

30 ISC

ENGINEERING REPORT
on
Pollution of the Waters of the
Interstate Sanitation District
by
NEW ROCHELLE

INTERSTATE SANITATION COMMISSION
60 HUDSON STREET
NEW YORK CITY

ENGINEERING REPORT
ON
POLLUTION OF THE WATERS OF THE
INTERSTATE SANITATION DISTRICT BY
THE CITY OF NEW ROCHELLE

August 17th, 1949

TABLE OF CONTENTS

	PAGE
Summary	1
Part I - <u>General Information</u>	3
Location	3
Characteristics of Municipality	3
Population	5
Corporation and Finances	5
Part II <u>Sewage Flow</u>	6
Domestic	6
Industrial	6
Part III <u>Sewerage Facilities</u>	8
Description of Plant Outlet	
Description of Intercepting Sewer and By-Passes	8
Existing Treatment Facilities	9
Part IV <u>Evidences and Effects of Pollution and Violation of the Provisions of the Tri-State Compact.</u>	12
Plant Investigations by Interstate Sanitation Commission	12
Notices of Treatment Plant Shut-Downs and Other By-Passing of Raw Sewage into Class "A" Waters of the Interstate Sanitation District	12
Effect of Pollution on Bathing Beaches	13
Effect of Pollution on Other Recreational Uses of Waters.	14

Maps

Map No. 1. Location of New Rochelle within the Interstate Sanitation District.	4
Map No. 2. Sewerage Data - City of New Rochelle	11

APPENDICES

Appendix A: Plant Investigation Data	16
Appendix B: Huguenot Yacht Club Letter to the Mayor and Council of the City of New Rochelle	17

S U M M A R Y

The City of New Rochelle is located on the south end of Westchester County, New York, on Long Island Sound. Portions of the municipality in the northeastern and northwestern sections are served by the South Yonkers and Mamaroneck plants of the County System. The major portion of the municipality is served by the city sewerage facilities with discharge into the Long Island Sound. The waters of the Interstate Sanitation District into which both raw and treated sewage of the City of New Rochelle are discharged have been classified as Class "A" by the Interstate Sanitation Commission. The municipality violates the requirements of the Tri-State Compact in that both raw and inadequately treated sewage are permitted to be discharged into Class "A" waters of the District.

As set forth herein routine investigations conducted by the Interstate Sanitation Commission since 1938 indicate that existing sewage treatment facilities are grossly incapable of meeting the degree of treatment required to comply with the provisions of the Tri-State Compact. While a similar type of treatment is currently provided in facilities of the Westchester County System the conditions in New Rochelle are considerably more acute for the following reasons:

1. The waters of Long Island Sound abutting the City of New Rochelle are used extensively for public and private bathing; several large public parks are located on the Sound; and many yacht clubs have been established in the area.
2. The sewer system of the municipality, though of the separate type, is appreciably and abnormally affected by rainfall and high ground water table. The resultant high flow of storm sewage requires considerable by-passing of raw sewage directly into Long Island Sound.
3. Leaks in the pressure line under Neptune Pond and in

in the Echo Bay inverted siphon were disclosed by Havens and Emerson, Consulting Engineers for the City. Also some part of the Drake Avenue Area has been reconnected to the old outfall, so that some direct discharge of raw sewage occurs throughout the year.

4. The sewage treatment plant, in addition to being grossly incapable of meeting requirements as to removal of suspended solids, has required an annual shut-down for one or more months for repairs and maintenance. At such times no treatment is afforded.
5. The State and City Department of Health have shown much concern over the inadequacy of the existing collecting system and treatment facilities particularly during periods of by-passing. For this reason the City Health Officer requires closing of bathing beaches on each occasion during the summer season when such overflow occurs.

Part I

General Information

Location (see Map No. 1)

The City of New Rochelle is located in the south central part of Westchester County, New York. It adjoins Larchmont, Mamaroneck and Scarsdale on the east, Scarsdale on the north, Eastchester, North Pelham, Pelham and Pelham Manor on the west and Long Island Sound on the south.

Natural drainage of all of the municipality is to Long Island Sound, by way of the Sheldrake River in the northeastern part and by way of the East Chester River and Hutchinson Creek in the westerly marginal portion. The marginal sewered areas of the municipality in the northeast portion drain through the Mamaroneck Project of the Westchester County System which discharges into Long Island Sound through the Mamaroneck treatment plant. The marginal sewered areas of the municipality in the northwest portion are part of the Hutchinson Project of the Westchester County System which discharges into the Hudson River through the South Yonkers treatment plant. The sewered areas, for the most part, are in the municipal system and discharge to Long Island Sound principally through the New Rochelle screening plant.

The water area bordering on the city has been designated Class "A" by the Interstate Sanitation Commission.

Characteristics of the Municipality

The municipality is situated on Long Island Sound sixteen miles northeast of New York City. It has excellent rail communication via the main line of the New York, New Haven and Hartford Railroad. The municipality has a steamboat landing and also has summer ferry service to Port Washington. There are several local bathing beaches

on Long Island Sound as well as a number of yacht clubs. Principal manufactures include metal products, textiles, apparel and food products.

Population

The City of New Rochelle had a 1940 U.S. Census population of 58,408, representing an 8.2% increase over the decennial period 1930-1940. Previous population increases were at an unusually rapid rate averaging approximately 62.5% decennially for the forty years since 1890.

Havens and Emerson, Consulting Engineers, for the city show (1947 report, p. 12) an estimated 1949 population of approximately 66,000.

Corporation and Finances

The City of New Rochelle was incorporated in 1899. Municipal affairs are governed by a Mayor and City Council. Municipal finances come under the general supervision of the Comptroller of the State of New York. It is expected that the State Comptroller will be represented at any scheduled hearing of the Commission involving municipalities of the State of New York. Latest municipal financial data will be available at such time.

Part II

Sewage FlowDomestic

It has been common knowledge for some time that the rate of flow of sanitary sewage in the New Rochelle sewer system has been subjected to greater fluctuations than is normally to be expected in this type of collection system. Particular sewers have been surcharged during heavy storms and periods of high ground water have evidenced higher rates of flow. Investigations have indicated a combination of contributory causes for these conditions. Poor condition of the system has been responsible for high rates of infiltration of ground water. There has also existed evidence of unauthorized connection of cellar drains and roof downspouts and cross connections to storm drains.

The sewage flow has been gauged and findings for dry and wet weather conditions are contained in the Consulting Engineers Report (Havens and Emerson, pp 19,20) The dry weather flow (three week period) averaged 6.80 mgd and the maximum hourly flow for the city was found to be approximately 160 per cent of the average daily flow and the minimum hourly flow, approximately 46 percent of the average daily flow.

The normal wet weather flow (16 day gauging) averaged 11.01 mgd as recorded by sewer gauges and ranged from a minimum of 5.45 mgd to a maximum of 19.51 mgd. The maximum hourly flow was about double the maximum hourly flow under dry weather conditions and the minimum hourly flow about three times the average dry weather rate of flow.

Industrial

There are no industries in New Rochelle contributing dispro-

portionately large quantities of wastes to the sewers nor are volume or characteristics of the wastes a particular treatment problem. The Consulting Engineers (Havens and Emerson, p. 14) report on their industrial survey of the 24 major industries in the municipality. Process wastes had a B.O.D. (5 day) of 895 lbs./da. and a suspended solids content of 493 lbs./da. Total volume of industrial wastes averaged 0.43 m.g.d. for processing and 0.06 m.g.d. for private sources of water supply.

Part III

Sewerage FacilitiesDescription of Plant Outlet

The outlet from the City Yard plant, a 36 inch cast iron pipe approximately 6,800 feet long, extends across Echo Manor and under Echo Bay to its point of discharge in Long Island Sound. Its terminus is in approximately a 24 foot depth of water (mean low tide) at a point about 0.4 mile southeast of Bailey's Rock. It is reported that dispersion is through three 24-inch outlets located on "Y" branches at intervals of 160 feet.

The outlet is not laid on a constantly descending grade but drops under its creek crossing, rises across Echo Manor and parallels the bottom thenceforth. Leaks in this submerged outlet have been repaired on several occasions since its completion. The last reported occasion was during the summer of 1945 when some five or six leaks were repaired.

Description of Intercepting Sewer and By-Passes.

The intercepting sewer starts at the western waterfront at the Whitewood Avenue pump station and extends to City Yard, near the eastern boundary of the municipality. This intercepts flows formerly discharged into tidal waters through three main outfalls and several small lateral sewers. The theoretical capacities of the different sections of the intercepting sewer range from about 7.5 m.g.d. for the force main between Whitewood and Drake Avenues to about 12 m.g.d. for the 30 inch gravity sewer and inverted siphon under Echo Bay. The Consulting Engineers Report (Havens and Emerson, p.4) indicates that actual capacities are considerably below these theoretical limits.

By-passing of sewage can be accomplished at the several points of interception of flows formerly discharged directly into tidal waters as well as at the treatment plant. For flows in excess of maximum plant capacity (approximately 27 m.g.d.) the flow is regulated by partial by-passing at the Whitewood Avenue Pumping Station or through the old outfall at Drake Avenue; or else to shut down the screens, close the valve at the plant end of the collecting sewer, open the by-pass gates in Hudson Park and discharge raw sewage by pumping through the 36-inch outfall and by gravity through the old Bailey's Rock outfall in addition to by-passing at Whitewood and Drake Avenues. The Consulting Engineer (Havens and Emerson, p. 7) indicate that by-passing in varying degrees have ordinarily occurred at intervals of from one to three or four times a year.

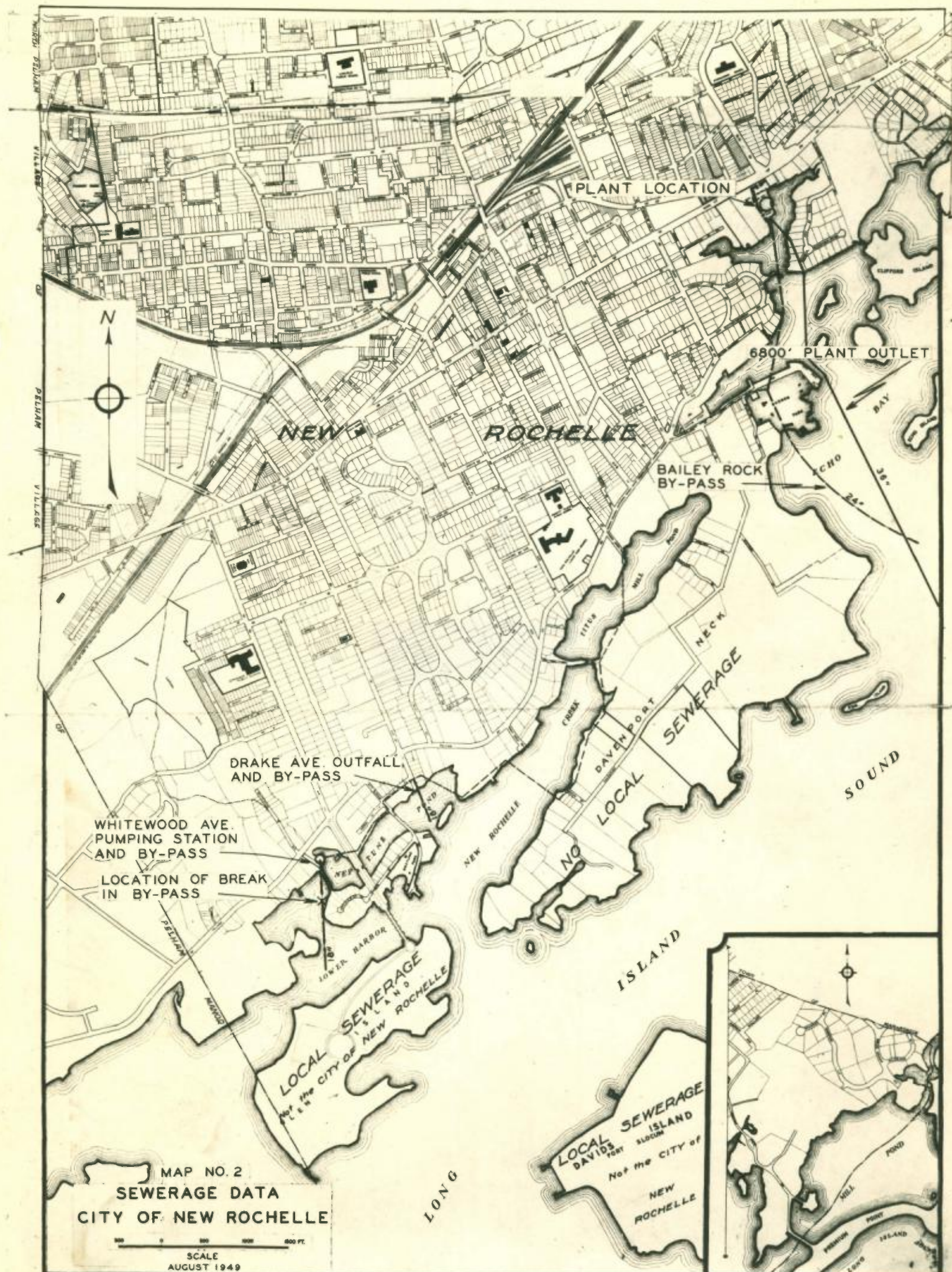
The Consulting Engineer (Havens and Emerson, p 5) report that leaks in the pressure line under Neptune Pond and in the Echo Bay inverted siphon were made evident by special tests during their sewer gauging studies. Also, in order to prevent occasional flooding of cellars, the connections from certain houses on Drake Avenue were severed and reconnected to the old outfall, so that some direct discharge of raw sewage into tidal waters continues in this area.

Existing Treatment Facilities

The sewage treatment plant is located at City Yard on East Main Street. Treatment is by fine screens, supplemented by chlorination during the bathing season. Screening equipment includes a course rack, and two horizontal drum fine screens, 8 feet in diameter and 8 feet long with slotted openings 1/16 inch by 2 inch. Each of these has a rated normal capacity of 11.1 m.g.d. and a maximum capacity of 14.4 m.g.d. Duplicate manual-control solution

feed vacuum chlorinators are installed. Discharge is through a 36-inch outfall into Long Island Sound; classified as Class "A" waters of the Interstate Sanitation District.

Normal operating capacity of the plant is 20 m.g.d. Maximum capacity is about 27 m.g.d. and is limited by ability of pumps to discharge the effluent through the outfall against the increased friction heads caused by high flows, particularly during periods of extreme tides.



MAP NO. 2
SEWERAGE DATA
CITY OF NEW ROCHELLE

SCALE
AUGUST 1949

Part IV

Evidences and Effects of Pollution and Violation
of the Provisions of the Tri-State CompactPlant Investigations by Interstate Sanitation Commission.

The Interstate Sanitation Commission has conducted a routine investigation of the sewage treatment facilities of the City of New Rochelle annually since 1938. A summary report of findings is contained in Appendix A. With reference to this summary it will be noted that at no time was sufficient treatment provided to indicate a satisfactory (Plant Rating I) or a "borderline" (moderately inadequate) rating (Plant Rating II).

~~It is generally conceded that~~ ^{The} facilities at the New Rochelle plant are ~~generally~~ ^{to} inadequate ~~for~~ meeting the removal of sewage solids required by the Tri-State Compact before discharge into Class "A" waters of the Interstate Sanitation District. Solids determinations were made routinely until 1943. Thereafter the Commission found it unfeasible to continue such determinations in view of the inadequacy of facilities. Coliform determinations were continued and remain as a partial check on current plant operations.

Notices of Treatment Plant Shut-Downs and Other By-Passing
of Raw Sewage into Class "A" Waters of the Interstate
Sanitation District.

Since 1945 this Commission has been in receipt of an increasing number of notices of by-passing of raw sewage by the City of New Rochelle.

The municipal sewage treatment plant has been shut-down for approximately a full month (January) each year for routine maintenance and repair operations. At such times all sewage normally discharged through this plant is by-passed untreated to Long Island Sound and adjoining tidal waters.

In addition to periods of normal plant shut-downs there are numerous occasions when collecting sewers and pumping equipment are inadequate for handling high flows. Periods of normal rainfall or high ground water table have caused by-passage of raw sewage into tidal waters and have caused particular concern during the summer season when extensive recreational uses are made of these waters.

It is anticipated that the Sanitary Engineer for the Regional Office of the New York State Department of Health will have for presentation at the Commission's hearing a detailed record of the occasions when the sewerage facilities of the City of New Rochelle were inadequate and raw sewage was discharged into tidal waters of the District.

Effect of Pollution on Bathing Beaches.

The excessively high dilution of sewage by rain and ground waters has frequently increased sewage flows to the point of required by-passing of the storm sewage. When rainy season and high ground water table develop during the bathing season New Rochelle has a major problem in protecting the health of bathers. Records of such occurrences during the summer season are on hand and are expected to be available to the hearing through the Regional Engineer of the New York State Department of Health.

The Westchester County Park System operate the Glen Island Beach. Another public bathing beach is located at Hudson Park. Bathing beaches are also operated by the New Rochelle Shore Club, by the U.S. Army for military personnel on the adjoining federal reservation on Davids Island. Many private beaches are also used for bathing along the municipal shorefront.

The City Health Officer has on several occasions, each for several days, found it necessary to close the bathing beaches during the past year due to the overflow of raw sewage into waters used for recreational purposes. The critical condition prompted the Engineer for the City Health Department (Stanley Stolz, December 9, 1948, I.S.C. file) to report "Everyone is, of course, familiar with the fact that the by-pass line from the Whitewood Avenue Station has been broken at a point near Neptune Island since the 1920s. The discharge of raw sewage through the by-pass line in its present condition, or even at the end of the by-pass line assuming the break were repaired, has a serious effect on the sanitary quality of the bathing waters in the vicinity. It is for that reason, and others, that the beaches along our waterfront were closed by this department on several occasions during the 1948 bathing season."

Effect of Pollution on Other Recreational Uses of Waters.

Glen Island, Hudson Park and other recreational areas front on Long Island Sound in the vicinity of the pollution indicated in this report. In addition many yacht clubs continue to maintain facilities in this area and add their voices to the clamor for cleaner waters.

Yacht clubs located in New Rochelle include the New York A.C., Huguenot, Arrow, Neptune, Echo Bay and New Rochelle. The attitude of the Yachtmen to the condition now existant in this area reflected in an open letter addressed to the Mayor and Council of the City of New Rochelle by the Board of Trustees of the Huguenot Yacht Club under date of August 23, 1948. Reference is made therein to the high coliform count found in water analysis after rain as compared

with more favorable conditions during dry weather. The letter also depicts the effect of the ban on bathing made necessary during the peak of the bathing season. A copy of this letter is included under Appendix B.

PLANT INVESTIGATION DATA

New York
State

Westchester
County

New Rochelle
Municipality

Plant Location

Date of Invest.	No. of Invest.	AV. FLOW M.G.D.	Total Suspended Solids				B. C. D. 5 Day 20° C.				Coliforms				Plant Rating
			Inf. ppm	Eff. ppm	Rem. ppm	% Rem.	Inf. ppm	Eff. ppm	Rem. ppm	% Rem.	MPN per ml.	% Over 1/ml	Lbs Cl ₂ Daily Pre Post	Av. Res Cl ₂	
6-9-38	31	8.31	161	120	41	25	152	137	15	10	290	100		0.9	I
6/29/38	52										84	100			
9/21/39	86	5.00	257	251	6	2	278	257	21	8				0	III
6/24/40	155	9.00	211	190	21	9	146	137	9	6	19.0	75		1.0	III
8/5/41	222	5.25	213	186	27	13	162	151	11	7	11.0	25		0.7	III
6/8/42	284	7.56	219	196	23	11	200	178	22	11	12.1	100		0.6	III
8/30/43	428	7.00	232	207	25	11	255	214	41	16	40.3	0		0.7	III
6/15/44	493	9.00									12.0	50	810	0.5	III
6/11/45	565	8.82									46.0	100	850	1.1	III
7/29/46	671	10.55									3.3	100	910	1.6	III
6/19/47	722	12.08									13.2	100	900	0.1	III
6/9/48	842	14.05									0.9	0	1270	1.3	
8/17/48	910										40.3	0	1020	2.0	
5/18/49	1038	16.0									40.3	0	1080	2.0	

M. Hentch

HUGUENOT YACHT CLUB

New Rochelle -- New York

August 23, 1948

TO THE MAYOR AND COUNCIL
OF THE CITY OF NEW ROCHELLE

The Board of trustees of the Huguenot Yacht Club of New Rochelle has voted unanimously to send you this open letter of protest on the continued disgraceful pollution permitted in New Rochelle bathing waters.

The Board of Health has been forced to close repeatedly all city beaches during the peak midsummer bathing period because of excessive contamination from inadequate sewage treatment.

An examination of city records disclosed a pollution count as high as 4600 Coliform bacteria per 100 cc on Friday, August 13, following the rainstorm of the previous day. In sharp contrast to this, the Ekroth laboratory, a well known independent biological concern which was employed by the New York World-Telegram in their test, stated that samples taken on the preceding Monday revealed a coliform bacteria count of only 23 per 100 cc.

According to World Telegram standards, a count of only 23 per 100 cc is rated Good. The count of 4600 registered on Friday, however, is rated Bad, the lowest possible rating. This is definitely dangerous to public health. An 18-inch sewer pipe in the lower harbor near the Huguenot Yacht Club Shore Station was discharging a solid stream of raw, untreated sewage into the harbor.

Because of this situation, the Board of Health was compelled to close all city beaches to the public. Members of our Club, as well as those of other New Rochelle yachting and shore clubs, were deprived of the use of their club bathing facilities. The general public likewise suffered from the effects of this sweeping ban.

We are fully aware of the attitude expressed by some city officials that although they favor the erection of a modern and completely adequate sewage treatment plant by New Rochelle, they hesitate to authorize such an expenditure until adjacent communities do likewise. The net result of such a do-nothing policy is to halt absolutely all progress.

There might be some validity to this attitude if the pollution of New Rochelle waters was caused by the faulty facilities of other adjoining communities. The figures given above for August 9th and 13th is caused solely by our own city's faulty and inadequate equipment and by nothing else.

-2-

As a matter of record, neighboring communities are not responsible for our contamination. Larchmont, Fort Slocum and City Island-Harts Island have highly efficient and entirely adequate sewage treatment plants. Pelham and Mount Vernon are on the joint sewage line discharging at Yonkers.

In view of these facts, we urge you and the City Council to take immediate action to authorize construction of the new proposed treatment plant and sewerage system, plans for which already are on file.

Copies of this letter are being released to the press and to numerous interested organizations.

Very truly yours,

Board of Trustees
Huguenot Yacht Club

Robert P. Stout, Secretary

By Order of the Commodore

Copy-6749-s