or partially treated wastewater in which aerobic or anaerobic stabilization occurs.

Most Probable Number (MPN) - That number of organisms per unit volume that, in accordance with statistical theory, would be more likely than any other number to yield the observed test result with the greatest frequency. Expressed as density of organisms per 100 ml. Results are computed from the number of positive findings of coliform-group organisms resulting from multiple-portion decimal-dilution plantings.

Nitrogen - A common non-metallic element that in free form is normally a colorless, odorless, tasteless, insoluble, inert, diatomic gas. In the combined form, it has a wide range of valences and is a constituent of biologically important compounds (as proteins) and hence of all living cells as well as industrially important substances (as cyanides, fertilizers, dyes).

Nitrogen, Ammonia - A compound of nitrogen and hydrogen, NH_3 , which is part of the nitrogen cycle. Its presence in sufficient amounts in a stream can indicate a wastewater discharge. The oxidation of ammonia depletes a stream of dissolved oxygen. It is toxic in sufficient amounts, especially to fish.

Nitrogen, Kjeldahl - This represents the total organic nitrogen content of water.

Nitrogen, Nitrate - Nitrate represents the most highly oxidized phase in the nitrogen cycle and normally reaches important concentrations in the final stages of biological oxidation. Nitrogen in this form is readily available to plants.

Organic Matter - Chemical substances of animal or vegetable origin, or more correctly, of basically carbon structure, comprising compounds consisting of hydrocarbons and their derivatives.

Oxidation - The addition of oxygen to a compound. More generally, any reaction which involves the loss of electrons from an atom.

Oxidation Pond - A basin used for the retention of wastewater before final disposal, in which biological oxidation of organic matter is affected by natural or artificially accelerated transfer of oxygen to the water from air.

Parshall Flume - A calibrated device developed by Parshall for measuring the flow of a liquid in an open conduit.

Pathogenic Bacteria - Bacteria that may cause disease in the host organism by their parasitic growth.

pH - The reciprocal of the logarithm of the hydrogen ion concentration. The concentration is the weight of hydrogen ions in grams per liter of solution. Neutral water, for example, has a pH value of 7 and hydrogen ion concentration of 10^{-7} .

Phenol - An aromatic compound which is a monohydroxy derivative of benzene. In concentrated solution, it is quite toxic to bacteria. Widely used as a germicide. Commonly known as carbolic acid.

Phosphorus - A nonmetallic multivalent element of the nitrogen family that occurs widely in combined form, especially as inorganic phosphates in minerals, soils, and natural waters, and as organic phosphates in all living cells; it exists in several allotropic forms. The majority of

the phosphorus contained in domestic sewage and industrial wastes comes from detergents.

Primary Settling Tank - The first settling tank for the removal of settleable solids through which wastewater is passed in a treatment works.

Primary Treatment - The first major (sometimes the only) treatment in a wastewater treatment works, usually sedimentation. The removal of a substantial amount of suspended matter but little or no colloidal and dissolved matter.

Residual Chlorine - Chlorine remaining in water or wastewater at the end of a specified contact time as combined or free chlorine.

Sampler - A device used with or without flow measurement to obtain an aliquot portion of water or waste for analytical purposes. May be designed for taking a single sample (grab), composite sample, continuous sample, or periodic sample.

Secondary Settling Tank - A tank through which effluent from some prior treatment process flows for the purpose of removing settleable solids.

Secondary Wastewater Treatment - The treatment of wastewater by biological methods after primary treatment by sedimentation.

Sludge Digestion - The process by which organic or volatile matter in sludge is gasified, liquified, mineralized, or converted into more stable organic matter through the activities of either anaerobic or aerobic organisms.

Sludge Thickening - The increase in solids concentration of sludge in a sedimentation or digestion tank.

Solids, Settleable - That matter in wastewater which will not stay in suspension during a pre-selected settling period, such as an hour, but which either settles to the bottom or to the top. In the Imhoff cone test, the volume of matter that settles to the bottom in one hour.

Solids, Suspended - Solids that either float on the surface of, or are in suspension in, water, wastewater, or other liquids and which are largely removable by laboratory filtering. The quantity of material removed from wastewater in a laboratory test, as prescribed in Standard Methods for the Examination of Water and Wastewater, and referred to as non-filterable residue.

Solids, Total - The sum of dissolved and undissolved constituents in water or wastewater, usually stated in milligrams per liter.

Wastewater Survey - An investigation of the quality and characteristics of each waste stream, as in an industrial plant or municipality.

