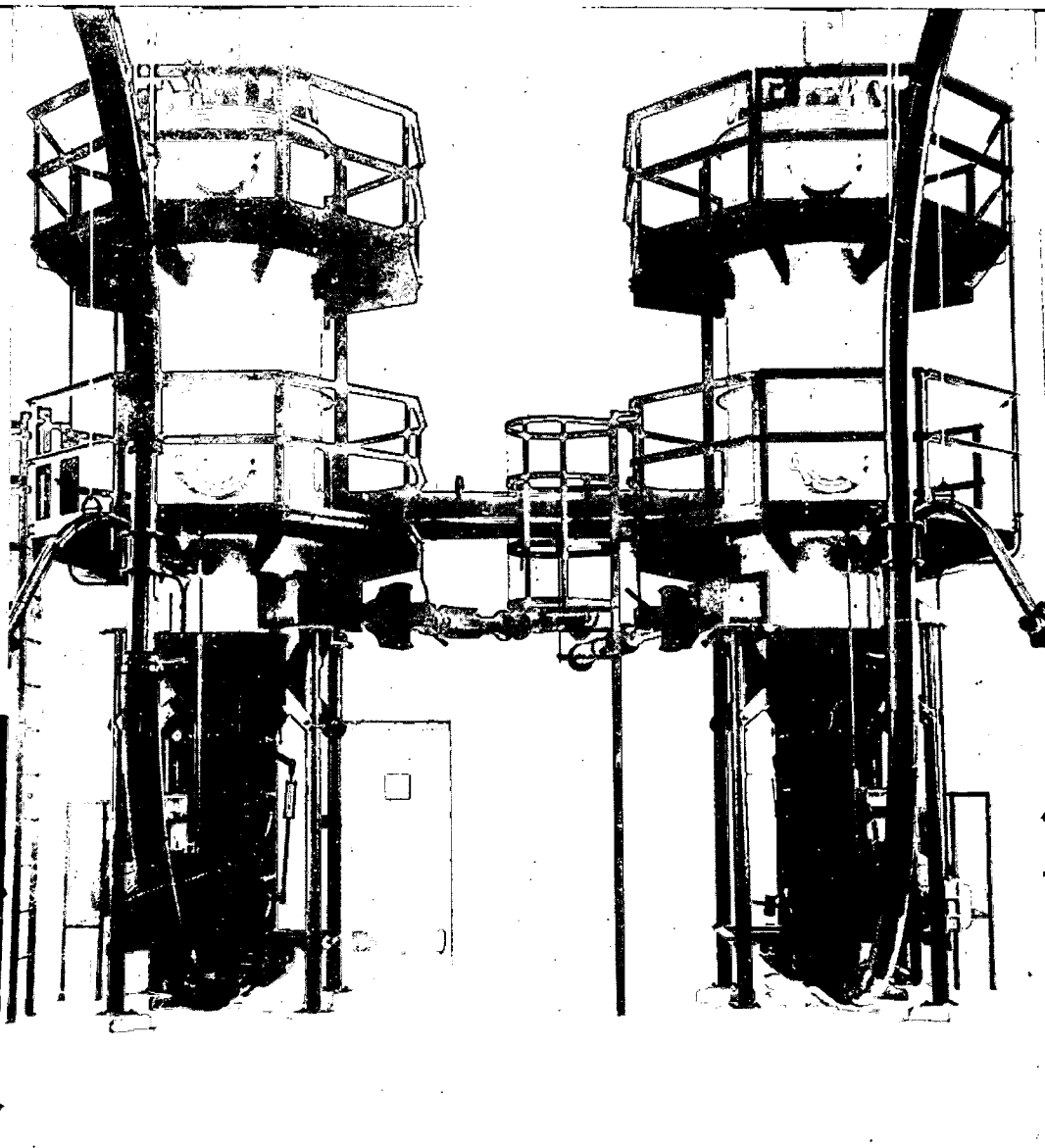


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CITY DOCUMENT



ANNUAL REPORT  
*of the*  
WATER SUPPLY BOARD  
*of the*  
CITY OF PROVIDENCE

For the Year Ended September 30, 1964

THE CITY OF PROVIDENCE

WATER SUPPLY BOARD

JOHN A. DOHERTY, CHAIRMAN  
EARL H. ASHLEY  
UGO RICCIO  
JOHN J. TIERNEY  
DAVID R. MCGOVERN, EX-OFFICIO

552 ACADEMY AVENUE  
PROVIDENCE 8, R. I.

PHILIP J. HOLTON, JR.  
CHIEF ENGINEER  
WILLIAM I. McDONALD  
DEPUTY CHIEF ENGINEER  
JOHN T. WALSH  
LEGAL ADVISOR  
JOHN J. DEARY  
SECRETARY

February 17, 1965

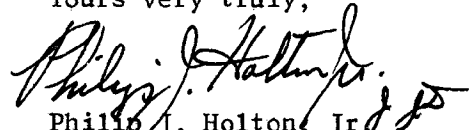
Mr. Vincent Vespia  
City Clerk  
City Hall  
Providence, R. I.

Dear Mr. Vespia:

I am enclosing copy of the Annual Report of the Water Supply Board for the fiscal year ended September 30, 1964, which has been signed by John A. Doherty, Chairman of the Board.

Thirty copies are being forwarded to your office for presentation to the members of the City Council at their next meeting.

Yours very truly,

  
Philip J. Holton, Jr.  
Chief Engineer

PJH:kam

Enclosure

FILED

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DEPT. OF CITY CLERK  
PROVIDENCE, R.I.

CITY DOCUMENT

ANNUAL REPORT

OF THE

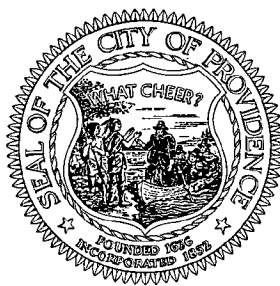
WATER SUPPLY BOARD

OF THE

CITY OF PROVIDENCE

RHODE ISLAND

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For the Year Ended September 30, 1964

IN CITY COUNCIL

MAR 4 1965

READ:

WHEREUPON IT IS ORDERED THAT  
THE SAME BE RECEIVED.

*Vincent Vespa*  
CLERK

# REPORT

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ADMINISTRATIVE OFFICE  
WATER SUPPLY BOARD  
CITY OF PROVIDENCE

TO THE HONORABLE JOSEPH A. DOORLEY,  
JR., MAYOR, AND THE HONORABLE CITY  
COUNCIL:

*Gentlemen:*

In compliance with Chapter XX of the Charter of the City of Providence, enacted by the General Assembly of the State of Rhode Island at its January Session, A. D. 1940, and approved April 26, 1940, we have the honor to present the twenty-fourth annual report of the Water Supply Board for the year ended September 30, 1964.

On January 3, 1964 Ugo Riccio was reappointed a member of the Board for the ensuing term ending on the first Monday in January 1968.

At the re-organization meeting held on January 3, 1964, John A. Doherty was re-elected Chairman and John J. Deary was reappointed Secretary.

The Board has held regular meetings throughout the year, meeting practically

every week, at which careful consideration has been given to the many problems arising in connection with maintenance and operating activities, the Department's financial structure, matters relative to taxes levied on property owned in nearby communities, and other miscellaneous departmental duties which properly come before the Board. Special meetings were held throughout the year for consideration of particular problems which have arisen.

The report of the Chief Engineer with many important tables and statistical data is appended hereto, to which we invite your attention for details and particular information regarding the finances of the Department and conduct of the work during the above period.

Respectfully submitted,

WATER SUPPLY BOARD

JOHN A. DOHERTY, *Chairman*

EARL H. ASHLEY

UGO RICCIO

JOHN J. TIERNEY

DAVID R. MCGOVERN, *Ex-Officio*

*John A. Doherty*  
*Chairman*

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DEPT. OF CITY CLERK  
PROVIDENCE, R.I.

## REPORT OF THE CHIEF ENGINEER

Providence, R. I.

October 1, 1964

WATER SUPPLY BOARD  
CITY OF PROVIDENCE

*Gentlemen:*

The following is the report of operations of the Providence Water Works for the fiscal year ended September 30, 1964.

The consumption of water in the various cities and towns supplied by Providence continues to increase, with the average for the year ending September 30, 1964 showing an all time high of 50,226,820 gallons used daily. This represents an increase over the previous year of 2,312,330 gallons daily. The maximum day for this year occurred on June 30, 1964, when 86,019,000 gallons were consumed, which was lower than the record established on June 27, 1963, when the system required 87,215,000 gallons. The maximum hourly rate of consumption of 139,620,000 gallons per day on June 30, 1964 broke all records, exceeding the previous high of 131,040,000 gallons per day that occurred on June 17, 1957.

For the second successive year the average daily yield on Scituate watershed dropped well below the long term average. Actual daily yield for the year was 85,434,750 gallons compared to the 49-year long term average of 109,770,000 gallons, a decline of 24,335,250 gallons daily. In fact, for the last 2 years, the average daily yield has just slightly exceeded the estimated safe yield of 84,020,000 gallons daily. From May through September was the second driest period in 49 years. The actual yield on the watershed was only 7,020,000 gallons daily and was only exceeded in the year 1957, when for the same period, we actually encountered a loss in storage of 6,400,000 gallons daily.

The present tunnel and aqueduct that conveys the water from the Purification Works in Scituate to the Siphon Chamber in Cranston was designed in 1916 and has a maximum capacity of 100 million gallons daily. At the time this main transmission line was designed, the average daily con-

sumption was 17,750,000 gallons and the maximum daily demand was slightly over 23,000,000 gallons daily. Today our maximum daily demand has reached over 87,000,000 gallons, and if East Providence were connected to our system it would be in excess of 95,000,000 gallons. The filter plant was originally designed for a capacity of 44,000,000 gallons daily and was increased to 61,600,000 gallons daily in 1939, and by changing the size of the filter sand was brought up to 105,000,000 gallons in 1954. Studies conducted by the department, and concurred in by Charles A. Maguire and Associates, indicate that our demands will reach the capacity of these facilities by the year 1967. The consultants estimate the cost of a new tunnel and aqueduct, plus additional filters at the Plant, will be \$13,000,000.

Under Chapter 1649, approved by the City Council on September 23, 1964, an Ordinance was passed requesting the Secretary of State to submit the following question to the qualified electors in the City of Providence at the general election to be held in the City of Providence on the Tuesday next after the first Monday in November, A. D. 1964, namely:

Shall the city of Providence be authorized to issue bonds in the sum not exceeding Thirteen Million (\$13,000,000) Dollars for the construction of major improvements to the Providence water supply system, including a new tunnel and aqueduct, additional filters and incidental construction necessary in connection therewith?

In order to complete the final stage of the Northwesterly Trunk Main, the department requested the City Council to transfer \$415,000 from the Water Depreciation and Extension Fund to a special account known as the Northwesterly

Trunk Main Reinforcement. This was granted under City Council Resolution No. 707, approved December 20, 1963. The first section of this reinforcement was started in 1954 and consisted of a 24" feeder running from the Neutaconkanut Pumping Station through Central Avenue in the Town of Johnston, Atwood Avenue, Cherry Hill Avenue, George Waterman Road and terminating at Putnam Pike. It was intended to connect the new feeder with Longview Reservoir, but this was postponed waiting for a final determination in the development of a new highway pattern in the vicinity of Centredale. In order to avoid any further delay in the completion of this project, we selected a new location running through an easement that is generally known as Allendale Avenue from the existing 24" feeder in George Waterman Road and eventually terminating at Longview Reservoir. Bids were received on the final phase of this project by the Board of Contract and Supply on May 26, 1964 and the work was awarded to Capaldi Bros. Corp. on June 2, 1964. This firm submitted the low bid in the amount of \$311,390. It is estimated that the work will be completed in the early part of 1965.

Under City Council Resolution No. 551, approved September 8, 1964, the Mayor was authorized to execute an agreement with the Town of Smithfield providing for the sale of water to the Town for a period of 20 years at a minimum charge of \$124.00 per million gallons. The agreement contained a clause granting the City the right to review the charge for water every five years and increase the rate if circumstances so warrant a change. The Mayor was authorized also to execute a lease with the Town of Smithfield under City Council Resolution No. 243, approved April 3, 1964, to enable the Town of Smithfield to install a supply line and build a pumping station on land owned by the City in the Town of North Providence at the Longview Reservoir site. The term of the lease is 50 years. The Town of Smithfield expects to place the new water system in operation before the end of the year.

The Accelerated Public Works Program sponsored by the Federal Government, consisting of Projects APW-RI-5G "Furnishing and Installing Butterfly Valves at the Water Purification Works in Scituate," APW-RI-6G "Furnishing and Installing Providence Standard Post Hydrants within the City of Providence," and APW-RI-7G "Furnishing and Installing New 8 MGD Wash Water Pumps at the Water Purification Works in Scituate," was completed during the year. Project APW-RI-5G, under contract with the D'Amario Plumbing Company of Providence, was completed on December 12, 1963. The total project cost was \$127,968.60, of which the Federal Government participated with a grant payment in the amount of \$63,982.50. Project APW-RI-6G, under contract with the Fanning and Doorley Construction Company of Providence, was completed on December 9, 1963. The total cost of this project was \$151,961.16, and the Federal Government participated with a grant payment in the amount of \$73,000.00. The third project, APW-RI-7G, also under contract with the D'Amario Plumbing Company of Providence, was completed on November 19, 1963, and the total cost for this project was \$25,540.64, of which the Federal Government granted a participating payment in the amount of \$12,255.00. The total grant payment by the Federal Government for all three completed projects amounted to \$149,237.50.

Incidental to the contract for construction of the Westminster Pedestrian Mall in downtown Providence, which is under the supervision of the Department of Public Works, and also an approved project of the Federal Government-Sponsored Accelerated Public Works Program, a new 8-inch water main was installed between Dorrance and Empire Streets. This new water main was previously approved by the Federal Government as a water main construction project only, APW-RI-8G, and was later withdrawn at the request of the City, to become a part of the overall project, APW-RI-27G, for construction of the Pedestrian Mall. To provide the funds necessary to match the federal grant for this project, a total of \$37,000.00



to defray the cost of the new water main construction was contributed by the Water Supply Board to the other available funds for the project.

Replacement of three 48-inch defective gate valves in the Neutaconkanut Conduit were made during the year, on separate weekend shutdowns. These defective gate valves, originally installed in 1927, were replaced with 48-inch Butterfly Valves conforming to AWWA Standard Specification C-504-58, which were furnished by the W. S. Rockwell Company of Fairfield, Connecticut in the previous year under a competitive bid price of \$20,428.95. Installation of the new butterfly valve units was made by the department's maintenance force in continuous around-the-clock operations on weekend periods in March and April, when the demands on the system were sufficiently low enough to permit the Neutaconkanut Conduit Primary Feeder to be temporarily removed from service. Outside contractual services of the Fanning and Doorley Construction Co. of Providence were obtained through Board of Contract and Supply authority, for the purpose of furnishing the heavy lifting crane equipment necessary to this operation. This program, which brings the total replacements of defective valves of the Neutaconkanut Conduit to eleven units, is now considered to be essentially complete, with the new butterfly valves placed in such favorable locations as to effect complete shutdown control under conditions of emergency. Under authority obtained in the previous year, the A. P. Smith Mfg. Co. of East Orange, N. J., manufactured and delivered to the department a 24-inch gate valve of the inserting type, for installation in the High Service Main in Smith Street, Providence. Due to the specialized circumstances of inserting large valves in the mains without interruption of service, which was necessitated by hospitals and other institutions served by the Smith Street main, the services of an outside contractor, the Fanning and Doorley Construction Co. of Providence, were obtained under Board of Contract and Supply Authority of March 10, 1964, to construct the necessary support-

ing and restraining concrete piers and footings, and to furnish the required heavy lifting crane equipment incidental to the installation. The work was successfully completed without incident on April 3, 1964, at a total cost to the department of \$14,408.21.

The Board of Contract and Supply, under date of May 19, 1964 granted the necessary authority to engage outside contractual services, and on June 1 work began on repairs to the dam at Ponaganset Reservoir in Glocester. This program which started in the previous year, during which time complete and extensive repairs were made at Westconnaug and Barden Reservoirs in Foster, involves all necessary repairs and improvements to the dams and gate houses of the smaller reservoirs providing upper storage for the main Scituate Reservoir. At Ponaganset Reservoir, the old wooden gate house was removed and a new gate outlet structure was constructed of mass concrete with a heavy steel plate locking type enclosure built over a new floor stand operator at the draw-off gate. Upstream and downstream faces of the earthen dam were cleared of scrub growths and the roadway surface across the top of the dam was widened, graded, reshaped and provided with new guard rail construction of structural steel columns set into concrete footings with heavy weight steel guy wires stranded between the columns. An inspection of the earthen dam showed signs of minor areas of seepage at the westerly end near the spillway, and the consulting services of a soils and foundation engineer and a geologist were retained through the local office of Charles A. Maguire and Associates to investigate and report on the conditions found. A field examination was made by the consultants and their subsequent report dated July 1964 stated that the conditions found gave no indication of distress or concern for the earthen structure and that there was no evidence to suggest the danger of progressive erosion. It was pointed out that the dam was similar in construction to the older mill type dams, typical of the New England area, and most probably was constructed of a miscellane-

ous rock and earth fill. The report further stated that the placement of an upstream impervious blanket could be resorted to, but is not considered warranted at the present time. Work at the Ponaganset Reservoir was completed on August 7, 1964 at a cost of \$26,107.34 with \$25,657.34 being paid to the Fanning and Doorley Construction Company of Providence for outside contractual assistance, and \$450.00 paid to the engineering consultants. On August 10, repair work on the dam of Coomer Reservoir, also in Gloucester, began with the Fanning and Doorley Construction Company providing the outside contractual services. Work at this location was limited to clearing the upstream face of the earthen dam of undesirable scrub growth and the rebuilding of the draw-off gate structure which had been seriously damaged as the result of vandalism. It was necessary to completely drain Coomer Reservoir and rebuild the draw-off structure with mass concrete walls and to provide a heavy steel plate locking enclosure over the draw-off gate operating mechanism in order to protect the structure from future vandalism. The completed work at Coomer Reservoir represented a total cost of \$9,612.79 paid for the outside contractual services furnished.

The program of Building Alterations and Improvements, Replacement of the High Voltage Electrical Switchgear, and Major Repairs to the Hydraulic Turbine and Generating Equipment of the Hydro Electric Station in Scituate, was undertaken during the year. On December 2, 1963 the station was removed from service, and under authority of the Board of Contract and Supply the Westinghouse Electric Corporation was engaged to completely rebuild and recondition the 1875 KVA 2300 Volt Generator. This work involved the services of Zavota Brothers Transportation Company of Providence, who furnished riggers' equipment and necessary low bed trucking facilities to transport the ten-ton armature and exciter motor to the Westinghouse Repair Shop in Springfield, Massachusetts. Repairs to the generator were completed and the unit was restored to service on December 20.

The cost of rebuilding the generator amounted to \$10,369.30. As described in the previous year's report, the second phase of the major repair program involved the replacement of the 40-Inch K2 Runner for the Francis Turbine, which was a part of the original plant equipment installed in 1927. Consequently, under authority of the Board of Contract and Supply of December 17, 1963, an order was issued to the Allis Chalmers Manufacturing Company of York, Pennsylvania in the amount of \$7700.00, to manufacture a new cast steel runner, together with necessary appurtenances to replace the defective unit, and to provide the supervisory field representative services required for its installation. Delivery of the new runner was made late in June, and on July 6, 1964 the Hydro Electric Station was again taken out of service to permit installation of the new runner. It was necessary to completely disassemble the turbine equipment to permit installation of the new runner at the base of the turbine well. This operation was slow and costly, inasmuch as each individual section of shaft, bearing, and structural bearing support was hoisted by hand operated chainfalls to the top of the well due to the extremely limited room within the 73-foot depth of well shaft. The condition of the turbine gate assembly, which could only be determined after its removal from the well, was such that with the extent of machine shop work necessary, and the specialized component parts requiring replacement, it was deemed advisable to return the turbine gate assembly to the York, Pennsylvania plant of the manufacturer for a complete rebuilding and reconditioning. The cost of rebuilding was estimated by the manufacturer at \$13,000.00, and on authority of the Board of Contract and Supply the turbine gate assembly was shipped to York, Pennsylvania early in August 1964. It is anticipated that the repaired gate assembly will not be returned from the repair shop until some time in November of the coming year. On December 10, 1963, the services of Oresto DiSaia, A.I.A., Providence Architect, were engaged for the preparation of contract plans and

specifications for Building Alterations and Improvements at the Hydro Electric Station. This work involves the placement of new granite facing on the exterior surfaces, sandblasting and cleaning, new aluminum windows and entrance doors, new lighting and toilet fixtures, new electric heating and interior floor tile, and repainting. On July 14, 1964, bids were received by the Board of Contract and Supply for this work, and a contract was subsequently awarded to the low bidder, the A. C. Beals Co., Inc. of Providence, in the amount of \$48,232.00. Work on the building Alterations and Improvements began on August 23, and is not expected to be completed until the Spring of 1965. To replace the obsolete type of open switchgear, controlling the 2300-volt generator and power circuits, which equipment also was installed in 1927 when the station was first placed into service, the engineering department prepared the necessary bid plans and specifications. The new switchgear will be the all metal enclosed type of individual high voltage cubicles, assembled together with fully enclosed bus structure and push button operation. Bids were received by the Board of Contract and Supply for this work on May 5, 1964, and a subsequent contract was awarded to the Crawford Electric Construction Company in the amount of \$61,500.00. The delivery of the new high voltage switchgear is expected towards the end of the 1964 calendar year, with installation to be completed early in the 1965 year.

The engineering office began work on final contract plans for completion of the 30-Inch Southeasterly Trunk Main between Allens Avenue at Ernest Street and Eddy at Public Streets in Providence. The first section of this trunk main was constructed in the year 1952 to serve the increasing demands on the southeasterly portion of the system. The continuing increase in consumption in this area, together with the rapidly increasing industrial load depending for its supply on the Southeasterly Trunk Main, are the factors involved in completion of the trunk main loop at this time. This connection, by its tie into the 30-inch Public Street main,

will provide a supply to downtown Providence and portions of the east side area under emergency condition of failure of the Public Street main, and balance pressure conditions under peak loads on the Southeasterly Trunk Main. It is anticipated that the contract plans and specifications for this work will be complete and ready for competitive bids in the Spring of 1965.

Contract plans and specifications were prepared by the engineering office for the Furnishing and Installation of New Pumping Equipment at the Bath Street High Service Pumping Station in Providence. Under date of June 2, 1964, the Board of Contract and Supply received competitive bids for this work and a contract was subsequently awarded to the low bidder, the D'Amario Plumbing Company of Providence, in the amount of \$54,485.00. The new equipment, consisting of two 2500 G.P.M. electric motor-driven pumps and one 5000 G.P.M. auxiliary gasoline engine-driven pump, will replace the four 2000 G.P.M. pumps installed when the station was first constructed in 1927. A series of repeated bearing failures in the old motor-driven pumps, and the obsolescence of the gasoline engine-drive units, which have been discontinued in manufacture for several years and for which no replacement parts are now available, dictated the necessity for replacement of the old pumping units with new pumps of increased capacity. Installation of this new equipment is scheduled for the winter months of the coming year, when the system demands are sufficiently low enough to permit the station to be removed from service for conversion.

A new sound color film, "Pure Water—Lifeline of Providence," had its premiere on the evening of April 15, 1964 when it was shown to the Mayor of Providence, members of the City Council, department heads, and officials of various local governments. This new release updates the previous film "You Can't Live Without It," introduced in 1952. It was produced by Frank McCabe and Associates Inc., a Providence Advertising and Public Relations firm, at a cost of \$11,000.00. Photog-

raphy was by Ralph K. Lawrence Productions, also of Providence. The film is a 16-millimeter, twenty-six and a half minute portrayal of the complete operations of a large public water supply system, from the source of supply to the consumers' taps. It has been shown to various civic, engineering, and vocational groups, department employees, and the general public. Also, a copy loaned to the BIF division of the New York Air Brake Company was exhibited at a European sales meeting held in the Hague. Engineers from nine participating countries were deeply impressed by the film, and the manager of international sales for BIF expressed his thanks for the contribution it made to the success of the meeting. In addition, it has been viewed by groups of school children and teachers as part of conducted tours of the Water Purification Plant. Also, school departments within the water district have made use of the film for general educational purposes. The enthusiastic reaction of the hundreds of persons who have seen the film indicates that this release will be popular for some time to come.

A high-level regional water purification training course, sponsored jointly by the United States Public Health Service, Rhode Island Department of Health and the City of Providence Water Supply Board, was conducted at the Water Purification Works from May 5 to 7, 1964. It was the first course of its kind held in the New England area and was attended by over fifty persons, consisting of sanitary engineers, water works superintendents, filter plant operators, chemists, and bacteriologists. There were twenty-five program participants from various universities, the U. S. Public Health Service, state departments of health, and water treatment plants. They gave technical lectures covering watershed sanitation, water treatment, laboratory control, and protection of finished water quality. Among these participants were members of the staff at the Water Purification Plant. The Water Purification Plant, with its modern and complete auditorium, laboratory and other facilities, provided an excellent location for this program.

Many favorable comments were received, along with requests for further courses in the area of water purification.

"Open House" for public visitation to the Water Purification Works was held on May 17, 1964, invitation being extended through advertisements in the local newspaper. An estimated 2200 persons were given guided tours by plant personnel. The enthusiastic compliments on the many modern and unique features duplicated reactions observed during previous Open House days. It is intended to repeat these visitations during the Fall of 1964 and the Spring of 1965 to afford others an opportunity to tour the facilities of the modernized Water Purification Works.

A brochure was published in April 1964, in keeping with the policy of the department to maintain a well informed public. It was produced by Frank McCabe and Associates Inc., at a cost of \$6,994.16 for 20,000 copies. This release is a descriptive and pictorial story of the early history of the City of Providence Water Supply System and the complex operations of the modern source of supply, Water Purification Works, distribution system, and administration. Copies have been distributed to the numerous visitors to the Plant, as well as engineers, government, and water works officials. It has been well received by the public, and many remarks of appreciation have been made as to its informative value.

The program of guided tours of the Water Purification Plant, for school children of the advanced grades and their instructors, was continued throughout the year. As part of the tours, lectures were given in the plant auditorium to explain the collection, treatment, and distribution of water by a large modern water supply system. Including visitors from all academic levels, a total of 850 students and teachers, comprising twenty-four school, college, and university groups, participated in the program.

The installation of new extensions to the distribution system and the replacement and the relocation of existing mains required the installation of 54,667.58 feet of

various size and kind of pipe. A major part of the footage was installed by contractors under competitive bidding. Fanning and Doorley Construction Company completed the Group 47 contract that was awarded the previous year and included the laying of 6,996.55 ft. during this fiscal year. C. Brito Construction Company laid 14,279.51 ft. under the Group 48 contract; A. E. Bragger Construction Company was awarded the Group 49 contract that totalled 18,226.24 ft. and under the Group 50 contract, C. Brito Construction Company installed 3,875.35 ft. before the end of the fiscal year. In connection with the replacement and relocation of mains resulting from the State highway construction program, M. A. Gammino Construction Company laid 4,229.08 ft. of water mains; Campanella and Cardi 6,432.43 ft.; and Macon Construction and Engineering Company 202.40 ft.

Other extensions involved the laying of 426.02 ft. of main, consisting of 181 ft. of 6-inch asbestos cement main, 26.02 ft. of 6-inch cast iron, 183 ft. of 8-inch asbestos cement, 8 ft. of 8-inch cast iron and 28 ft. of 12-inch cast iron, which was laid by the department's forces.

One hundred and fifty-seven main installations were made in various streets during the year. At the end of the year, approximately 8,500 ft. of main extensions contracted for remained to be laid.

Under Cranston City Council Resolution No. 24, approved March 25, 1963, the department was requested to install 49 hydrants in various locations throughout Cranston. The Contract was awarded to A. E. Bragger Construction Company on June 18, 1963, and work was started on September 9, 1963. The Contract was completed on November 20, 1963. The contractor supplied all materials except the hydrants, which were furnished by the department. The final payment to the contractor was \$19,013.18 and the cost of the hydrants was \$7,994.35, making a total installation cost of \$27,007.53.

Capital improvements, including the project under the Gilbane contract for additions, alterations and improvements to the Water Purification Works, totalled \$3,005,993.53. The final estimate on the Gilbane contract was \$1,912,487.33 and other incidental costs brought the total amount of the project to \$2,066,401.08. The department's forces installed new influent and drain butterfly valves on Filters 2, 3 and 4 at a cost of \$29,204.27, and D'Amario Plumbing completed a similar installation on Filters 5 to 14 inclusive under Project APW-R. I.-5G, at a cost of \$127,560. This contract also included 4 new main plant influent butterfly valves. This same firm installed 2 new 8-M.G.D. wash water pumps at the Purification Works under Project APW-R. I.-7G at a cost of \$25,439. New main extensions amounted to \$347,608.70, services \$98,531.29, hydrants \$171,847.99, and new gate valves \$139,401.20.

Applications for water service totalled 1,064, or 58 more than in the previous year. Of this number, 104 required extensions to the distribution system. A total of 993 new services were installed, 975 general supplies and 18 fire supplies.

Under the terms of Chapter 1525 of the Ordinances and Resolutions of the City of Providence for 1946, this department was charged with the operation of the sewer rental law, which took effect on October 1, 1946. During the fiscal year ended September 30, 1964, the net sewer rental collection totalled \$142,110.58.

Automotive and construction equipment owned and in use by the department totalled 29 various trucks, 17 passenger cars including 2 jeeps, 10 compressors, 3 trenchers, various pumps, and other miscellaneous equipment. The records of the department indicate that trucks were operated a total of 43,517 truck hours at a cost of 73 cents per hour, and passenger cars were driven a total of 224,893 miles at a cost of 7 cents per mile.

## SOURCE OF SUPPLY

### SCITUATE WATERSHED— RAINFALL AND RUNOFF

The rainfall on the 92.8 square mile Scituate Watershed above Gainer Dam was measured as usual by rain gages at Rocky Hill, Hopkins Mills, North Scituate, Westcott District, and Gainer Dam. For the year ended September 30, 1964 a total of 44.83 inches was recorded, which is 3.42 inches less than the 49-year (1916-1964) average of 48.25 inches. The rainfall for the year was 93% of the long term average and 68% of the maximum of 66.28 inches, established during the year ended September 30, 1958.

There were seven long periods when no rainfall was recorded, ranging in duration from seven to twenty-four days. The four longest periods occurred from October 4 to 27, 1963, November 12 to 22, 1963, April 23 to May 7, 1964, and from May 25 to June 5, 1964. There were two periods of five days and one of seven days of successive rainfall, with the most productive of these occurring from November 5 to 11, 1963. During this interval a total of 3.69 inches was recorded, with a maximum of 1.556 inches on November 7, and a minimum of 0.004 inches on November 9.

The total rainfall of 44.83 inches was the nineteenth lowest yearly rainfall experienced during the 49-year (1916-1964) period, the lowest being for the year ended September 30, 1957, when a total of 33.43 inches was recorded. During the months of November 1963 and January, February, April and July 1964, the monthly rainfall exceeded the 49-year averages for those respective months; the maximum monthly rainfall occurring in November when 7.82 inches were measured. This was 3.13 inches greater than the 49-year average and was the sixth highest rainfall recorded for November, the maximum for that month being 9.64 inches measured in 1951. As a result of the severe drought which began in May, the total rainfall for the five month period May through September was only 12.69 inches. This was the third lowest of the corresponding periods during the 49 years of record. The lowest total rain-

fall for this five month interval was 6.39 inches in the year ended September 30, 1957; the second lowest was 12.08 inches for the year ended September 30, 1929. The minimum monthly rainfall during the past year occurred in May when a total of only 1.15 inches was recorded, an amount 2.33 inches below the long term average for that month. The maximum day's rainfall for the year occurred on November 29, 1963, when a total of 2.76 inches was recorded, with the station at Rocky Hill measuring 3.02 inches.

The runoff for the year totalled 19.39 inches, which was 5.47 inches less than the 49-year (1916-1964) average of 24.86 inches. It was the twelfth lowest yearly runoff during the 49 years of observations, the lowest being 12.02 inches for the year ended September 30, 1930. During the months of January, February and April, the monthly runoff exceeded the 49-year averages for those respective months. The maximum monthly runoff occurred in January, when 4.68 inches were recorded, an amount 1.91 inches less than the long term average for that month. Due to the drought which began in May, the total runoff for the five month period May through September was only 0.66 inches. This was the second lowest of the corresponding periods during the 49 years of record. The lowest total runoff for this five month interval was minus 0.61 inches in the year ended September 30, 1957. The minimum monthly runoff during the past year occurred in August, when minus 0.14 inches was recorded, an amount 0.66 inches less than the long term average of 0.52 inches for that month.

Statistical rainfall and runoff data for the year ended September 30, 1964, and the years of previous watershed record, may be found in Tables 1, 2, 3, and 4 of the Appendix.

### SCITUATE WATERSHED STORAGE, DRAFT, AND YIELD

On October 1, 1963 the water in Scituate Reservoir was at elevation 278.08, or 5.93 feet below the spillway level. The total

storage then amounted to 30,780,000,000 gallons, or 83.2% of capacity. At the end of the year, October 1, 1964, the reservoir was at elevation 274.98, or 9.03 feet below the spillway level, with a storage of 27,681,000,000 gallons, or 74.8% of capacity. From October 1, 1963, the elevation decreased at a moderately rapid rate to 274.44 on November 29, or 9.57 feet below the spillway. The total storage at that time amounted to 27,171,000,000 gallons, or 73.4% of capacity, the smallest amount in storage during the entire year. Following a moderately rapid rise to 275.79 on December 14, the elevation then decreased a negligible amount to 275.36 on January 1, 1964, and then rose slowly to 275.75 on January 20. From this point there was a very rapid rise to 279.94 on January 29, an increase to 281.27 on February 17, and then a decrease to 280.20 on March 5. A quite rapid rise then occurred, resulting in an elevation of 284.19 on April 15; this was 0.18 feet above spillway level of 284.01. A continued rapid increase brought the elevation to the maximum for the year of 285.41 on April 20 and 21, or 1.40 feet above the spillway. At that time the total storage amounted to 38,571,000,000 gallons, or 104.2% of capacity. The effect of the drought then became quite evident, with the elevation decreasing 10.43 feet; from 285.41 on April 21 to 274.98 on October 1, 1964.

On October 1, 1963 the combined storage on the watershed, including Regulating, Westconnaug, Barden, Moswansicut, Ponaganset and Scituate Reservoirs, amounted to 33,518,000,000 gallons, or 81.2% of combined total capacity. At the end of the year, October 1, 1964, the combined storage was 31,471,000,000 gallons, or 76.3% of capacity. The maximum combined storage was on April 18, when 42,803,000,000 gallons, which is 103.7% of capacity, were impounded. The minimum combined storage was on November 23, 1963, when 31,092,000,000 gallons, which is 75.3% of capacity, were impounded.

Available storage statistics will be found in Table 5 of the Appendix.

The total draft from the Scituate Water-

shed for the year was 33,316,120,000 gallons, or an average of 91,027,650 gallons per day. The draft for water supply purposes was 18,726,480,000 gallons, or an average of 51,165,250 gallons per day. The discharge into the north branch of the Pawtuxet River totalled 14,589,640,000 gallons, equal to 39,862,400 gallons per day. The discharge to the river was released at rates and during the hours which were most advantageous to the mills on the Pawtuxet River below Gainer Dam.

The yield from the Scituate Watershed for the year was 31,269,120,000 gallons, or an average of 85,434,750 gallons per day, which was 5,592,900 gallons per day less than the average daily draft, and 24,335,250 gallons per day less than the 109,770,000 gallons per day average yield for the 49-year period 1916 through 1964.

Draft and yield statistics will be found in Table 6 of the Appendix.

## SCITUATE WATERSHED WATERSHED MANAGEMENT OPERATIONS—1964

### *THE MAINTENANCE PROGRAM*

Intensive management designed to improve and maintain turf cover at the Purification Works, Gainer Dam, and distribution reservoirs continued with fertilizer and lime applications made as scheduled. Despite the droughty summer season, turfed areas responded favorably to fall fertilization. The addition of a swing-knife mowing unit expedited mowing operations in those major areas under turf maintenance. The six-foot wide mowing attachment is driven by power take-off and pulled by a Worthington tractor. Features provided by the machine, such as control of cutting height and the pulverizing and mulching of mown grass, improved the efficiency of mowing operations on Gainer Dam and the distribution reservoirs.

Herbicidal brush control remains an important summer operation. Over 11 miles of firelanes and woods trails, 18 miles of roadside fenceline, 2.2 miles of aqueduct, and other miscellaneous areas were sprayed with brush-killing Ammate. Sec-

tions of the Scituate Reservoir shoreline at the Knight and Cork Brook inlets and west of Gainer Dam were mechanically cleared of hardwood sprout growth. Stumps were treated with Ammate to prevent resprouting. Stump or foliage treatment with herbicides does not insure 100 percent effective kill. Many biological and environmental factors affect the relative success of herbicidal treatment. Several treatments on a given area over a period of years will effectively reduce the amount of living brush-hardwood vegetation and inhibit the growth of vegetation which may survive one or more applications of herbicide.

A woods trail connecting Danielson Pike with the Battey Meeting House Firelane was improved by widening, removal of high boulders, spreading of gravel, and construction of several culverts. Improvement of this 6400-foot trail expedited woods operations in adjacent forest stands and facilitated access for inspection and watershed protection purposes. Other woods trails totalling 9475 feet in length were cleared in conjunction with cultural operations conducted adjacent to Battey Meeting House Firelane.

All iron gates and braces associated with fencing at the Source of Supply and Aqueduct were painted. A stain was applied to rustic cedar fencing at Gainer Dam. Other fence and barrier installation and repair were accomplished as necessary. Necessary maintenance of fencelines, roadside areas, fire lanes, rights-of-way, distribution reservoirs and Rockland Cemetery was carried out as scheduled.

#### **THE FORESTRY PROGRAM TIMBER PRODUCTION**

Timber harvested during the year totalled 1248.9 tons of softwood pulpwood, 127 cords of hardwood pulpwood and fuelwood, 17 cords of red cedar, and 53,254 board feet of sawlogs. A sizable timber sale of 28,000 board feet of old-growth pine and 14,000 board feet of oak occurred in the Saundersville and Clayville sections of the watershed. Much of the harvested timber contained defect. Past injury of white pine by forest fires and white-pine

weevill (*Pissodes strobi*) permitted entry of red ring rot (*Fomes pini*) and carpenter ants (*Camponotus* sp.), seriously degrading the timber which was marked for harvest.

#### **CULTURAL OPERATIONS**

Release of underplanted conifers from overstory hardwood of poor quality continues to be an important winter operation. Acreage released by a combination of frilling and girdling totalled 181.12 acres. Major release work was concentrated on 45.92 acres in the Tunk Hill section and 129.70 acres adjacent to the Battey Meeting House Firelane. The usual period for a girdled tree to succumb is 2 to 3 years. Because of droughty conditions in the 1964 growing season, many girdled trees died within a year after treatment. Released conifers continue to grow at a vigorous rate. Hardwoods killed in some of the early release operations have nearly disappeared from the forest canopy.

In other operations designed to remove poor-quality hardwoods of merchantable size, woods operators have harvested pulpwood or fuelwood at a nominal stumpage price. This type of operation is designated for areas in which volunteer or planted white pine are established in the understory of hardwood stands. Proficient woods operators have minimized mechanical damage to conifers in the understory caused by the felling of large hardwood trees.

Competing sprout growth was cut by brushkings in approximately 20 acres of young conifer plantations. Much of this work was conducted in areas that had been planted after severe woods fires which occurred adjacent to Riverview Firelane and Regulating Reservoir.

#### **REFORESTATION**

Sites prepared in the close vicinity of Clayville Village and along Winsor Road were planted to coniferous seedlings in the spring of 1964. Larch, hemlock and white pine were the principal species planted on 37.4 acres at the Source of Supply. Some of the 15,510 seedlings



planted during the spring season suffered mortality because of droughty conditions.

Considerable forest cover at the Source of Supply consists of pure stands of low-quality oak of pole or sapling size. Future full or partial conversion of these low-value stands to coniferous species may be undertaken on the basis of observation of several trial plantings which were accomplished in 1964. In one instance, hemlock were underplanted at a wide spacing in an upland oak stand which received no site treatment prior to planting. In another area, larch were interplanted with white spruce which had been released from upland oak in the winter of 1962-63. The spruce are responding slowly to the release, which should provide the fast-growing larch an opportunity to become well established.

#### PROTECTION OF THE WATERSHED

**Fires:** The only fire of consequence during the period of this report burned approximately one acre of City woodland adjacent to Rockland Road in the early morning hours of October 22, 1963. Four other small fires were discovered and quickly extinguished on October 28, 1963; June 20, July 15, and August 5, 1964. One fire was caused by lightning, one by camping, and three were of unknown origin. Two of the latter three appeared to be intentionally set.

The Tunk Hill Fire Tower was in operation 148.5 hours during 21 days of the extended 1963 fall fire season. The tower operated 385 hours during 53 high-hazard days in the spring season of 1964. The Tunk Hill tower continues to provide a vital service in the protection of City and privately owned land within and surrounding the 92.8 square-mile watershed.

#### Forest Insects:

The slowing of growth and deterioration of foliage of white spruce became more apparent during the year. This general decline of planted spruce could be attributed to a number of causes. It is speculated that droughty conditions coupled with spider-mite infestation are important considerations in the decline.

White-pine weevil control measures were limited to white-pine plantings averaging 3 to 15 feet in height. Damaging populations of white-pine weevil, pales weevil (*Hylobius pales*), white-pine cone beetle (*Conophthorus coniperda*), and shoot moths (*Rhyacionia* sp.) appeared to be at normal limits with no apparent outbreaks of epidemic proportion.

A serious outbreak of gypsy moth (*Porthetria dispar*) occurred on the Cranston-Scituate line just 1200 feet east of City of Providence property. State Entomology and Forestry agencies controlled the spread of the insects with an aerial application of the insecticide, Sevin. Female moths had laid eggs prior to the application of Sevin which indicates the possibility of a second outbreak in the summer of 1965. In the Cranston outbreak, an estimated 300 acres of forestland were defoliated. Most deciduous hardwoods will survive a defoliation, whereas, complete loss of foliage is usually fatal to conifers.

**Forest Diseases:** *Fomes annosus* remains a principal threat in the management of coniferous plantations on the watershed. Most infection centers of the disease are continuing to spread. Some degree of stabilization is occurring in stands infected by the root-rot disease for a decade or more. Plantations given a first thinning in 1957 to 1959 are showing the effects of the initial virulent infection of the disease. For example, numerous dying trees can be spotted from the Tunk Hill Fire Tower in a red-pine plantation thinned in 1958. A six-acre plantation adjacent to Brandy Brook has suffered severe losses in the past three years. This plantation, having a predominance of red pine, was thinned in 1957. The degree of success of stump treatment after thinning initiated in 1961 should soon become apparent, in that symptomatic effects of *F. annosus* infection usually become noticeable 3 to 4 years after thinning.

**Control of Trespass:** A total of 241 violations of City watershed property was recorded during the period of this report. Local police authorities cooperated in the prosecution of seven chronic violators.

Nineteen juvenile offenders were referred to local authorities for necessary disciplinary action. Incidents of vandalism, roadside dumping, and illegal cutting of greens were resolved with the assistance of local and State police.

#### GAINER DAM—HYDRO-ELECTRIC PLANT

The Hydro-Electric Station at Gainer Dam was removed from service for the period December 2 to 20, 1963 inclusive, to effect repairs and reconditioning of the 1875 KVA, 2300 volt generator, which was the first phase of the major rebuilding program outlined in the 1963 Annual Report. On July 6, 1964, the station was again removed from service to undertake the second, and major phase, of the rebuilding program, all of which is described in detail elsewhere in this report. At the end of the year, September 30, the station was still out of service, and due to the enlarged scope of necessary repairs it is estimated that return to service cannot be accomplished before the beginning of the 1965 calendar year. During the periods of shutdown, water was discharged into the Pawtuxet River at a computed rate on a 24-hour basis through the 36-inch blow-off valve near the base of Gainer Dam.

Other than the two out of service periods, the plant was operated on a necessarily reduced schedule for a total of 191 days, or 2,315 hours.

The total discharge of water to the Pawtuxet River for the year was 14,589,640,000 gallons, with 12,878,480,000 gallons used for power generation, and 1,711,160,000 gallons discharged through the 36-inch blow-off valve during the periods of plant shutdown.

Power generated from the discharge of 12,878,480,000 gallons of water through the 1875 KVA Hydro-Electric Turbo Generator to the Pawtuxet River amounted to 2,334,050 kilowatt hours, using 5,518 gallons of water for each kilowatt hour generated. Of the power generated, 2,081,400 kilowatt hours, or 89.18%, were sold to the Narragansett Electric Company, and 233,790 kilowatt hours were used at the

Water Purification Works. The rate of discharge to the river through the station and the blow-off, concentrated during the hours of down-stream mill operations, averaged 151.24 million gallons per day.

Hydro-Electric Plant statistics on the basis of the "Contract Year" with the Narragansett Electric Company are shown in Table 8 of the appendix.

#### WATER PURIFICATION WORKS

The Water Purification Works, located on the North Scituate-Hope Road about three-fourths of a mile from the Scituate Reservoir, has been in continuous and satisfactory operation throughout the year.

Water was drawn from Scituate Reservoir between elevations 213 and 220 and totalled 18,726,478,000 gallons, or an average of 51,165,000 gallons per day; the maximum for any one day being 86,317,000 gallons on July 1, 1964, and the minimum 26,556,000 gallons on July 10, 1964.

This water was treated with Ferri-Floc, aerated, dosed with slaked lime, mixed in the tangential mixer, and coagulated in two concrete basins operated in series. Following a sedimentation period averaging slightly more than three days, it was filtered through rapid sand filters, treated with sodium silicofluoride, and finally chlorinated before being delivered into the Scituate Aqueduct leading to the water distribution system.

With the exception of a few short-period shutdowns to examine plant structures, install new butterfly valves and service equipment, influent flow and chemical treatment were carried on 24 hours daily to obtain a constant and unvarying degree of coagulation and filter efficiency. The Ferri-Floc feeders and the quicklime feeders and slakers are the loss in weight gravimetric type, the automatic operation of each being controlled by an electric signalling device proportional to the rate of flow of water through the influent Venturi.

Water for dissolving Ferri-Floc and for lime slaking was maintained at a temperature of from 90 to 100 degrees Fahrenheit. The Ferri-Floc was dissolved by using a

ratio of three pounds of water to each pound of chemical, and the quicklime was slaked by using a ratio of six pounds of water to each pound of material.

Ferri-Floc used totalled 1,874,497 pounds, or an average of 5,122 pounds daily; with a maximum for any one day of 8,713 pounds on July 1, 1964, and a minimum of 2,716 pounds on July 10, 1964. The dosage averaged 0.70 grains per gallon, the maximum for any one day being 0.73 grains per gallon and the minimum 0.61 grains per gallon.

Quicklime used during the year totalled 1,760,299 pounds, or an average of 4,810 pounds daily; with a maximum for any one day of 8,511 pounds on July 1, 1964, and a minimum of 2,538 pounds on January 1, 1964. The lime dosage averaged 0.66 grains per gallon, the maximum for any one day being 0.71 grains per gallon and the minimum 0.58 grains per gallon.

Filters were operated a total of 69,902.79 hours during the year, at an average of 190.99 filter hours per day; the average length of filter runs being 62.14 hours, which is 3.22 hours, or 4.9 per cent less than the average of 65.36 hours for the previous year. The maximum daily average of filter runs was 107.50 hours on May 2, 1964, as compared to a maximum of 129.50 hours during the previous year; and the minimum was 28.30 hours on May 26, 1964, as compared to a minimum of 38.03 hours during the previous year.

Wash water rates varied from 13 to 33 inches rise per minute, the rate of rise being adjusted inversely to the temperature of the wash water. Filters 1 to 10, exclusive of number 2, were washed at rates which varied from 16 to 33 inches rise per minute, and an average sand expansion of 32%. These nine filters have sand with an effective size of 0.52 millimeters. Filter number 2, which has 0.65 millimeter sand, was washed at rates varying from 30 to 33 inches per minute rise, and an average sand expansion of 28%. Filters 11, 12, 13 and 14, which have 0.46 millimeter sand, were washed at rates varying from 13 to 27 inches rise per minute, and an average sand expansion of

42%. A total of 170 tests were made during the year to determine the sand expansion and rate of rise. The total wash water used was 149,993,000 gallons, an average of 410,000 gallons per day, or 130,884 gallons per wash. The 149,993,000 gallons of wash water used was 13.0% more than the 132,765,000 gallons for the previous year.

The total water filtered for the year amounted to 18,726,478,000 gallons, an average of 50,640,000 gallons daily; the maximum day being 83,859,000 gallons on June 30, 1964, and the minimum 29,791,000 gallons on November 10, 1963. The average rate of filtration per filter was 6,360,000 gallons per day, and the average amount of water filtered per filter per run was 16,470,000 gallons, or 0.1% more than the 16,450,000 gallons for the previous year.

The total plant effluent, or pure water delivered to the Scituate Aqueduct and the Kent County Water Authority, totalled 18,384,177,000 gallons, an average of 50,230,000 gallons per day, with a maximum of 83,406,000 gallons on June 30, 1964, and a minimum of 29,655,000 gallons on November 10, 1963.

With the exception of a few short-period shutdowns to make inspections and adjustments to the fluoridizers, fluoridation of the plant effluent delivered to the Scituate Aqueduct was carried on 24 hours daily. With respect to fluoridation, the City of Providence Water Supply Board is acting solely as the agent of the R. I. State Health Department in carrying out their directives relative to the chemical used, the applied dosage, and the type of feeding equipment. Sodium silicofluoride has been added in amounts sufficient to produce a fluoride ion concentration of 1.0 part per million throughout the distribution system.

Plant effluent delivered to the Scituate Aqueduct and treated with sodium silicofluoride amounted to 18,108,010,000 gallons; an average of 49,475,000 gallons per day. Sodium silicofluoride used during the year totalled 232.850 pounds, or an average of 636 pounds per day; with a maximum for any one day of 1,128 pounds on

June 30, 1964, and a minimum of 347 pounds on November 10, 1963. The actual dosage of fluoride ion averaged 0.92 parts per million. Water delivered to the Kent County Water Authority is not treated with sodium silicofluoride.

Chlorination of the plant effluent delivered to the Scituate Aqueduct was carried on continuously out of abundant caution. The amount treated with chlorine totalled 18,129,224,000 gallons, an average of 49,533,000 gallons per day. Water delivered to Kent County is chlorinated separately by their facilities. Chlorine used during the year totalled 42,346 pounds, or an average of 116 pounds per day; with a maximum for any one day of 181 pounds on October 8, 1963, and a minimum of 69 pounds on March 8, 1964. The chlorine dosage averaged 0.28 parts per million, the maximum and minimum dosages being 0.43 and 0.24 parts per million. Chlorine residual of the water at a point adjacent to the main aqueduct averaged 0.017 parts per million. Chlorine residual of the tap water at the Providence City Hall, from October 1, 1963 to January 22, 1964, averaged 0.012 parts per million. From January 23 to September 30, 1964 the tap sample was obtained at the Providence Journal Building, 75 Fountain Street; the residual averaged 0.006 parts per million.

The following tabulation shows that the cost of chemical treatment for the year ended September 30, 1964 was \$4.89 per million gallons, or 6.8% more than the figure of \$4.58 last year. The price per ton of Ferri-Floc was \$54.05 for the entire year, as against \$53.05 for the larger part of the previous year. Quicklime was purchased for \$20.40 a ton from October 1, 1963 to June 25, 1964; shipments received between June 26 and the end of the year cost \$20.27 per ton. This compares with a price range of \$20.47 down to \$20.40 per ton during the prior fiscal year. The price per ton of sodium silicofluoride was \$164.40 for the period October 1, 1963 to August 11, 1964, and \$164.00 from August 12 to the end of the year. The cost of this material during the major portion of the previous year was \$139.35 a ton. Chlorine was purchased for \$135.00 per ton, the

same price that was paid during the year ended September 30, 1963.

	Year Ended Sept. 30, 1963	Year Ended Sept. 30, 1964
Ferri-Floc .....	0.67 G.P.G.	0.70 G.P.G.
Quicklime .....	0.62 G.P.G.	0.66 G.P.G.
Sodium Silicofluoride.....	*0.90 P.P.M.	*0.92 P.P.M.
Chlorine .....	0.41 P.P.M.	0.28 P.P.M.
Length of Filter Runs.....	65.36 Hrs.	62.14 Hrs.
Tap Water Color.....	5 P.P.M.	4 P.P.M.
Tap Water Iron.....	0.01 P.P.M.	0.02 P.P.M.
Cost of Chemicals per M.G. of Water Treat- ed .....	\$4.58	\$4.89

\*Dosage expressed as P.P.M. (parts per million) of fluoride.

G.P.G.=Grains per gallon.

Operating figures and statistics relative to chemical use and cost will be found in Tables 9 and 10 of the Appendix.

The Ferri-Floc used as a coagulant was obtained under contract from Faesy & Besthoff, Inc., New York, for the period October 1, 1963 to September 30, 1964 at \$54.05 per ton.

Specifications for Ferri-Floc read as follows: "The material furnished shall be ferric sulphate. It shall contain not less than sixty-nine per cent (69%) of water soluble Ferric Sulphate ( $\text{Fe}_2(\text{SO}_4)_3$ ). The content of ferrous iron shall not exceed one and one-half per cent (1.5%) as (Fe). It shall be free of foreign material or material deemed undesirable in water purification processes. The material shall be in granular or lump form. Not more than forty-five percent (45%) shall pass a 20 mesh per inch screen, and no particle shall be larger than will pass a one-inch mesh screen. Deliveries to be made in cars suitably lined to protect the material from moisture and foreign matter." The specifications contain a provision that allows us to penalize the manufacturer at the end of the contract year in event that the total amount of material received falls below an average of sixty-nine per cent (69%) of water soluble ferric sulphate ( $\text{Fe}_2(\text{SO}_4)_3$ ).

Ferri-Floc has been delivered in bulk carload lots to the railroad siding at Washington, R. I., about five and one-half miles from the Water Purification Works. Deliveries to the plant have been made by our force with the use of a pneumatic

transfer truck, which removes the material from the car and delivers it into a storage silo of glazed segment tile masonry. This silo has an inside diameter of 16 feet, a height of 55 feet, and a capacity of 180 tons of the material. A combination suction—pressure pneumatic conveying system transfers the material from the silo to three 20-ton secondary steel storage hoppers located directly over the three Ferri-Floc feeders in the Central Operations and Control Building. The 240 tons storage provided by the silo and hoppers assures a maximum of approximately 94 average days' supply.

Analysis of the Ferri-Floc received has shown an average ferrous iron content of 0.94%, which is 0.56% less than the maximum of 1.50% allowed by the specifications. The average water soluble ferric sulphate ( $\text{Fe}_2(\text{SO}_4)_3$ ) content of the nineteen deliveries received was 72.16%, or 3.16% more than the minimum of 69% permitted by specification requirements. The average amount of material passing a 20 mesh per inch screen was 47.2% as compared to the permissible maximum of 45.0%. The following table shows the date of delivery, together with the per cent of ferrous iron, per cent of water soluble ferric sulphate, and per cent passing a 20 mesh per inch screen.

Date Received	Percent Ferrous Iron	Percent Water Soluble Ferric Sulphate	Percent Passing a 20 Mesh per Inch Screen
November 8, 1963.....	0.86 .....	73.43 .....	47.5
November 20, 1963.....	0.78 .....	74.00 .....	43.2
November 22, 1963.....	0.82 .....	73.75 .....	53.0
December 27, 1963.....	0.67 .....	73.21 .....	45.6
December 30, 1963.....	0.75 .....	74.36 .....	50.6
January 6, 1964.....	0.92 .....	73.07 .....	51.8
February 21, 1964.....	0.54 .....	73.03 .....	44.2
March 9, 1964.....	0.50 .....	73.43 .....	42.6
March 11, 1964.....	0.49 .....	71.85 .....	55.5
April 27, 1964.....	0.67 .....	71.17 .....	43.3
May 4, 1964.....	0.61 .....	72.82 .....	60.0
May 8, 1964.....	0.77 .....	72.89 .....	45.9
June 10, 1964.....	0.67 .....	71.99 .....	41.1
June 19, 1964.....	0.74 .....	72.94 .....	40.3
June 22, 1964.....	0.58 .....	74.21 .....	36.7
July 22, 1964.....	1.95 .....	68.59 .....	45.2
August 17, 1964.....	1.20 .....	69.74 .....	44.8
August 19, 1964.....	2.41 .....	66.95 .....	47.9
August 21, 1964.....	1.87 .....	69.67 .....	58.5

The table shows that three shipments failed to meet the specifications with respect to ferrous iron content, two failed with respect to the water soluble ferric sulphate content, and eleven did not meet screen size requirements. However, as noted in the paragraph preceding the table, the average ferrous iron and ferric sulphate contents of the nineteen deliveries not only met but exceeded the specifications. The average screen size of the nineteen shipments was only 2.2% more than the permissible maximum of 45% passing a 20 mesh per inch screen. Nevertheless, the manufacturer was notified each time a delivery did not meet specification requirements and was requested to conform to his obligations.

Quicklime was obtained under contract with the Standard Lime and Cement Company, Division of Martin Marietta Corporation, Baltimore, Maryland from October 1, 1963 to June 25, 1964 at a price of \$20.40 per ton. Specifications for the quicklime purchased from this company read as follows: "The material furnished shall be rotary kiln pebble quicklime, of which 100% shall pass a  $\frac{3}{4}$ -inch screen and not less than 80% shall be retained on a 10 mesh per inch screen. Insoluble matter shall be less than 2% and magnesium oxide shall be less than 3%. It shall have an available calcium oxide ( $\text{CaO}$ ) content of not less than 90%. The calculation of the available lime shall be on an 'As Received' basis."

Analysis of the quicklime received from the Standard Lime and Cement Company showed an average available calcium oxide content of 92.9, which is 2.9% greater than specification requirements. The per cent of material passing a  $\frac{3}{4}$ -inch screen was 100% on every delivery and the amount retained on a 10 mesh per inch screen averaged 98.5%. The following table shows the date of delivery, together with the per cent of available calcium ox-

ide and the per cent of material retained on a 10 mesh per inch screen:

Date Received	Percent Available Calcium Oxide	Percent Retained on a 10 Mesh per Inch Screen
October 4, 1963.....	91.2 .....	99.9
December 4, 1963.....	93.4 .....	97.0
December 11, 1963.....	93.7 .....	98.4
December 16, 1963.....	91.1 .....	98.6
February 7, 1964.....	91.7 .....	98.8
February 10, 1964.....	93.9 .....	98.7
February 20, 1964.....	93.9 .....	99.3
April 8, 1964.....	93.4 .....	96.1
April 13, 1964.....	92.5 .....	98.1
April 20, 1964.....	93.7 .....	99.9

The table shows that all ten deliveries met specification requirements.

Shipments of quicklime received on and after June 26, 1964 were obtained under contract with the New England Lime Company, Division of Charles Pfizer and Company, Adams, Mass. at a price of \$20.27 per ton. Specifications for the quicklime purchased from this company read as follows: "The material furnished shall be granular or fine grain quicklime, of which 100% shall pass a 4 mesh per inch screen and not less than 90% shall be retained on a 100 mesh per inch screen. Insoluble matter shall be less than 2%, and magnesium oxide shall be less than 3%. It shall have an available calcium oxide (CaO) content of not less than 90%. The calculation of the available lime shall be on an 'As Received' basis."

Analysis of the quicklime received from the New England Lime Company showed an average available calcium oxide content of 93.6%, which is 3.6% greater than specification requirements. The per cent of material passing a 4 mesh per inch screen was 100% on every delivery and the amount retained on a 100 mesh per inch screen averaged 99.5%. The following table shows the date of delivery, together with the per cent of available calcium oxide and the per cent of material retained on a 100 mesh per inch screen:

Date Received	Percent Available Calcium Oxide	Percent Retained on a 100 Mesh per Inch Screen
June 26, 1964.....	92.3 .....	99.0
July 3, 1964.....	95.5 .....	99.8
July 8, 1964.....	94.5 .....	99.6
July 20, 1964.....	95.0 .....	99.6
July 27, 1964.....	91.2 .....	99.2
August 7, 1964.....	94.0 .....	99.4
September 14, 1964.....	92.8 .....	99.7
September 23, 1964.....	92.3 .....	99.6
September 30, 1964.....	94.7 .....	99.6

The table shows that all nine deliveries met specification requirements.

Quicklime has been delivered in bulk carload lots to the railroad siding at Washington, R. I. Deliveries to the plant have been made by our force with the use of the same pneumatic transfer truck used for transporting the Ferri-Floc. The material has been delivered into a storage silo of the same size and construction as the Ferri-Floc silo. A combination suction-pressure pneumatic conveying system transfers the material from the silo to three 20-ton secondary steel storage hoppers located directly over the three combination lime feeders and slakers in the Central Operations and Control Building. The 240 tons storage provided by the silo and hoppers assures a maximum of approximately 100 average days' supply.

Sodium silicofluoride was purchased under contract with the Henry Sundheimer Company, New York, for the period October 1, 1963 to August 11, 1964 at \$164.40 per ton, and for the period August 12 to September 30, 1964 at \$164.00 per ton. The specifications covering this material are the American Water Works Association Standard for Sodium Silicofluoride, AWWA B702-60, with slight modifications as to size and type of shipping containers, and exclusion of material not of domestic manufacture. Among other requirements, the specifications call for a minimum of 98 per cent sodium silicofluoride which corresponds to approximately 59.4 per cent fluoride ion. The average sodium silicofluoride content of six shipments received was 99.3%.

The following table shows the date of delivery and per cent of sodium silicofluoride:

Date Received	Percent Sodium Silicofluoride
November 26, 1963.....	99.6
January 21, 1964.....	98.6
March 17, 1964.....	99.0
May 1, 1964.....	99.2
June 17, 1964.....	99.5
August 12, 1964.....	99.9

The table shows that all six deliveries met specification requirements.

Sodium silicofluoride has been delivered to the plant in 400-pound fiber drums and stored in a separate room on the second floor of the Central Operations and Control Building. Space for storage of 40-tons of the chemical provides a maximum of approximately 126 average days' supply. The material is conveyed by a suction type pneumatic transfer system from the drums to either of two 6,000-pound capacity storage-receiver units. These units are located in an adjacent room directly over the loss in weight gravimetric fluoridizers. The fluoridizers are automatically and proportionally controlled to the plant effluent by summation metering equipment.

The liquid chlorine used to treat the water was obtained under contract with the Fields Point Manufacturing Company, Inc., Providence, for the period October 1, 1963 to September 30, 1964 at \$135.00 per ton. This material was delivered to the Purification Plant by our force in lots of two cylinders, each containing one ton of chlorine. Special tramrail equipment is used to transfer the containers from tailboard delivery to platform scales. Two one-ton cylinders are carried on each of two platform scales, with four additional containers stored in cradles in the same room.

This room, equipped with a special exhaust system to remove any escaping chlorine fumes, is located on the second floor of the Central Operations and Control Building, directly over the gas feed chlorinators. Total storage of 16,000 pounds assures a maximum of approximately 138 average days' supply.

Number 6 fuel oil used for heating the plant from October 1963 to May 1964, and during September 1964, totalled 49,418 gallons, an average of 4,118 gallons per month. Number 2 fuel oil was used from October 1963 to November 1963, and from May to September 1964, for heating water. The amount used totalled 5,749 gallons, an average of 479 gallons per month.

#### WATER PURIFICATION WORKS LABORATORY

The fully equipped and modern laboratory maintained at the Purification Works for control over the quality of the water supply, from the raw water on the watershed to the tap at the consumers' premises, has been in operation throughout the year, with constant vigilance being exercised by the chemists and bacteriologists. Samples of tap water were obtained daily from not less than nine consumers' taps in various parts of the distribution system. This was reduced to eight samples daily, effective June 1, 1964, as the City of Warwick started to obtain their own samples at that time. A daily tap sample was collected at the Providence City Hall, from October 1, 1963 to January 22, 1964 inclusive; this sampling location was then changed to the Providence Journal building for the period January 23 to September 30, 1964. In addition, samples were taken daily from Longview and Neutaconkanut distribution reservoirs. Also, samples for analysis were obtained from the brooks, streams and reservoirs on the watershed, the raw water from the lower intake of Scituate Reservoir, the reservoir surface water, Gainer Memorial Dam meter chamber, Fiskeville Reservoir, twelve locations on the Pawtuxet River below the Dam, the various stages of the purification process, coincident with the investigation of complaints, from extensions to the distribution system, selected locations in the distribution system, and from miscellaneous sources.

The total number of samples obtained from all sources during the year amounted to 12,879 which, based on a forty-hour work week means that one sample or

another was obtained every 10 minutes. Tests made on these samples included chemical, sanitary chemical, and mineral analyses, and bacteriological and microscopical examinations. The total number of tests made amounted to 103,691 which, based on a forty-hour work week, means that the water was receiving one test or another every 72 seconds. Each delivery of Ferri-Floc and of quicklime was tested to determine conformance to specifications and the optimum dosages required for coagulation and pH control. Deliveries of sodium silicofluoride were also tested, not only for conformance to specifications, but to assure that the proper concentration of fluoride ion would be maintained throughout the distribution system. Filter washings were regulated by means of tests on the sand expansion and rate of rise of wash water. Samples taken after disinfection of extensions to the distribution system were tested for chlorine residual, coliform bacteria, 35°C and 20°C bacteria before permitting any extension to be placed in service. Consumer complaints were serviced, and recommendations made to eliminate the source of trouble.

Some idea of the laboratory control over the quality of the water supply may be had by a comparison of our sampling schedule with that recommended by the U. S. Public Health Service Drinking Water Standards. The following table, compiled from a graph in the Standards, shows the minimum number of bacteriological samples that should be obtained from the distribution system per month for any given population served:

Population Served	Minimum Number of Samples per Month
2,000 and under.....	2
10,000 .....	13
25,000 .....	30
100,000 .....	105
1,000,000 .....	320
2,000,000 .....	400
5,000,000 .....	510

The population served by the City of Providence water supply is approximately 390,494. In accordance with the above table the minimum number of bacteriological samples that should be obtained

from the distribution system per month for this population is 210.

From October 1963 through May 1964 the actual number of bacteriological samples obtained in the distribution system amounted to a total of 2,242, or an average of 280 per month; a figure 33% greater than recommended by the Standards, and more than is required for a population of 700,000.

Effective June 1, 1964, this department discontinued its sampling program in the City of Warwick. This was the result of a directive by the R. I. State Department of Health requiring that Warwick, which owns and maintains its distribution system, obtain samples daily from four fixed locations. These samples were forwarded to our laboratory for examination, from June 1 through the end of the fiscal year. The total number of samples amounted to 346, or an average of 87 per month.

From June 1 to September 30, 1964, the number of bacteriological samples obtained in the distribution system, exclusive of Warwick's system, totalled 1,090, or an average of 273 per month; a figure 44% greater than the 190 recommended by the Standards for an estimated population of 328,603 served by our distribution system, and again, more than is required for a population of 700,000. A sample for chemical and sanitary chemical analysis was also obtained with each bacteriological sample.

Coagulation tests were made on one liter quantities of raw water treated with various amounts of Ferri-Floc and slaked lime, simulating all the operations of the purification processes on a laboratory scale for the purpose of determining the most economical dosage consistent with good coagulation.

Civil Defense activities were continued during the year, consisting of monitoring the water for radioactivity, and of continual study of developments in the field.

Samples of water obtained from dead end cast iron mains were tested for the fluoride concentration. These tests, together with earlier studies, established



that no conditions known to exist in a water main will cause extraction of significant amounts of fluoride from the water or solution from coatings which now exist there.

Rigid laboratory control has resulted in the continuation of economies consistent with an excellent quality of water. Constant vigilance over the chemical treatment machines and filter operation has

aided greatly in keeping the cost of treatment low despite high costs for chemicals. These operations have been responsible for maintaining long filter runs and an excellent quality of water.

Tables 11 to 21 of the Appendix show statistics relative to the quality of the water and the kind and number of laboratory examinations made during the past year.

## TRANSMISSION AND DISTRIBUTION

### SCITUATE AQUEDUCT

The Scituate Aqueduct, which conveys the effluent water from the Water Purification Works in Scituate to the distribution system, has been in continuous and satisfactory service throughout the year.

Maintenance of the property along the Scituate Aqueduct included cutting and burning brush, repairs to grassed embankments, repairs to fencing, and other miscellaneous work as required.

### HIGH SERVICE PUMPING STATIONS

Neutaconkanut and Bath Street Pumping Stations, supplying water to the high service portion of the distribution system generally above elevation 140, and to the special high pressure fire service in the congested area of downtown Providence, have been in satisfactory operation throughout the year.

Water pumped into the high service area totalled 3,141,705,000 gallons, or an average of 8,584,000 gallons per day.

Neutaconkanut Station pumped 1,487,160,000 gallons through the east Venturi and 1,070,135,000 gallons through the west Venturi meter for a total of 2,557,295,000 gallons, or 6,987,000 gallons per day, and Bath Street Station pumped 584,410,000 gallons, or 1,597,000 gallons per day.

The total power required for pumping at both stations amounted to 1,175,160 kilowatt-hours. Neutaconkanut Station required 927,500, and Bath Street Station 247,660 kilowatt-hours. The cost of power at both stations was \$21,181.89, or \$6.74 per million gallons pumped.

Test runs of the auxiliary gasoline engine driven pump at Neutaconkanut Pumping Station were made weekly, the pump being operated a total of 48 hours, pumping 19,970,000 gallons during the year. Periodic test runs of the auxiliary gasoline engine driven pumps at the Bath Street Pumping Station were made throughout the year. These pumps were operated a total of 74 hours and 30 minutes, pumping 9,760,000 gallons for the year.

Operating statistics for the high service pumping stations will be found in Tables 22 and 23 of the Appendix.

### DISTRIBUTION RESERVOIRS

The 40.03 million gallon Aqueduct Low Service Distribution Reservoir, located off Scituate Avenue in Cranston, the 38.58 million gallon Neutaconkanut Low Service Distribution Reservoir, on Neutaconkanut Hill in Johnston, and the 11.94 million gallon Longview High Service Distribution Reservoir, at Mineral Spring Avenue and Smithfield Road in North Providence, have been in continuous and satisfactory operation throughout the year.

Routine maintenance activities at the three reservoirs were carried on with respect to the care of equipment, grounds, fencing, etc.

Operating statistics for the Distribution Reservoirs will be found in Tables 24, 25, and 26 of the Appendix.

### WATER DISTRIBUTION SYSTEM

The water distribution system has been maintained in satisfactory and continuous operation throughout the year. Extensions of mains, the installation of various types of valves, hydrants and services, and necessary repairs and replacement of the system's appurtenances were made when and where required. The construction of new highways and the reconstruction and repairs to existing highways during the year accounted for a major part of the repairs to and the replacement of the appurtenances.

The amount of pipe laid during the year, all sizes, totalled 54,667.58 feet, including 42,682.54 ft. of asbestos cement pipe, and 11,985.04 feet of cement lined cast iron pipe.

A total of 24,562.47 feet of pipe was removed or abandoned, resulting in a net increase to the distribution system of 30,105.11 feet. In the City of Providence, there was a decrease that amounted to 4,586.97 feet. In the City of Cranston there was an increase of 17,046.74 feet, in

the Town of Johnston the increase amounted to 9,754.67 feet and the Town of North Providence 7,890.67 feet.

At the end of the year the total length of mains in the distribution system aggregated 785.71 miles, including 12.73 miles in the special high service fire system in the City of Providence. Asbestos cement pipe in the system totalled 948,468.56 feet, consisting of 493,843.02 feet of 6-inch, 413,790.34 feet of 8-inch, 28,804.60 feet of 12-inch, 8,615.28 feet of 16-inch and 3,415.32 feet of 20-inch. Prestressed reinforced concrete steel cylinder pipe totalled 56,585.15 feet, consisting of 2,380.54 feet of 16-inch, 32,168.08 feet of 24-inch, 19,553.66 feet of 30-inch, 116.01 feet of 36-inch, 126.97 feet of 48-inch, and 2,239.89 feet of 60-inch. Reinforced concrete steel cylinder pipe totalled 36,597.00 feet, consisting of 715.00 feet of 36-inch, 15,312.00 feet of 48-inch and 20,570.00 feet of 60-inch. Steel pipe totalled 10,032.00 feet including 1,584.00 feet of 48-inch and 8,448.00 feet of 66-inch. The remaining footage consists of cast iron pipe including 1,886,748.73 feet of 6-inch, 520,881.02 feet of 8-inch, 12,407.12 feet of 10-inch, 359,396.52 feet of 12-inch, 143,929.17 feet of 16-inch, 16,360.34 feet of 20-inch, 62,306.15 feet of 24-inch, 60,086.49 feet of 30-inch, 9,235.80 feet of 36-inch, and 25,500.74 feet of 42-inch, totalling 3,096,852.08 feet.

Details of pipe laid, removed and in use at the end of the year are shown in Tables 27 and 28 of the Appendix.

Stop gates installed during the year, including replacements, totalled 208. In Providence a total of 75 stop gates was installed, thirty-five 6-inch, seventeen 8-inch, five 12-inch, ten 16-inch, five 24-inch including 3 butterfly valves and one inserting valve, one 36-inch butterfly valve, and two 48-inch butterfly valves. In Cranston a total of 69 stop gates was installed, seventeen 6-inch, fifty 8-inch, one 12-inch, and one 48-inch butterfly valve. Stop gates installed in Johnston totalled 35 including twelve 6-inch, nineteen 8-inch and four 12-inch, and in North Providence a total of 29 was installed, fifteen 6-inch and fourteen 8-inch.

Stop gates removed or abandoned totalled 95. In Providence a total of 71 was removed, including forty-four 6-inch, ten 8-inch, two 10-inch, three 12-inch, eight 16-inch, one 24-inch, one 36-inch, and two 48-inch. In Cranston a total of 18 was removed, including nine 6-inch, seven 8-inch, one 24-inch and one 48-inch. In Johnston one 6-inch and two 8-inch were removed and in North Providence one 6-inch and two 8-inch.

At the end of the year there was a total of 10,754 stop gates in use in the system, ranging from 6-inch to 60-inch, including five 12-inch and fifteen 16-inch rotary plug valves, and ten 16-inch, two 20-inch, three 24-inch, two 30-inch, four 36-inch, one 42-inch and eight 48-inch and one 60-inch butterfly valves.

Hydrant gates in use at the end of the year totalled 4,490, which included 2,907 six-inch and 1,583 eight-inch. In Providence there were 1,352 six-inch, an increase of 321 over the previous year while the number of eight-inch dropped to 1,567, a decrease of 212. In Cranston the six-inch totalled 997 representing an increase of 28 while the eight numbered 5, a decrease of 3. In Johnston there are 265 six-inch, an increase of 8 and 11 eight-inch, a decrease of 2. North Providence has 293 six-inch, an increase of 3.

Gates on unwatering hydrants and blowoffs totalled 41; nine 6-inch, twenty-six 8-inch and six 12-inch.

The total number of gates in the system, not including service gates, all sizes, in use at the end of the year totalled 15,285.

Details of gates in use September 30, 1964 are shown in Table 29 of the appendix.

Private pipes connected to the distribution system at the end of the year totalled 195. In Providence, there was a total of 113, in Cranston 50, in Johnston 14 and in North Providence a total of 18.

A total of 993 services, including general and fire supplies, was installed during the year; 271 in Providence, 394 in Cran-

ston, 171 in Johnston and 157 in North Providence. The number of active services in the system at the end of the year, including both general and fire supplies, totalled 62,126, consisting of 62,078 metered services and 48 unmetered services. Active metered services at the end of the year constituted 99.92% of the total active services in the system.

Statistics relative to services will be found in Tables 30 and 31 of the Appendix.

Public fire hydrants in use at the end of the year totalled 4,740, which included 3,827 post hydrants and 913 flush type hydrants. Post hydrant installations totalled 333 including 267 in Providence, 38 in Cranston, 17 in Johnston and 11 in North Providence. In Providence, 251 flush hydrants were removed and replaced with the post type, and 12 post hydrants were removed, 10 post hydrants were removed in Cranston, 11 in Johnston and 7 in North Providence.

Statistics relative to public fire hydrants will be found in Table 32 of the Appendix.

Leaks in the distribution and transmission mains totalled 59 during the year, 24 occurring at joints and 35 as a result of ruptured mains. Leaks at joints averaged 1 for every 32.74 miles of mains, while total leaks averaged 1 for every 13.32 miles of mains.

The number of meters repaired and tested in our Meter Repair Shop was 8,456, while those receiving attention in the field numbered 151, making a total of 8,607, or 94 less than during the previous year. The cost of meter repairs in the shop averaged \$2.13 per meter, as against \$2.16 last year. Meters requiring service in the field involved an average expendi-

ture of \$2.78 during the current year, as compared with \$2.69 the previous year.

The number, make and size of meters on active services at the end of the year are shown in Table 33 of the Appendix.

### CONSUMPTION

Water consumption for the year ended September 30, 1964 amounted to 18,383,017,000 gallons, or an average of 50,226,820 gallons per day. This average was 2,312,330 gallons per day more than the average for the previous year. With the exception of November, 1963, December, 1963 and August, 1964, increases occurred in every month, ranging from 770,000 gallons per day in April to 8,270,000 gallons per day in May. During the months of November and December, 1963 and August, 1964, consumption was less than for the corresponding months of the previous year, ranging from 310,000 gallons per day less in December, 1963 to 1,780,000 gallons per day less in November, 1963.

The maximum daily consumption occurred on June 30, 1964 when 86,019,000 gallons were consumed which was 1,196,000 gallons less than the record maximum of 87,215,000 gallons on June 27, 1963. However, the maximum hourly rate of consumption of 139,620,000 gallons per day on June 30, 1964 broke all records, exceeding the previous high of 131,040,000 gallons per day that occurred on June 17, 1957.

The maximum month's consumption was in June, 1964, when 1,919,392,000 gallons were used, and the minimum was November, 1963, when 1,279,915,000 gallons were consumed.

Water Consumption statistics will be found in Tables 34, 35, 36, 37 and 38 of the Appendix.

## FINANCIAL SUMMARY

The gross income for the year ended September 30, 1964 totalled \$3,427,795.93, an increase of \$113,167.63 over the previous year. Revenue from the sale of water alone was \$2,986,556.95, an increase over the previous year of \$38,684.95. The remaining income of \$441,238.98 was received from other sources, including hydrant rentals, sale of power, installation of services, miscellaneous items, and the surplus in the Meter Revolving Fund. The receipts for these items show an increase of \$74,482.68.

During the year total payments for water main extensions amounted to \$128,535.18, an increase over the previous year of \$14,070.65. Income from service connection charges amounted to \$95,816.00, an increase of \$5,061.00 over the previous year. At the end of the fiscal year, unpaid water bills totalled \$232,886.36 as compared with \$240,585.58 at the beginning of the year or 7% of the total net billing. Miscellaneous Accounts Receivable amounted to \$13,840.70 at the end of the year as compared with \$12,426.97 at the beginning of the year.

Operating Expenses, including Taxes, Employees' Retirement System and Social Security payments totalled \$2,086,444.93, an increase over the previous year of \$31,114.35.

Interest on the Bonded and Floating Debt, Principal Payments on Serial Bonds and the Floating Debt, plus the appropriation to the Water Depreciation and Extension Fund totalled \$1,078,826.31. The aggregate of all expenditures of the Board during the year was \$3,165,271.24, which

deducted from the gross revenue of \$3,427,795.93, leaves a net balance of \$262,524.69. According to law this reverts to the Sinking Fund for the retirement of water bonds.

During the present fiscal year ended September 30, 1964, \$2,000,000.00 in Sinking Fund Bonds were retired. This leaves a balance of \$5,500,000.00 of Sinking Fund Bonds still outstanding. The first payment on the Serial Bonds in the amount of \$65,000.00 was made on November 27, 1963 and the first payment of Principal on the Floating Debt of \$54,600.00 on August 31, 1964.

The total Bonded Debt as of September 30, 1964 is \$8,585,000.00 and the reserve for the retirement of bonds \$6,115,520.30, which leaves a net Bonded Debt at the end of the present fiscal year of \$2,469,479.70 and outstanding short term notes of \$237,400.00.

Financial accounts of the department, tabulation of water works property, statements of revenues, expenses, various special funds, outstanding bond issues and sinking fund requirements, inventories and other statistics may be found in Tables 40 to 64 of the Appendix.

A summary of statistics of the Providence Water Supply Board for the year ended September 30, 1964 may be found in Table 65 of the Appendix.

Respectfully submitted,

PHILIP J. HOLTON, JR.  
*Chief Engineer*

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## APPENDIX

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# LIST OF TABLES

## TABLE

1. SCITUATE WATERSHED—Monthly Rainfall in Inches for Year Ended Sept. 30, 1964.
2. SCITUATE WATERSHED—Monthly and Yearly Rainfall in Inches for 49 Years, 1916-1964.
3. SCITUATE WATERSHED—Monthly and Yearly Runoff in Inches for 49 Years, 1916-1964.
4. SCITUATE WATERSHED—Monthly and Yearly Percent of Rainfall Collected for 49 Years, 1916-1964.
5. SCITUATE WATERSHED—Statistics of Storage for Year Ended Sept. 30, 1964.
6. SCITUATE WATERSHED—Statistics of Draft and Yield for Year Ended Sept. 30, 1964.
7. SCITUATE WATERSHED—Reforestation, Number and Kinds of Trees Planted in Various Years.
8. GAINER DAM—Hydro-Electric Power Generation Statistics.
9. WATER PURIFICATION WORKS—Operating Statistics.
10. WATER PURIFICATION WORKS—Chemicals Used and their Cost.
11. WATER PURIFICATION WORKS—Chemical and Physical Characteristics of Water in Process of Filtration.
12. WATER PURIFICATION WORKS—Chemical and Physical Characteristics of Water in Various Brooks and Reservoirs on Scituate Watershed.
13. WATER PURIFICATION WORKS—Chemical and Physical Characteristics of Water in the Distribution System.
14. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Process of Filtration—48 Hours on Agar at 20° C.
15. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Process of Filtration—24 Hours on Agar at 35° C.
16. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Process of Filtration—Coliform Bacteria.
17. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Various Brooks and Reservoirs on Scituate Watershed.
18. WATER PURIFICATION WORKS—Bacteriological Examination of Water in the Distribution System.
19. WATER PURIFICATION WORKS—Mineral Analysis of Water.
20. WATER PURIFICATION WORKS—Sanitary Chemical Analysis of Water.
21. WATER PURIFICATION WORKS—List of Laboratory Tests and Examinations.
22. WATER DISTRIBUTION SYSTEM—Neutaconkanut Pumping Station Operating Statistics.
23. WATER DISTRIBUTION SYSTEM—Bath Street Pumping Station Operating Statistics.
24. WATER DISTRIBUTION SYSTEM—Aqueduct Distribution Reservoir Statistics.
25. WATER DISTRIBUTION SYSTEM—Neutaconkanut Distribution Reservoir Statistics.
26. WATER DISTRIBUTION SYSTEM—Longview Distribution Reservoir Statistics.
27. WATER DISTRIBUTION SYSTEM—Water Mains Laid, Removed, etc.
28. WATER DISTRIBUTION SYSTEM—Public Water Mains in Use at End of Year.
29. WATER DISTRIBUTION SYSTEM—Gates in Use at End of Year.
30. WATER DISTRIBUTION SYSTEM—Services Installed and Removed.
31. WATER DISTRIBUTION SYSTEM—Services in Use on September 30, 1964.
32. WATER DISTRIBUTION SYSTEM—Fire Hydrants Installed, Removed, and Number in System.
33. WATER METERS—Number, Make and Size of Meters in System.
34. CAPACITY AND CONSUMPTION—1941-1964.
35. WATER CONSUMPTION—Low Service, High Service and Total Consumption for Year.
36. WATER CONSUMPTION—Water Sold to State Institutions and City of Warwick.
37. WATER CONSUMPTION—Water Sold to East Smithfield Water Co. and Kent County Water Authority.
38. WATER CONSUMPTION—Average Daily Consumption for Years 1877-1964.
39. FUEL OIL CONSUMPTION.
40. FINANCIAL STATEMENT OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1964.
41. OPERATING EXPENSES OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1964.
42. STATEMENT OF REVENUE—Estimated and Actual—Year Ended Sept. 30, 1964.
43. ANNUAL WATER WORKS REVENUES—Summary, 1930-1964.
44. WATER WORKS DEPRECIATION AND EXTENSION FUND—Year Ended Sept. 30, 1964.
45. BONDED INDEBTEDNESS AND SINKING FUND REQUIREMENTS—Year Ended Sept. 30, 1964.
46. STATEMENT—Serial Bonds Outstanding—Year Ended Sept. 30, 1964.
47. STATEMENT OF FLOATING DEBT OUTSTANDING—Year Ended Sept. 30, 1964.
48. PERSONAL PROPERTY INVENTORIES as of Sept. 30, 1964.
49. STATEMENT OF STORES REVOLVING FUND—Year Ended Sept. 30, 1964.
50. STATEMENT OF THE MISCELLANEOUS WATER MAIN EXTENSIONS ACCOUNT—Year Ended Sept. 30, 1964.
51. STATEMENT—Account for Inserting New Valves.
52. SPECIAL VALVE INSERTION ACCOUNT—Webster Avenue.
53. ADDITIONS, ALTERATIONS AND IMPROVEMENTS AT THE WATER PURIFICATION WORKS.
54. NEW 40-MILLION GALLON WATER DISTRIBUTION RESERVOIR.
55. REPAIRS TO STRUCTURES AT PONAGANSET AND COOMER RESERVOIRS.
56. REPAIRS AND IMPROVEMENTS TO WESTCONNAUG RESERVOIR DAM.
57. REPAIRS AND RENOVATIONS TO THE HYDRO-ELECTRIC STATION.
58. FURNISHING AND INSTALLING BUTTERFLY VALVES AT WATER PURIFICATION WORKS. APW-R.I.-5G.
59. FURNISHING AND INSTALLING PROVIDENCE STANDARD POST HYDRANTS. APW-R.I.-6G.
60. FURNISHING AND INSTALLING NEW 8 MGD WASH WATER PUMPS AT WATER PURIFICATION WORKS. APW-R.I.-7G.
61. HYDRAULIC STUDIES OF PRESENT AND PROPOSED TUNNEL AND AQUEDUCT.
62. NORTHWESTERLY TRUNK MAIN REINFORCEMENT ACCOUNT.
63. PUMPS—Bath Street Station Account.
64. WATER WORKS PROPERTY—Valuations and Taxes.
65. SUMMARY OF WATER WORKS STATISTICS—Year Ended Sept. 30, 1964.

**TABLE 1**  
**MONTHLY RAINFALL IN INCHES ON SCITUATE WATERSHED**  
**For Year Ended September 30, 1964**

1963-1964	STATIONS ON WATERSHED					Average
	Rocky Hill	Hopkins Mills	North Scituate	Westcott	Gainer Dam	
October.....	1.59	1.47	1.54	1.63	1.70	1.59
November.....	8.43	7.78	8.19	7.94	6.75	7.82
December.....	3.00	2.54	2.84	2.86	2.61	2.77
January.....	6.89	6.52	6.63	5.91	5.67	6.32
February.....	4.33	6.39	4.75	5.11	6.22	5.36
March.....	2.85	2.91	2.55	2.56	2.29	2.63
April.....	5.67	6.11	5.45	5.91	5.12	5.65
May.....	1.15	1.12	1.05	1.23	1.20	1.15
June.....	2.56	3.18	1.12	1.43	1.60	1.98
July.....	4.20	3.62	3.45	4.72	3.31	3.86
August.....	2.38	1.76	2.27	2.59	1.69	2.14
September.....	3.84	3.55	3.43	3.59	3.38	3.56
Total.....	46.89	46.95	43.27	45.48	41.54	44.83*
Monthly Average .....	3.91	3.91	3.61	3.79	3.46	3.74

\*Total of averages.



TABLE 2

## MONTHLY AND YEARLY RAINFALL IN INCHES ON SCITUATE WATERSHED

Year	YEARS ENDED SEPTEMBER 30													Jan.-Dec.	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year	Total
1915-1916.....	2.75(e)	2.88	5.86	1.88	5.88	2.46	3.60	4.83	5.71	7.38	1.33	1.24	45.80	1916	42.56
1916-1917.....	2.61	2.34	3.30	3.96	2.18	4.91	2.70	4.15	4.54	1.51	6.13	2.66	40.99	1917	43.16
1917-1918.....	6.71	0.48	3.23	3.56	3.73	2.15	4.56	3.12	4.49	5.13	4.14	8.79	50.09	1918	47.09
1918-1919.....	1.07	2.60	3.75	4.89	3.42	6.05	4.31	5.99	3.65	5.47	6.65	6.07	53.92	1919	56.42
1919-1920.....	2.29	5.05	2.58	3.03	6.10	4.90	6.28	3.95	7.93	4.44	3.86	3.04	53.45	1920	55.81
1920-1921.....	1.34	5.85	5.09	3.46	3.06	3.72	5.45	3.73	4.30	6.80	2.97	2.53	48.30	1921	47.84
1921-1922.....	1.26	8.02	2.54	1.91	2.67	6.40	1.98	5.22	6.34	8.36	9.09	5.35	59.14	1922	54.76
1922-1923.....	2.92	1.41	3.11	6.78	1.82	3.73	5.92	1.48	4.93	2.78	2.35	2.15	39.38	1923	48.39
1923-1924.....	5.67	5.68	5.10	4.49	2.92	2.80	6.12	3.66	1.49	1.72	5.85	5.28	50.78	1924	39.15
1924-1925.....	0.21	2.23	2.38	4.41	2.22	4.76	2.85	2.72	2.36	6.14	1.70	2.96	34.94	1925	44.45
1925-1926.....	4.32	4.83	5.18	3.26	6.10	3.73	2.46	2.27	1.74	3.80	3.94	1.89	43.52	1926	43.33
1926-1927.....	5.04	5.55	3.55	2.98	3.31	1.59	2.56	3.41	3.36	3.99	8.55	2.61	46.50	1927	52.45
1927-1928.....	5.24	9.22	5.63	2.72	4.32	2.70	5.43	1.45	3.91	5.06	5.50	4.80	55.98	1928	45.59
1928-1929.....	3.99	2.50	3.21	5.20	4.89	3.92	7.56	3.47	2.27	2.06	2.93	1.35	43.35	1929	43.95
1929-1930.....	3.09	3.06	4.15	2.86	2.88	3.23	2.03	2.74	3.05	3.33	3.00	1.35	34.77	1930	35.58
1930-1931.....	3.36	4.65	3.10	3.55	2.57	6.37	3.36	4.19	6.31	3.74	5.96	1.97	49.13	1931	44.43
1931-1932.....	2.22	1.03	3.16	6.16	2.38	6.16	1.97	2.57	2.75	2.57	6.44	11.75	49.16	1932	58.60
1932-1933.....	6.63	7.13	2.09	2.02	3.81	6.55	6.18	3.76	4.04	2.00	3.60	7.56	55.37	1933	48.13
1933-1934.....	3.41	1.48	3.72	3.87	4.53	4.03	5.24	3.98	4.79	2.20	3.89	7.37	48.51	1934	51.14
1934-1935.....	3.25	4.44	3.55	7.24	3.09	1.93	4.76	2.27	5.12	4.10	1.42	3.59	44.76	1935	41.30
1935-1936.....	1.04	5.86	0.88	8.81	4.16	9.31	3.80	1.98	2.98	2.63	3.28	7.72	52.45	1936	57.75
1936-1937.....	2.00	1.25	9.83	5.02	2.45	4.09	5.42	3.05	3.40	1.58	6.47	4.19	48.75	1937	50.58
1937-1938.....	3.92	8.10	2.89	5.29	2.91	2.70	2.60	4.17	8.62	11.49	3.10	6.76	62.55	1938	57.83
1938-1939.....	2.64	3.91	3.64	3.08	5.06	5.86	4.53	0.94	2.95	1.20	6.52	3.47	43.80	1939	44.17
1939-1940.....	5.76	1.40	3.40	2.82	5.97	4.04	6.00	5.76	2.45	4.41	2.01	2.63	46.65	1940	47.18
1940-1941.....	2.00	6.81	2.28	3.12	3.37	2.97	1.36	3.16	4.92	5.90	4.00	0.20	40.09	1941	37.88
1941-1942.....	1.75	3.35	3.78	4.95	3.30	8.35	0.89	2.80	3.88	5.38	4.32	1.94	44.69	1942	51.98
1942-1943.....	4.26	5.52	6.39	3.56	1.95	3.68	3.90	3.87	1.99	3.41	2.15	1.30	41.98	1943	36.84
1943-1944.....	6.38	3.43	1.22	1.79	2.50	5.05	4.11	1.35	3.75	1.74	2.01	11.03	44.36	1944	48.82
1944-1945.....	2.71	8.45	4.33	3.45	5.79	2.13	3.36	4.89	5.17	2.74	3.06	2.84	48.92	1945	52.25
1945-1946.....	2.21	9.03	7.58	3.82	3.81	1.42	2.37	4.92	3.31	2.49	11.48	3.69	56.13	1946	43.01
1946-1947.....	0.48	1.32	3.90	2.98	2.60	3.85	5.40	3.37	4.10	4.86	2.91	4.02	39.79	1947	47.68
1947-1948.....	3.26	6.42	3.91	7.14	2.57	4.26	3.97	9.36	4.20	3.73	3.14	1.59	53.55	1948	55.70
1948-1949.....	4.86	7.43	3.45	4.38	3.62	2.47	4.65	4.03	0.10	1.24	6.07	3.49	45.79	1949	38.58
1949-1950.....	2.27	3.47	2.79	3.68	4.62	3.99	3.68	3.51	2.93	1.62	5.04	2.03	39.63	1950	45.11

1950-1951.....	2.23	7.21	4.57	4.95	4.48	5.91	3.97	5.20	2.71	3.36	3.08	2.41	50.08	1951	55.38
1951-1952.....	4.14	9.64	5.53	4.88	4.81	4.13	4.41	3.97	3.16	1.20	7.33	2.21	55.41	1952	45.26
1952-1953.....	1.94	3.02	4.20	7.38	4.64	9.33	7.54	3.24	1.67	4.27	2.94	2.74	52.91	1953	61.10
1953-1954.....	5.57	6.22	5.56	2.91	3.16	4.36	5.37	4.91	1.55	2.76	9.10	7.63	59.10	1954	57.44
1954-1955.....	3.13	5.65	6.91	1.00	4.96	4.17	4.16	1.78	4.53	2.43	12.75	4.53	56.00	1955	57.74
1955-1956.....	11.48	5.23	0.72	5.39	4.39	7.91	3.84	2.42	2.10	4.13	1.56	3.98	53.15	1956	49.06
1956-1957.....	2.96	4.92	5.46	2.90	2.46	3.33	5.01	1.55	0.72	0.96	1.58	1.58	33.43	1957	36.13
1957-1958.....	3.07	5.50	7.47	8.46	4.50	5.46	7.55	3.84	2.69	7.04	4.58	6.12	66.28	1958	58.88
1958-1959.....	3.83	3.03	1.78	2.56	4.12	7.13	4.41	1.15	5.55	6.74	2.27	0.57	43.14	1959	53.82
1959-1960.....	8.37	5.35	5.60	3.59	5.65	3.27	3.06	4.49	1.15	4.86	2.55	8.10	56.04	1960	47.42
1960-1961.....	3.58	2.86	4.26	3.24	3.48	4.27	5.92	5.65	2.25	3.01	4.02	9.43	51.97	1961	50.52
1961-1962.....	2.60	3.18	3.47	4.55	6.15	3.67	2.16	2.05	4.68	1.33	3.37	3.49	40.70	1962	47.58
1962-1963.....	8.95	4.20	2.98	3.23	3.41	3.71	2.03	3.06	3.36	3.59	1.65	4.41	44.58	1963	40.63
1963-1964.....	1.59	7.82	2.77	6.32	5.36	2.63	5.65	1.15	1.98	3.86	2.14	3.56	44.83	1964	45.58
49 Years Average.....	3.60	4.69	4.00	4.15	3.84	4.40	4.21	3.48	3.59	3.81	4.36	4.12	48.25*	Avg.	48.29
49 Years Maximum.....	11.48	9.64	9.83	8.81	6.15	9.33	7.56	9.36	8.62	11.49	12.75	11.75	66.28	Max.	61.10
49 Years Minimum.....	0.21	0.48	0.72	1.00	1.82	1.42	0.89	0.94	0.10	0.96	1.33	0.20	33.43	Min.	35.58

(e Estimated. \*Total of monthly averages.

TABLE 3

## MONTHLY AND YEARLY RUNOFF IN INCHES ON SCITUATE WATERSHED (92.8 SQ. MI.)

Year	YEARS ENDED SEPTEMBER 30													Jan.-Dec.	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year	Total
1915-1916.....	0.75(e)	1.24(e)	3.03(e)	2.50	3.70	3.99	4.64	3.69	3.42	2.74	1.09	0.42	31.21	1916	28.25
1916-1917.....	0.51	0.58	0.97	1.91	1.30	4.29	3.05	2.79	2.18	0.79	0.71	0.63	19.71	1917	22.41
1917-1918.....	1.79	1.59	1.38	1.83	4.04	3.17	3.40	2.24	1.24	0.47	0.82	1.81	23.78	1918	23.75
1918-1919.....	1.02	1.34	2.37	3.81	2.27	5.01	4.43	3.86	1.27	1.35	0.91	3.33	30.97	1919	32.65
1919-1920.....	1.45	2.25	2.71	1.19	1.69	9.60	5.10	3.73	4.15	1.38	0.79	0.34	34.38	1920	33.29
1920-1921.....	0.37	1.73	3.22	2.79	1.69	4.19	3.68	2.85	0.95	2.56	0.93	0.31	25.27	1921	24.52
1921-1922.....	0.24	1.65	2.68	1.13	1.80	4.81	3.92	3.50	2.39	3.50	3.59	4.39	33.60	1922	33.32
1922-1923.....	1.66	1.26	1.37	4.16	2.46	6.10	4.06	2.68	1.15	0.64	0.40	0.25	26.19	1923	29.75
1923-1924.....	1.27	2.01	4.57	4.52	1.88	3.43	5.70	3.38	1.05	0.20	0.56	0.68	29.25	1924	23.31
1924-1925.....	0.49	0.45	0.97	0.91	3.65	3.41	2.46	1.46	0.52	0.58	0.39	0.32	15.61	1925	19.04
1925-1926.....	0.61	1.48	3.25	2.23	3.11	4.38	3.00	1.70	0.62	0.40	0.42	0.17	21.37	1926	21.03
1926-1927.....	0.76	2.15	2.09	3.34	2.64	3.05	1.71	2.03	1.44	0.32	1.59	0.64	21.76	1927	30.14
1927-1928.....	1.95	6.73	4.70	2.62	3.76	2.86	3.18	2.05	1.15	1.08	1.17	0.80	32.05	1928	23.03
1928-1929.....	1.21	1.16	1.99	4.02	3.65	5.56	6.09	3.56	0.48	0.06	0.07	—0.09	27.76	1929	25.18
1929-1930.....	0.07	0.53	1.18	1.96	2.38	2.74	1.84	0.88	0.42	0.09	0.04	—0.11	12.02	1930	11.82
1930-1931.....	0.12	0.63	0.83	1.56	2.11	5.95	3.21	3.10	2.97	0.69	0.85	0.10	22.12	1931	21.67
1931-1932.....	0.07	0.15	0.91	3.35	2.16	4.10	3.08	1.35	0.39	0.07	0.35	3.27	19.25	1932	30.15
1932-1933.....	3.48	6.29	2.26	2.24	2.70	6.28	6.88	1.93	1.57	0.17	0.25	1.52	35.57	1933	27.13
1933-1934.....	0.95	0.82	1.82	3.78	1.18	5.48	6.08	2.88	1.47	0.08	0.14	1.40	26.08	1934	28.94
1934-1935.....	1.33	1.91	3.21	4.78	2.83	4.22	4.05	1.71	1.78	0.62	—0.14	0.26	26.56	1935	21.82
1935-1936.....	—0.13	1.09	0.75	3.94	1.93	11.51	4.45	1.59	0.44	0.03	—0.02	0.82	26.40	1936	31.64
1936-1937.....	0.46	0.43	6.06	4.59	2.77	3.34	3.79	2.52	0.75	0.02	0.60	0.57	25.90	1937	27.16
1937-1938.....	0.79	4.17	3.25	4.15	2.99	2.99	2.29	1.84	2.85	6.93	1.32	1.66	35.23	1938	33.76
1938-1939.....	1.22	1.90	3.62	2.11	4.12	5.24	4.90	1.08	0.31	—0.24	0.22	0.09	24.57	1939	21.35
1939-1940.....	0.63	1.35	1.54	2.03	1.51	4.86	6.89	3.17	1.65	0.84	—0.14	—0.04	24.29	1940	23.98
1940-1941.....	—0.07	1.63	1.65	1.53	2.88	2.42	1.65	1.16	1.33	0.54	0.10	—0.41	14.41	1941	12.43
1941-1942.....	—0.15	0.52	0.86	1.87	2.54	7.14	1.75	1.06	0.59	0.86	0.26	—0.17	17.13	1942	22.77
1942-1943.....	0.45	1.86	4.56	2.45	3.46	4.40	2.68	3.01	0.36	0.02	—0.16	—0.22	22.87	1943	17.97
1943-1944.....	0.60	0.95	0.42	0.73	1.23	3.24	3.53	1.08	0.43	—0.26	—0.31	1.73	13.37	1944	18.61
1944-1945.....	0.50	3.16	3.55	2.91	2.58	5.61	2.15	3.10	1.26	0.15	—0.12	—0.15	24.70	1945	24.02
1945-1946.....	0.06	1.88	4.59	3.93	2.98	3.70	1.43	2.50	1.65	0	2.35	0.56	25.63	1946	21.08
1946-1947.....	0.49	0.30	1.19	2.16	1.52	4.01	3.31	2.86	1.09	0.53	0.12	0.31	17.89	1947	20.47
1947-1948.....	0.23	2.94	1.39	1.55	3.15	7.16	3.76	5.25	3.12	0.56	0.15	—0.21	29.05	1948	29.08
1948-1949.....	0.35	2.24	2.00	3.57	3.22	2.92	3.20	1.78	—0.02	—0.26	0.02	0.09	19.11	1949	16.40
1949-1950.....	0.05	0.57	1.26	2.03	2.42	4.16	3.01	2.20	1.00	—0.11	0.22	—0.02	16.79	1950	19.39

1950-1951.....	0.04	1.85	2.59	3.24	4.95	4.36	4.30	2.70	1.21	0.14	0.07	-0.07	25.38	1951	30.16
1951-1952.....	0.34	4.62	4.30	4.24	3.30	5.02	2.97	2.46	0.98	-0.35	0.53	-0.20	28.21	1952	20.27
1952-1953.....	-0.20	0.37	1.15	4.61	4.35	7.24	6.36	3.20	0.20	0.07	-0.05	-0.13	27.17	1953	32.41
1953-1954.....	0.38	1.86	4.32	2.12	2.66	3.56	4.01	3.71	0.33	-0.01	0.93	3.96	27.83	1954	32.15
1954-1955.....	1.33	3.65	5.90	2.46	3.61	4.26	2.76	1.62	0.89	0.02	4.04	1.19	31.73	1955	35.13
1955-1956.....	7.22	5.56	1.50	3.27	4.09	4.57	6.57	1.98	0.96	0.37	-0.22	0.05	35.92	1956	25.87
1956-1957.....	0.23	1.10	2.90	2.41	2.10	2.78	4.54	0.58	-0.18	-0.41	-0.38	-0.22	15.45	1957	14.20
1957-1958.....	0.06	0.52	2.40	6.59	2.69	6.03	6.89	3.88	0.83	0.85	0.86	1.31	32.91	1958	35.65
1958-1959.....	2.05	1.85	1.83	1.65	2.58	5.86	4.52	1.45	1.23	2.09	0.07	-0.23	24.95	1959	26.29
1959-1960.....	1.17	2.18	4.40	3.29	5.09	3.15	4.01	2.19	0.35	0.38	0.00	1.54	27.75	1960	25.51
1960-1961.....	0.98	2.11	2.42	2.21	3.68	4.97	4.75	3.63	1.30	0.25	0.20	2.30	28.80	1961	27.93
1961-1962.....	1.28	1.53	1.83	4.32	1.66	5.24	3.61	1.53	0.98	-0.09	0.04	0.07	22.01	1962	24.34
1962-1963.....	1.89	2.97	2.12	1.81	1.88	4.47	1.69	1.88	0.54	0.10	-0.25	-0.02	19.08	1963	15.25
1963-1964.....	-0.11	1.59	1.67	4.68	2.82	3.47	4.61	0.87	0.01	0.03	-0.14	-0.11	19.39	1964	18.06
49 Years Average.....	0.86	1.89	2.48	2.88	2.77	4.70	3.88	2.39	1.16	0.63	0.52	0.70	24.86*	Avg.	24.79
49 Years Maximum.....	7.22	6.73	6.06	6.59	5.09	11.51	6.89	5.25	4.15	6.93	4.04	4.39	35.92	Max.	35.65
49 Years Minimum.....	-0.20	0.15	0.42	0.73	1.18	2.42	1.43	0.58	-0.18	-0.41	-0.38	-0.41	12.02	Min.	11.82

(e Estimated. \*Total of monthly averages.

TABLE 4

## MONTHLY AND YEARLY PERCENT OF RAINFALL COLLECTED ON SCITUATE WATERSHED

Year	YEARS ENDED SEPTEMBER 30													Jan.-Dec.	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year	Total
1915-1916.....	27.3(e)	43.0(e)	51.7(e)	133.0	62.9	162.2	128.9	76.4	59.9	37.1	82.0	33.9	68.1	1916	66.4
1916-1917.....	19.5	24.8	29.4	48.2	59.6	87.4	113.0	67.2	48.0	52.3	11.6	23.7	48.1	1917	51.9
1917-1918.....	26.7	331.2	42.7	51.4	108.3	147.4	74.6	71.8	27.6	9.2	19.8	20.6	47.5	1918	50.4
1918-1919.....	95.3	51.5	63.2	77.9	66.4	82.8	102.8	64.4	34.8	24.7	13.7	54.8	57.4	1919	57.9
1919-1920.....	63.3	44.6	105.0	39.3	27.7	195.9	81.2	94.4	52.3	31.1	20.5	11.2	64.3	1920	59.6
1920-1921.....	27.6	29.6	63.3	80.6	55.2	112.6	67.5	76.4	22.1	37.6	31.3	12.2	52.3	1921	51.2
1921-1922.....	19.0	20.6	105.5	59.2	67.4	75.2	198.0	67.0	37.7	41.9	39.5	82.0	56.8	1922	60.8
1922-1923.....	56.8	89.4	44.0	61.4	135.2	163.5	68.6	181.1	23.3	23.0	17.0	11.6	66.5	1923	61.5
1923-1924.....	22.4	35.4	89.6	100.7	64.4	122.5	93.1	92.3	70.5	11.6	9.6	12.9	57.6	1924	59.5
1924-1925.....	233.3	20.2	40.8	20.6	164.4	71.6	86.3	53.7	22.0	9.4	22.9	10.8	44.7	1925	42.8
1925-1926.....	14.1	30.6	62.7	68.4	51.0	117.4	122.0	74.9	35.6	10.5	10.6	9.0	49.1	1926	48.5
1926-1927.....	15.1	38.7	58.9	112.1	79.8	191.8	66.8	59.5	42.8	8.0	18.6	24.5	46.8	1927	57.5
1927-1928.....	37.2	73.0	83.5	96.3	87.0	105.9	58.6	141.4	29.4	21.3	21.3	16.7	57.2	1928	50.5
1928-1929.....	30.3	46.4	62.0	77.3	74.6	141.8	80.6	102.6	21.1	2.9	2.4	-6.7	64.0	1929	57.3
1929-1930.....	2.3	17.3	28.4	68.5	82.6	84.8	90.6	32.1	13.8	2.7	1.3	-8.1	34.6	1930	33.2
1930-1931.....	3.6	13.5	26.8	43.9	82.1	93.4	95.5	74.0	47.1	18.4	14.3	5.1	45.0	1931	48.8
1931-1932.....	3.2	14.6	28.8	54.4	90.8	66.6	156.3	52.5	14.2	2.7	5.4	27.8	39.2	1932	51.4
1932-1933.....	52.5	88.2	108.1	110.9	70.9	95.9	111.3	51.3	38.9	8.5	6.9	20.1	64.2	1933	56.4
1933-1934.....	27.9	55.4	48.9	97.7	26.0	136.0	116.0	72.4	30.7	3.6	3.6	19.0	53.8	1934	56.6
1934-1935.....	40.9	43.0	90.4	66.0	91.6	218.6	85.1	75.3	34.8	15.1	-9.8	7.2	59.3	1935	52.8
1935-1936.....	-12.5	18.6	85.2	44.7	46.4	123.6	117.1	80.3	14.8	1.1	-0.6	10.6	50.3	1936	54.8
1936-1937.....	23.0	34.4	61.6	91.4	113.1	81.7	69.9	82.6	22.0	1.3	9.3	13.6	53.1	1937	53.7
1937-1938.....	20.2	51.5	112.5	78.4	102.7	110.7	88.1	44.1	33.1	60.3	42.6	24.6	56.3	1938	58.4
1938-1939.....	46.2	48.6	99.4	68.5	81.4	89.4	108.2	114.9	10.5	-20.0	3.4	2.6	56.1	1939	48.3
1939-1940.....	10.9	96.4	45.3	72.0	25.3	120.3	114.8	55.0	67.3	19.0	-7.0	-1.5	52.1	1940	50.8
1940-1941.....	-3.5	23.9	72.4	49.0	87.4	81.5	121.3	36.7	27.0	9.2	2.5	-205.0	35.9	1941	32.8
1941-1942.....	-8.6	15.5	22.8	37.8	77.0	85.5	196.6	37.8	15.2	16.0	6.0	-8.8	38.3	1942	43.8
1942-1943.....	10.6	33.7	71.4	68.8	177.4	119.6	68.7	77.8	18.1	0.6	-7.4	-16.9	54.5	1943	48.8
1943-1944.....	9.4	27.7	34.4	40.8	49.2	64.2	85.9	80.0	11.5	-14.9	-15.4	15.7	30.1	1944	38.1
1944-1945.....	18.4	37.4	82.0	84.3	44.6	263.4	64.0	63.4	24.4	5.5	-3.9	-5.3	50.5	1945	46.0
1945-1946.....	2.7	20.8	60.6	102.9	78.2	260.6	60.3	50.8	49.8	0	20.5	15.2	45.7	1946	49.0
1946-1947.....	102.1	22.7	30.5	72.5	58.5	104.2	61.3	84.9	26.6	10.9	4.1	7.7	45.0	1947	42.9
1947-1948.....	7.0	45.8	35.5	21.7	122.6	168.1	94.7	56.1	74.3	15.0	4.8	-13.2	54.2	1948	52.2
1948-1949.....	7.2	30.1	58.0	81.5	89.0	118.2	68.8	44.2	-20.0	-21.0	0.3	2.6	41.7	1949	42.5
1949-1950.....	2.2	16.4	45.2	55.2	52.4	104.3	81.8	62.7	34.1	-6.8	4.4	-1.0	42.4	1950	43.0

1950-1951.....	1.8	25.6	56.7	65.4	110.5	73.8	108.3	51.9	44.6	4.2	2.3	-2.9	50.7	1951	54.5
1951-1952.....	8.2	47.9	77.8	86.9	68.6	121.5	67.3	61.7	31.0	-29.2	7.2	-9.0	50.9	1952	44.8
1952-1953.....	-10.3	12.2	27.4	62.5	93.8	77.6	84.4	98.8	12.0	1.6	-1.7	-4.7	51.4	1953	53.0
1953-1954.....	6.8	29.9	77.7	72.8	84.2	81.6	74.7	75.6	21.3	-0.4	10.2	51.9	47.1	1954	56.0
1954-1955.....	42.5	64.6	85.4	246.0	72.8	102.2	66.3	91.0	19.6	0.8	32.7	26.3	56.7	1955	60.8
1955-1956.....	62.9	122.7	208.3	60.7	93.2	57.8	171.1	81.8	45.7	8.9	-14.1	1.2	67.6	1956	52.7
1956-1957.....	7.8	22.4	53.1	83.1	85.4	83.5	90.6	37.4	-25.0	-42.7	-24.1	-13.9	46.2	1957	39.3
1957-1958.....	2.0	9.5	32.1	77.9	59.8	110.4	91.3	101.0	30.9	12.1	18.8	21.4	49.7	1958	60.5
1958-1959.....	53.5	61.1	102.8	64.5	62.6	82.2	102.5	126.1	22.2	31.0	3.1	-40.4	57.8	1959	48.8
1959-1960.....	14.0	40.7	78.6	91.6	90.1	96.3	131.0	48.8	30.4	7.8	-0.1	19.0	49.6	1960	53.8
1960-1961.....	27.4	73.8	56.8	68.2	105.7	116.4	80.2	64.2	57.8	8.3	5.0	24.4	55.4	1961	55.3
1961-1962.....	49.2	48.1	52.7	94.9	27.0	142.3	167.1	74.6	20.9	-6.8	1.2	2.0	54.1	1962	51.1
1962-1963.....	21.1	70.7	71.1	56.0	55.1	120.5	83.3	61.4	16.1	2.8	-15.2	-0.5	42.8	1963	37.5
1963-1964.....	-6.9	20.3	60.3	74.1	52.6	131.9	81.6	75.7	0.5	0.8	-6.5	-3.1	43.3	1964	39.6
49 Years Average.....	23.9	40.3	62.0	69.4	72.1	106.8	92.2	68.7	32.3	16.5	11.9	17.0	51.5	Avg.	51.3
49 Years Maximum.....	233.3	331.2	208.3	246.0	177.4	263.4	198.0	181.1	74.3	60.3	82.0	82.0	68.1	Max.	66.4
49 Years Minimum.....	-12.5	9.5	22.8	20.6	25.3	57.8	58.6	32.1	-25.0	-42.7	-24.1	-205.0	30.1	Min.	32.8

(p Estimated.

TABLE 5

## SCITUATE WATERSHED

(92.8 Square Miles)

Statistics of Storage for Year Ended September 30, 1964

1963-1964	1 Regulating Reservoir		2 Westconnaug Reservoir		3 Barden Reservoir		4 Moswansicut Reservoir		5 Ponaganset Reservoir		Total 1-5		6 Scituate Reservoir		Total 1-6	
	Avail. Storage		Avail. Storage		Avail. Storage		Avail. Storage		Avail. Storage		Avail. Storage		Avail. Storage		Avail. Storage	
	Elev.	M. G.	Elev.	M. G.	Elev.	M. G.	Elev.	M. G.	Elev.	M. G.	Elev.	% of Total Avail.	Elev.	M. G.	Elev.	% of Total Avail.
October.....	283.65	286	442.17	3	314.66	0	301.25	650	632.83	677	1,616	51.5	278.08	30,380	31,996	80.5
November.....	282.80	229	445.15	50	314.66	0	301.10	636	632.65	664	1,579	50.4	275.77	28,065	29,644	74.6
December.....	285.75	441	447.40	125	345.60	893	302.05	730	633.68	741	2,930	93.5	274.90	27,206	30,136	75.8
January.....	285.60	429	449.95	236	345.30	869	301.95	720	633.60	735	2,989	95.3	275.36	27,653	30,642	77.1
February.....	285.70	437	454.60	477	344.10	774	302.10	735	634.15	778	3,201	102.1	280.15	32,531	35,732	89.9
March.....	285.62	431	452.95	384	344.00	766	302.00	725	633.67	741	3,047	97.2	280.37	32,754	35,801	90.1
April.....	285.68	436	453.75	429	345.40	877	302.00	725	633.90	758	3,225	102.9	282.17	34,642	37,867	95.3
May.....	285.60	429	453.25	401	344.30	789	302.00	725	633.85	755	3,099	98.9	284.68	37,362	40,461	101.8
June.....	285.55	425	453.10	392	344.29	788	301.85	710	633.30	712	3,027	96.6	283.53	36,097	39,124	98.4
July.....	285.30	405	452.85	379	345.15	857	301.75	700	631.57	589	2,930	93.5	281.43	33,850	36,780	92.5
August.....	284.85	371	452.65	369	345.15	857	301.70	695	631.34	573	2,865	91.4	279.43	31,773	34,638	87.1
September.....	283.80	297	452.30	353	345.00	845	301.50	675	631.10	558	2,728	87.0	277.21	29,510	32,238	81.1
Maximum for Year	January 25 286.20	479	February 1 454.60	477	January 25 346.70	983	January 25 302.25	751	January 25 634.35	793	January 25 3,438	109.7	April 20, 21 285.41	38,171	April 18 41,281	103.9
Minimum for Year	October 26 282.65	220	October 1, 5 442.17	3	October 1 to November 1 314.66	0	October 26 301.07	633	September 12 to September 30 631.02	552	October 26 1,558	49.7	November 29 274.44	26,771	November 23 29,570	74.4
1. Regulating	Reservoir—Spillway	Elev.	285.50;	Total Storage	428 M.G.;	Dead Storage	7 M.G.;	Total Available Storage	421 M.G.							
2. Westconnaug	"	"	454.17;	"	"	453	"	"	453							
3. Barden	"	"	345.10;	"	"	853	"	"	0							
4. Moswansicut	"	"	301.90;	"	"	1,781	"	"	0							
5. Ponaganset	"	"	633.05;	"	"	742	"	"	49							
Total 1-5				Total Storage	4,257 M.G.;	Dead Storage	1,122 M.G.;	Total Available Storage	*3,135 M.G.							
6. Scituate	Reservoir—Spillway	Elev.	284.01;	"	"	37,011	"	"	400							
Total 1-6				Total Storage	41,268 M.G.;	Dead Storage	1,522 M.G.;	Total Available Storage	†39,746 M.G.							

Note: Elevations shown are in feet above mean high water in Providence Harbor.  
Statistics shown are for the first day (7 A.M.) of the month indicated.

**TABLE 6**  
**SCITUATE WATERSHED**  
**(92.8 Square Miles)**

**Draft and Yield for the Year Ended September 30, 1964**

1963-1964	DRAFT FROM SCITUATE RESERVOIR Million Gallons				WATERSHED YIELD Million Gallons				
	To River Over Spillway	Below Gainer Dam Through Gatehouse	Total	To Water Purification Works	Total For Month	Average per Day	For Month	Average per Day 1963-1964	49-Year Mean 1916-1964
October.....	0	649.12	649.12	1,525.19	2,174.31	70.14	—177.69	—5.73	44.74
November.....	0	760.68	760.68	1,314.83	2,075.51	69.18	2,567.51	85.58	101.60
December.....	0	833.80	833.80	1,347.19	2,180.99	70.35	2,686.99	86.68	129.02
January.....	0	1,040.26	1,040.26	1,412.75	2,453.01	79.13	7,543.01	243.32	149.83
February.....	0	3,130.82	3,130.82	1,347.98	4,478.80	154.44	4,547.80	156.82	158.14
March.....	0	2,064.49	2,064.49	1,467.00	3,531.49	113.92	5,597.49	180.56	244.51
April.....	201.42	3,211.19	3,412.61	1,422.87	4,835.48	161.18	7,429.48	247.65	208.58
May.....	42.95	904.80	947.75	1,788.68	2,736.43	88.27	1,399.43	45.14	124.34
June.....	0	428.86	428.86	1,938.72	2,367.58	78.92	23.58	0.79	62.36
July.....	0	377.81	377.81	1,820.78	2,198.59	70.92	56.59	1.83	32.78
August.....	0	512.15	512.15	1,660.28	2,172.43	70.08	—227.57	—7.34	27.05
September.....	0	431.29	431.29	1,680.21	2,111.50	70.38	—177.50	—5.92	37.63
For Year.....	†244.37	14,345.27	14,589.64	18,726.48	33,316.12	91.03	31,269.12	85.43	109.77

†Includes Flashboard Leakage.



TABLE 7

## SCITUATE WATERSHED — REFORESTATION

## Number and Kinds of Trees Planted in Various Years

Planted During Calendar Year	Balsam Fir	Red Pine	White Pine	Douglas Fir	Austrian Pine	Scotch Pine	Jack Pine	White Spruce	Norway Spruce	Hemlock	Larch	Total Number Planted Yearly
1926.....	0	160,000	40,000	0	0	0	0	0	0	0	0	200,000
1927.....	0	60,000	150,000	0	0	0	0	0	0	0	0	210,000
1928.....	0	10,000	10,000	0	0	0	0	0	0	0	0	20,000
1929.....	0	10,000	75,000	0	0	0	0	0	0	0	0	85,000
1930.....	0	40,000	40,000	0	0	0	0	0	0	0	0	80,000
1931.....	0	40,000	50,000	0	0	0	0	9,000	0	0	0	99,000
1932.....	0	40,000	40,000	0	0	0	0	20,000	0	0	0	100,000
1933.....	0	0	0	0	0	0	0	0	0	0	0	0
1934 and 1935.....	0	755,000	255,000	0	36,000	136,000	4,000	505,000	204,000	3,000	0	1,898,000
1936.....	0	453,700	111,000	0	14,400	0	0	20,000	15,000	26,000	0	640,100
1937.....	0	481,100	0	0	0	0	0	213,200	0	0	0	694,300
1938.....	0	229,000	21,693	0	0	0	0	0	0	0	0	250,693
1939.....	0	8,000	761,000	0	0	0	50,000	0	0	0	0	819,000
1940.....	0	267,387	618,828	0	45,916	0	67,750	0	0	0	0	999,881
1941.....	0	51,000	295,650	0	0	0	0	34,350	0	0	0	381,000
1942.....	0	0	308,120	0	0	0	0	0	0	0	0	308,120
1943.....	0	0	0	0	0	0	0	0	0	0	0	0
1944.....	0	0	0	0	0	0	0	0	0	0	0	0
1945.....	0	0	0	0	0	0	0	0	0	0	0	0
1946.....	0	0	0	0	0	0	0	0	0	0	0	0
1947.....	0	0	0	0	0	0	0	0	0	0	0	0
1948.....	0	0	0	0	0	0	0	0	0	0	0	0
1949.....	0	0	0	0	0	0	0	0	0	0	0	0
1950.....	0	0	0	0	0	0	0	0	0	0	0	0
1951.....	0	0	1,500	12,000	0	0	0	0	0	0	0	13,500
1952.....	0	20,000	0	0	0	0	0	10,000	0	0	10,000	40,000
1953.....	0	10,000	0	0	0	0	0	6,000	0	0	0	16,000
1954.....	2,000	0	0	2,000	0	0	0	0	0	0	6,000	10,000
1955.....	0	0	5,000	0	0	0	0	0	0	0	5,000	10,000
1956.....	0	0	5,000	0	4,500	0	0	0	0	0	0	9,500
1957.....	0	0	6,000	0	0	0	0	0	0	0	0	6,000
1958.....	0	2,700	2,000	0	0	0	0	0	0	0	0	4,700
1959.....	0	0	0	0	0	0	0	0	0	0	0	0
1960.....	140	540	6,874	784	405	0	0	3,401	49	0	3,461	15,654
1961.....	0	0	2,300	144	0	0	0	0	0	2,000	0	4,444
1962.....	0	0	5,000	0	0	0	0	150	0	2,000	2,000	9,150
1963.....	0	0	5,000	0	0	0	0	170	0	5,000	5,000	15,170
1964.....	0	0	5,000	0	0	0	0	510	0	5,000	5,000	15,510
TOTALS.....	2,140	2,638,427	2,819,965	14,928	101,221	136,000	121,750	821,781	219,049	43,000	36,461	6,954,722

**TABLE 8**  
**GAINER DAM HYDRO-ELECTRIC PLANT\***  
**Power Statistics on the Basis of the "Contract Year" with**  
**The Narragansett Electric Company**

Contract Year	KWH Generated at Gainer Dam	KWH Used at Gainer Dam and Water Purification Works	Net KWH Delivered to Narragansett Electric Co.	Payment Received
(Period June 20-30, 1930).....	87,000	6,470	75,100	\$ 300.40
July 1930—June 1931.....	3,023,000	152,940	2,758,340	20,000.00
July 1931—June 1932.....	4,201,500	158,070	3,980,570	19,600.00
July 1932—June 1933.....	7,024,900	155,210	6,697,656	26,790.62
July 1933—June 1934.....	5,080,900	152,420	4,837,371	19,349.48
July 1934—June 1935.....	7,102,900	174,710	6,756,101	27,024.40
July 1935—June 1936.....	5,761,200	173,530	5,394,176	21,576.70
July 1936—June 1937.....	5,626,000	174,110	5,262,807	21,051.23
July 1937—June 1938.....	6,438,300	156,710	6,069,927	24,279.71
July 1938—June 1939.....	8,915,000	159,860	8,457,980	33,831.92
July 1939—June 1940.....	4,681,100	231,850	4,329,115	17,316.46
July 1940—June 1941.....	3,291,200	185,540	2,982,991	16,000.00
July 1941—June 1942.....	2,585,300	194,250	2,322,916	15,600.00
July 1942—June 1943.....	4,655,800	170,520	4,372,359	17,489.44
July 1943—June 1944.....	2,290,100	183,250	2,096,811	14,597.25
July 1944—June 1945.....	4,146,200	187,080	3,879,622	15,518.49
July 1945—June 1946.....	4,754,100	200,200	4,460,596	17,343.70
July 1946—June 1947.....	3,494,400	251,270	3,224,049	13,600.00
July 1947—June 1948.....	5,576,900	249,940	5,313,209	21,252.84
July 1948—June 1949.....	3,790,500	264,160	3,521,404	14,085.62
July 1949—June 1950.....	1,972,200	303,460	1,548,000	9,288.00
July 1950—June 1951.....	4,965,900	322,220	4,476,900	26,861.40
July 1951—June 1952.....	6,381,400	329,080	5,836,700	35,020.20
July 1952—June 1953.....	4,993,400	351,080	4,429,900	26,579.40
July 1953—June 1954.....	3,945,700	389,050	3,389,000	20,334.00
July 1954—June 1955.....	6,776,900	422,250	6,111,000	36,666.00
July 1955—June 1956.....	9,521,700	480,300	8,747,900	52,487.40
July 1956—June 1957.....	2,195,400	466,480	1,608,100	9,648.60
July 1957—June 1958.....	4,141,000	541,760	3,432,900	**20,597.40
July 1958—June 1959.....	4,987,600	504,310	4,297,300	25,783.80
July 1959—June 1960.....	5,754,000	515,280	5,078,000	30,468.00
July 1960—June 1961.....	4,912,500	583,050	4,159,400	24,956.40
July 1961—June 1962.....	3,998,900	614,800	3,267,600	19,605.60
July 1962—June 1963.....	2,116,200	679,400	1,334,800	8,008.80
July 1963—June 1964.....	2,550,450	735,790	1,716,800	10,418.40

\*1875 KVA 3 Phase, 60 Cycle, 2300 Volts, 80 Ft. Head Turbo-Generator.

\*\*Involves net exchange for portion of previous year.

TABLE 9

## WATER PURIFICATION WORKS

Operating Statistics for Year Ended September 30, 1964

1963-1964	Influent Aerator — Hours Operated	Plant Influent Mil. Gals.		Water Filtered Mil. Gals.		Wash Water Mil. Gals.			Plant Effluent Mil. Gals.		Plant Effluent Flow — Hours	Number of Filters in Operation		
		Total	Average per Day	Total	Average per Day	Total	Average per Day	% of Water Filt.	Total	Average per Day		Max.	Min.	Avg.
October.....	742.2	1,525.195	49.200	1,466.970	47.322	16.091	0.519	1.1	1,450.879	46.803	742.2	12.0	5.0	8.2
November.....	710.1	1,314.829	43.828	1,296.600	43.220	14.955	0.499	1.2	1,281.645	42.722	710.8	12.0	3.0	7.5
December.....	744.0	1,347.189	43.458	1,343.467	43.338	9.314	0.300	0.7	1,334.153	43.037	744.0	10.0	4.5	7.4
January.....	742.5	1,412.751	45.573	1,418.328	45.753	8.909	0.287	0.6	1,409.419	45.465	744.0	10.0	3.5	7.8
February.....	691.3	1,347.985	46.482	1,335.644	46.057	9.184	0.317	0.7	1,326.460	45.740	696.0	10.0	5.0	7.9
March.....	742.3	1,467.001	47.323	1,445.353	46.624	9.963	0.321	0.7	1,435.390	46.303	744.0	10.0	4.5	7.9
April.....	703.6	1,422.868	47.429	1,403.213	46.774	8.244	0.275	0.6	1,394.969	46.499	719.0	11.0	5.0	8.0
May.....	744.0	1,788.677	57.699	1,761.759	56.831	17.064	0.550	1.0	1,744.695	56.280	744.0	13.5	4.5	8.3
June.....	706.2	1,938.724	64.624	1,932.184	64.406	14.862	0.495	0.8	1,917.322	63.911	720.0	14.0	4.0	8.8
July.....	744.0	1,820.775	58.735	1,793.149	57.844	11.970	0.386	0.7	1,781.179	57.457	744.0	14.0	3.5	7.9
August.....	744.0	1,660.275	53.557	1,665.664	53.731	11.895	0.384	0.7	1,653.769	53.347	744.0	11.0	4.0	7.3
September.....	720.0	1,680.209	56.007	1,671.839	55.728	17.542	0.585	1.0	1,654.297	55.143	720.0	12.0	3.5	8.4
Totals.....	8,734.2	18,726.478	.....	18,534.170	.....	149.993	.....	.....	18,384.177	.....	8,772.0	.....	.....	.....
Average.....	727.9	.....	51.165	.....	50.640	.....	0.410	0.8	.....	50.230	731.0	.....	.....	8.0

Raw water treated with Ferri-Floc before Influent Aeration.

Quicklime added to Ferri-Floc treated water in conduit to tangential mixer.

Chlorine added to water after filtration.

Sodium Silicofluoride added to water after filtration.

Raw water drawn from lower intake at Gainer Memorial Dam all year.

Note:—Influent aerator and plant effluent shut down for various lengths of time to replace influent gate valves with butterfly valves, to replace aerator nozzles, and to replace filter influent and drain sluice gates with butterfly valves.

**TABLE 9 (Continued)**  
**WATER PURIFICATION WORKS**

Operating Statistics for Year Ended September 30, 1964

1963-1964	Average Rate of Filtration per Filter M.G.D.		Number of Filters Washed		Ferri-Floc Used			Quicklime Used			Chlorine Used			Sodium Silicofluoride Used		
			Avg. per Day	Average Filter Run Hours	Lbs.	Avg. per Day	Gr. per Gal.	Lbs.	Avg. per Day	Gr. per Gal.	Lbs.	Avg. per Day	Parts per Mil.	Lbs.	Avg. per Day	Parts per Mil.*
October.....	5.76	115	3.7	45.28	152,098	4,906	0.70	137,596	4,439	0.63	4,871	157	0.41	17,518	565	0.87
November.....	5.80	102	3.4	66.84	133,977	4,466	0.71	116,530	3,884	0.63	4,036	135	0.38	15,278	509	0.86
December.....	5.83	79	2.5	67.95	136,968	4,418	0.71	121,142	3,908	0.63	3,403	110	0.31	15,865	512	0.86
January.....	5.84	89	2.9	64.57	143,879	4,641	0.71	124,256	4,008	0.62	3,113	100	0.27	17,020	549	0.87
February.....	5.86	81	2.8	68.70	137,306	4,735	0.71	121,794	4,200	0.63	2,754	95	0.25	16,533	579	0.91
March.....	5.88	88	2.8	67.33	149,430	4,820	0.71	133,284	4,299	0.64	2,968	96	0.25	17,896	577	0.90
April.....	5.86	70	2.3	78.76	144,677	4,823	0.71	131,949	4,398	0.65	2,882	96	0.25	18,302	610	0.94
May.....	6.83	124	4.0	51.28	182,521	5,888	0.71	166,890	5,384	0.65	3,614	117	0.25	23,343	753	0.97
June.....	7.30	105	3.5	59.66	197,872	6,596	0.72	185,838	6,195	0.67	4,014	134	0.25	25,949	865	0.98
July.....	7.29	86	2.8	69.94	177,173	5,715	0.68	179,675	5,796	0.69	3,763	121	0.26	23,028	743	0.94
August.....	7.32	84	2.7	65.96	156,115	5,036	0.66	169,455	5,466	0.71	3,476	112	0.26	21,145	682	0.92
September.....	6.64	123	4.1	48.54	162,481	5,416	0.68	171,890	5,730	0.72	3,452	115	0.25	20,973	699	0.92
Totals.....	.....	1,146	.....	.....	1,874,497	.....	.....	1,760,299	.....	.....	42,346	.....	.....	232,850	.....	.....
Average.....	6.36	.....	3.1	62.14	.....	5,122	0.70	.....	4,810	0.66	.....	116	0.28	.....	636	0.92

Total filter hours for year, 69,902.79; average per day, 190.99.

Average quantity of water filtered per filter per run, 16.47 m. g.

\*Dosage expressed as p.p.m. of Fluoride ion.

**TABLE 10**  
**WATER PURIFICATION WORKS**  
**Chemicals Used During the Fiscal Year Ended September 30, 1964**

Chemicals	Pounds of Chemicals Used		Total Gallons of Water Treated	Cost of Chemicals	Pounds of Chemicals Used per 1,000,000 Gals. of Water Treated (Average)	Cost of Chemicals per 1,000,000 Gals. of Water Treated
	Total	Lbs. per Day (Average)				
Ferri-Floc.....	1,874,497	5,122	18,724,357,000	\$50,651.37	100.11	\$2.71
Quicklime.....	1,760,299	4,810	18,723,253,000	17,922.67	94.02	0.96
Chlorine.....	42,346	116	18,129,224,000	2,858.36	2.34	0.16
Sodium Silicofluoride.....	232,850	636	18,108,010,000	19,139.61	12.86	1.06
<b>Totals.....</b>	<b>3,909,992</b>	.....	.....	<b>\$90,572.01</b>	.....	<b>\$4.89</b>

Price of Ferri-Floc—From Oct. 1, 1963 to Sept. 30, 1964—\$54.05 per ton.

Price of Quicklime—From Oct. 1, 1963 to June 25, 1964—\$20.40 per ton; from June 26 to Sept. 30, 1964—\$20.27 per ton.

Price of Chlorine—From Oct. 1, 1963 to Sept. 30, 1964—\$135.00 per ton.

Price of Sodium Silicofluoride—From Oct. 1, 1963 to Aug. 11, 1964—\$164.40 per ton; from Aug. 12 to Sept. 30, 1964—\$164.00 per ton.

**TABLE 11**  
**WATER PURIFICATION WORKS**

\*Chemical and Physical Characteristics of Water in Process of Filtration

Year Ended September 30, 1964

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Alkalinity</b>													
Raw.....	5.9	5.3	4.4	4.3	4.1	4.1	3.9	4.0	4.0	4.1	4.0	4.7	4.4
**Effluent.....	16.1	14.9	14.0	13.2	14.1	13.9	14.1	13.8	14.5	15.2	16.4	16.8	14.8
Tap.....	14.6	13.5	12.4	11.6	12.6	12.3	12.6	12.8	12.9	13.5	14.9	15.3	13.3
<b>Hardness</b>													
Raw.....	10	10	10	10	10	11	11	11	11	11	11	12	11
**Effluent.....	27	26	26	26	27	29	29	30	29	28	30	31	28
Tap.....	28	27	27	26	28	30	30	30	30	28	31	32	29
<b>pH</b>													
Raw.....	6.8	6.8	6.6	6.3	6.3	6.3	6.3	6.2	6.0	5.8	5.8	6.0	6.3
Aerated Influent.....	4.5	4.3	4.3	4.2	4.2	4.1	4.2	4.2	4.1	4.2	4.2	4.2	4.2
Treated.....	10.6	10.4	10.3	10.3	10.3	10.3	10.4	10.3	10.2	10.2	10.2	10.2	10.3
Settled.....	10.5	10.3	10.2	10.2	10.2	10.2	10.2	10.2	10.1	10.1	10.1	10.1	10.2
Filtered.....	10.4	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.1	10.0	10.1	10.0	10.2
**Effluent.....	10.4	10.2	10.2	10.1	10.2	10.2	10.2	10.2	10.1	10.0	10.1	10.0	10.2
Tap.....	10.3	10.1	10.1	10.1	10.1	10.1	10.2	10.2	10.0	9.9	9.9	9.9	10.1
<b>Free CO<sub>2</sub></b>													
Raw.....	2.1	1.6	1.5	2.2	2.3	2.1	1.7	2.3	3.4	5.1	6.2	5.6	3.0
Aerated Influent.....	6.2	6.2	6.0	6.3	6.7	7.4	6.8	7.4	7.3	7.9	7.6	7.3	6.9
<b>Phenolphthalein Alkalinity</b>													
Treated.....	10.6	9.8	9.8	8.9	9.6	9.3	9.9	9.7	9.8	10.2	10.9	11.4	10.0
Settled.....	10.0	9.2	8.9	8.2	9.0	8.5	8.9	9.0	9.0	9.3	10.1	10.6	9.2
Filtered.....	9.8	8.9	8.8	8.1	8.8	8.3	8.7	8.9	8.8	9.2	10.0	10.2	9.0
**Effluent.....	9.7	9.0	8.7	8.1	8.8	8.3	8.7	8.9	8.8	9.2	10.0	10.2	9.0
Tap.....	7.3	6.8	6.3	5.8	6.4	6.1	6.3	6.4	6.4	6.7	7.5	7.7	6.6
<b>Color</b>													
Raw.....	7	6	7	12	12	12	12	12	12	11	10	14	11
**Effluent.....	3	3	3	5	4	5	5	5	6	6	5	4	5
Tap.....	3	3	3	5	4	5	4	5	5	5	4	3	4
<b>Turbidity</b>													
Raw.....	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.8	0.2
Settled.....	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1
**Effluent.....	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
<b>Iron</b>													
Raw.....	0.10	0.06	0.07	0.08	0.06	0.06	0.05	0.04	0.05	0.04	0.08	0.26	0.08
Settled.....	.19	.22	.32	.44	.42	.41	.38	.43	.40	.31	.30	.29	.34
**Effluent.....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Tap.....	.02	.02	.03	.03	.01	.01	.01	.02	.01	.01	.01	.00	.02
<b>Manganese</b>													
Raw.....	0.03	0.00	0.00	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.07	0.19	0.03
Settled.....	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.04	.01
**Effluent.....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Tap.....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<b>Fluoride</b>													
Raw.....	0.14	0.14	0.14	0.15	0.13	0.14	0.14	0.14	0.14	0.15	0.14	0.15	0.14
**Effluent.....	.12	.13	.13	.12	.10	.10	.10	.10	.11	.12	.12	.13	.12
Tap.....	1.00	.99	.99	.98	.97	.97	.98	1.00	1.01	1.00	1.00	1.00	.99
<b>Temperature (°F.)</b>													
Air (Average of Daily Maximum).....	74	58	37	41	39	50	59	74	79	82	77	74	62
Air (Average of Daily Minimum).....	47	40	19	23	19	29	37	46	54	61	54	49	40
Raw Water.....	59	51	39	35	35	36	41	47	51	53	56	61	47
Water on Filters.....	58	49	38	33	33	35	42	50	55	58	59	61	48
Tap.....	61	56	46	43	41	42	48	56	60	65	65	65	54

\*Parts per million, except pH and Temperature.

\*\*Before treatment with chlorine and sodium silicofluoride.

# TABLE 12

## WATER PURIFICATION WORKS

\*Chemical and Physical Characteristics of Water in Various Brooks and Reservoirs  
on Scituate Watershed

Year Ended September 30, 1964

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Color</b>													
Ponaganset Reservoir .....	4	7	2	4	7	7	3	3	15	12	13	10	7
Coventry Brook .....	27	28	17	27	18	17	22	32	18	17	17	23	22
Wilbur Brook .....	132	74	32	47	33	32	49	90	11	65	90	64	60
Westconnaug Reservoir .....	17	43	17	33	19	13	17	20	135	11	12	13	29
Barden Reservoir .....	7	37	28	34	18	18	23	20	18	11	11	17	20
Cork Brook .....	14	17	12	33	12	8	15	53	17	13	12	**	19
Rush Brook .....	17	27	22	23	18	17	18	27	37	17	11	18	21
Huntinghouse Brook .....	38	23	13	22	12	13	17	22	21	12	15	**	19
Harrisdale Brook .....	8	12	17	23	13	13	18	17	17	12	11	17	15
Blanchard Brook .....	**	70	57	69	54	56	94	270	240	**	**	**	114
Moswansicut Pond .....	8	12	12	13	13	12	13	22	17	12	7	12	13
Regulating Reservoir .....	17	17	22	19	15	8	21	17	16	18	12	13	16
Quonapaug Brook .....	74	84	52	54	43	42	66	220	320	165	53	56	102
Hemlock Brook .....	32	43	23	40	31	27	34	23	20	13	8	8	25
Betty Pond Stream .....	**	28	12	29	12	11	12	18	18	27	**	24	19
Spruce Brook .....	42	37	22	38	21	22	28	45	39	36	33	23	32
Brandy Brook .....	22	56	58	66	38	38	56	47	27	32	20	17	40
Moswansicut—South .....	**	18	8	14	7	12	12	22	32	18	56	240	40
Windsor Brook .....	**	17	12	27	13	13	16	32	18	12	13	37	19
Paine Pond .....	**	32	56	27	18	13	32	18	9	**	**	**	26
Unnamed Brook—A .....	**	44	32	43	28	33	47	88	**	**	**	**	45
Unnamed Brook—B .....	**	12	7	12	8	8	13	13	**	**	**	**	10
<b>Turbidity</b>													
Ponaganset Reservoir .....	0.2	0.2	0.2	0.1	0.3	0.1	0.1	0.1	0.3	0.4	0.0	0.4	0.2
Coventry Brook .....	0.4	0.3	0.1	0.1	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2
Wilbur Brook .....	0.3	0.6	0.1	0.1	0.3	0.2	0.2	0.2	0.5	0.7	0.4	0.1	0.3
Westconnaug Reservoir .....	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.5	0.2
Barden Reservoir .....	0.1	0.6	0.1	0.2	0.3	0.2	0.1	0.3	0.3	0.0	0.0	0.4	0.2
Cork Brook .....	0.1	0.1	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.0	**	0.2
Rush Brook .....	0.3	0.4	0.1	0.3	0.4	0.1	0.1	0.1	0.3	0.0	0.0	0.4	0.2
Huntinghouse Brook .....	0.2	0.6	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.0	**	0.2
Harrisdale Brook .....	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.0	0.1	0.1
Blanchard Brook .....	**	0.5	0.0	0.1	0.3	0.1	0.1	0.2	0.1	**	**	**	0.2
Moswansicut Pond .....	0.3	0.8	0.2	0.1	0.2	0.1	0.1	0.3	0.2	0.0	0.1	0.4	0.2
Regulating Reservoir .....	0.2	0.8	0.1	0.3	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.4	0.2
Quonapaug Brook .....	1.0	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.7	0.0	0.1	0.3	0.3
Hemlock Brook .....	0.2	0.3	0.1	0.3	0.2	0.1	0.1	0.1	0.3	0.0	0.1	0.4	0.2
Betty Pond Stream .....	**	0.5	0.1	0.5	0.1	0.1	0.2	0.1	0.4	0.2	**	0.4	0.3
Spruce Brook .....	0.1	0.4	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.2
Brandy Brook .....	0.1	0.7	0.3	0.4	0.2	0.2	0.1	0.2	0.2	0.8	0.0	0.4	0.3
Moswansicut—South .....	**	1.0	0.2	0.3	0.2	0.1	0.1	0.9	0.5	2.0	3.1	9.0	1.6
Windsor Brook .....	**	0.3	0.1	0.2	0.1	0.1	0.1	0.3	0.3	0.1	0.0	0.3	0.2
Paine Pond .....	**	0.4	0.6	0.7	0.2	0.3	0.2	0.1	0.3	**	**	**	0.4
Unnamed Brook—A .....	**	0.2	0.3	0.1	0.1	0.2	0.2	0.1	**	**	**	**	0.2
Unnamed Brook—B .....	**	0.3	0.1	0.2	0.1	0.1	0.1	0.1	**	**	**	**	0.1

\*Parts per million.

\*\*No sample obtained—Dry.

Note: Unnamed Brook A is just north of Scituate Town Dump. Unnamed Brook B is southwest of the Foster Nike Site.

**TABLE 12 (Continued)**  
**WATER PURIFICATION WORKS**

\*Chemical and Physical Characteristics of Water in Various Brooks and Reservoirs  
on Scituate Watershed  
Year Ended September 30, 1964

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Iron</b>													
Ponaganset Reservoir .....	0.01	0.04	0.01	0.01	0.08	0.10	0.02	0.15	0.43	0.38	0.28	0.19	0.14
Coventry Brook .....	.08	.05	.00	.03	.01	.00	.02	.06	.10	.02	.03	.08	.04
Wilbur Brook .....	1.35	.88	.05	.03	.07	.01	.10	.94	1.35	.85	.80	.74	.60
Westconnaug Reservoir .....	.08	.16	.04	.04	.04	.05	.07	.23	.08	.18	.10	.19	.11
Barden Reservoir .....	.06	.18	.02	.02	.07	.01	.05	.08	.05	.08	.04	.38	.09
Cork Brook .....	.02	.03	.00	.02	.01	.00	.02	.03	.03	.03	.03	**	.02
Rush Brook .....	.56	.09	.01	.02	.05	.01	.11	.10	.30	.07	.23	.37	.16
Huntinghouse Brook .....	.08	.08	.01	.02	.01	.03	.02	.10	.13	.12	.10	**	.06
Harrisdale Brook .....	.07	.12	.04	.02	.04	.01	.12	.18	.18	.13	.07	.12	.09
Blanchard Brook .....	**	.18	.18	.00	.14	.02	.27	.95	1.30	**	**	**	.38
Moswansicut Pond .....	.00	.09	.00	.08	.03	.09	.00	.04	.05	.00	.00	.07	.04
Regulating Reservoir .....	.02	.09	.03	.04	.02	.01	.08	.18	.09	.07	.08	.15	.07
Quonapaug Brook .....	.60	.35	.05	.02	.18	.00	.15	.95	1.35	1.20	.35	.27	.46
Hemlock Brook .....	.08	.24	.04	.04	.05	.06	.19	.08	.07	.01	.04	.06	.08
Betty Pond Stream .....	**	.08	.07	.05	.04	.05	.08	.18	.26	.01	**	.18	.10
Spruce Brook .....	.16	.03	.04	.04	.01	.02	.03	.14	.11	.04	.08	.09	.07
Brandy Brook .....	.28	.37	.14	.20	.18	.07	.28	.20	.30	.23	.10	.08	.20
Moswansicut—South .....	**	.76	.08	.02	.54	.08	.09	.80	1.68	.38	1.70	9.00	1.38
Windsor Brook .....	**	.02	.01	.00	.00	.00	.02	.11	.04	.01	.01	.05	.02
Paine Pond .....	**	.04	.10	.00	.14	.07	.03	.10	.02	**	**	**	.06
Unnamed Brook—A .....	**	.06	.93	.01	.03	.01	.02	.70	**	**	**	**	.25
Unnamed Brook—B .....	**	.01	.00	.00	.00	.00	.00	.02	**	**	**	**	.00
<b>Manganese</b>													
Ponaganset Reservoir .....	0.00	0.07	0.10	0.10	0.10	0.08	0.16	0.07	0.07	0.06	0.00	0.06	0.07
Coventry Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
Wilbur Brook .....	.02	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Westconnaug Reservoir .....	.02	.00	.00	.00	.02	.01	.00	.00	.00	.02	.01	.03	.01
Barden Reservoir .....	.01	.02	.00	.09	.10	.00	.01	.03	.00	.01	.00	.02	.02
Cork Brook .....	.01	.00	.00	.06	.00	.01	.01	.00	.00	.00	.00	**	.01
Rush Brook .....	.00	.01	.00	.08	.01	.00	.01	.00	.01	.00	.00	.00	.01
Huntinghouse Brook .....	.09	.00	.00	.00	.00	.00	.00	.00	.02	.07	.16	**	.03
Harrisdale Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Blanchard Brook .....	**	.02	.01	.02	.02	.00	.00	.00	.00	**	**	**	.01
Moswansicut Pond .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.01	.02	.00
Regulating Reservoir .....	.03	.02	.00	.00	.00	.00	.00	.00	.03	.02	.01	.00	.01
Quonapaug Brook .....	.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
Hemlock Brook .....	.00	.03	.00	.08	.02	.01	.01	.01	.02	.01	.00	.00	.02
Betty Pond Stream .....	**	.00	.01	.01	.00	.00	.00	.00	.00	.00	**	.00	.00
Spruce Brook .....	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
Brandy Brook .....	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00
Moswansicut—South .....	**	.04	.00	.01	.03	.00	.00	.16	.10	.10	.08	.40	.08
Windsor Brook .....	**	.00	.00	.02	.00	.00	.00	.02	.00	.01	.01	.02	.01
Paine Pond .....	**	.00	.00	.00	.00	.00	.01	.00	.00	**	**	**	.00
Unnamed Brook—A .....	**	.02	.01	.00	.00	.00	.00	.00	**	**	**	**	.00
Unnamed Brook—B .....	**	.04	.01	.02	.02	.01	.01	.06	**	**	**	**	.02

\*Parts per million.

\*\*No sample obtained—Dry.

Note: Unnamed Brook A is just north of Scituate Town Dump. Unnamed Brook B is southwest of the Foster Nike Site.



**TABLE 12 (Continued)**  
**WATER PURIFICATION WORKS**

**\*Chemical and Physical Characteristics of Water in Various Brooks and Reservoirs  
on Scituate Watershed**

**Year Ended September 30, 1964**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>pH</b>													
Ponaganset Reservoir .....	5.7	5.2	4.9	5.0	4.8	4.9	4.6	5.0	5.0	5.3	5.4	5.8	5.1
Coventry Brook .....	6.5	6.3	6.2	5.8	6.0	6.1	5.9	6.3	6.3	6.3	6.5	6.2	6.2
Wilbur Brook .....	6.6	5.7	5.6	5.7	5.4	5.7	5.7	6.0	6.5	6.3	6.6	6.5	6.0
Westconnaug Reservoir .....	7.1	6.5	6.6	6.5	5.8	6.2	5.9	6.3	6.9	7.0	6.9	6.9	6.6
Barden Reservoir .....	6.6	6.4	5.7	5.4	5.4	5.5	5.5	6.4	6.5	6.4	7.0	6.3	6.1
Cork Brook .....	6.3	6.0	5.8	5.3	5.6	5.8	5.2	6.2	6.2	6.1	6.4	**	5.9
Rush Brook .....	6.5	6.1	6.0	5.6	5.9	6.0	5.6	6.3	6.2	6.2	6.2	6.3	6.1
Huntinghouse Brook .....	6.6	5.7	6.2	5.7	6.0	6.1	6.0	6.5	6.5	6.5	6.6	**	6.2
Harrisdale Brook .....	7.3	6.7	6.4	6.2	6.2	6.3	6.5	6.9	7.0	6.9	7.0	6.7	6.7
Blanchard Brook .....	**	5.7	5.0	5.2	5.0	5.2	5.1	5.4	5.6	**	**	**	5.3
Moswansicut Pond .....	6.9	6.5	6.7	6.9	6.3	6.3	6.4	6.4	6.5	6.7	6.8	6.7	6.6
Regulating Reservoir .....	7.2	6.7	6.4	6.1	6.0	6.4	6.3	6.6	7.0	7.0	7.0	6.9	6.6
Quonapaug Brook .....	6.2	5.7	5.4	5.5	5.2	5.7	5.7	6.4	6.2	6.2	6.3	6.7	5.9
Hemlock Brook .....	6.8	5.7	5.6	5.0	5.4	5.5	5.3	6.0	6.2	6.1	6.3	6.3	5.9
Betty Pond Stream .....	**	6.1	5.8	5.5	5.6	5.7	5.8	6.0	6.1	6.1	**	5.8	5.9
Spruce Brook .....	6.5	5.7	5.5	5.1	5.4	5.6	5.4	5.9	6.2	6.2	6.8	6.3	5.9
Brandy Brook .....	7.0	6.4	6.5	6.4	6.5	6.6	6.2	6.2	6.8	6.9	6.4	6.8	6.6
Moswansicut—South .....	**	6.5	6.5	6.7	6.3	6.5	6.3	6.9	6.6	6.5	6.5	6.2	6.5
Windsor Brook .....	**	6.5	5.8	5.4	5.8	5.9	5.8	6.4	6.5	7.1	6.8	6.3	6.2
Paine Pond .....	**	6.2	5.8	5.6	5.3	5.4	5.2	5.7	5.3	**	**	**	5.6
Unnamed Brook—A .....	**	6.3	5.8	5.9	5.7	5.9	5.9	6.1	**	**	**	**	5.9
Unnamed Brook—B .....	**	5.8	5.3	5.2	5.1	5.2	5.1	5.2	**	**	**	**	5.3
<b>Free CO<sub>2</sub></b>													
Ponaganset Reservoir .....	2.0	4.0	2.5	2.0	7.0	5.0	3.0	2.0	2.0	3.0	2.0	2.0	3.0
Coventry Brook .....	7.0	4.0	3.5	2.5	4.0	4.0	3.5	3.5	4.5	4.0	2.5	5.5	4.0
Wilbur Brook .....	9.0	11.5	10.5	2.5	8.5	5.0	5.5	11.0	8.0	7.5	5.5	4.0	7.4
Westconnaug Reservoir .....	2.5	4.5	2.5	2.0	4.0	3.0	2.5	2.0	2.5	2.0	2.0	4.0	2.8
Barden Reservoir .....	4.5	4.5	3.5	3.0	5.5	3.5	3.0	1.5	1.5	1.5	2.0	2.5	3.0
Cork Brook .....	8.0	3.5	3.0	4.0	3.5	3.5	3.5	3.5	3.5	4.0	3.0	**	3.9
Rush Brook .....	11.5	3.5	3.0	2.5	3.0	3.0	5.0	5.5	6.5	5.0	9.5	6.5	5.4
Huntinghouse Brook .....	10.0	2.5	2.5	2.5	3.5	2.5	2.5	3.5	6.5	6.0	4.5	**	4.2
Harrisdale Brook .....	2.5	2.0	3.5	2.0	3.0	3.0	2.0	1.5	2.5	2.0	2.0	2.0	2.3
Blanchard Brook .....	**	3.0	10.0	3.0	4.5	6.0	7.0	10.5	13.0	**	**	**	7.1
Moswansicut Pond .....	2.5	2.5	2.0	2.0	3.0	2.5	1.5	1.5	4.0	2.0	1.5	2.5	2.3
Regulating Reservoir .....	2.0	3.0	3.0	2.0	5.0	2.5	2.0	1.5	2.0	1.0	1.5	3.0	2.4
Quonapaug Brook .....	23.0	11.0	10.5	2.0	13.0	6.0	6.0	11.5	10.0	15.0	9.0	8.0	10.4
Hemlock Brook .....	2.5	4.5	4.0	3.5	4.5	4.0	4.0	2.5	2.0	4.0	2.0	1.5	3.3
Betty Pond Stream .....	**	3.5	7.0	3.0	5.5	2.5	3.5	3.5	5.5	2.5	**	3.5	4.0
Spruce Brook .....	8.5	5.0	4.5	3.5	5.5	4.0	4.0	3.0	4.5	4.0	3.0	6.5	4.7
Brandy Brook .....	2.5	3.5	3.5	1.5	3.5	2.0	2.0	3.0	1.5	2.5	1.5	2.5	2.5
Moswansicut—South .....	**	4.5	3.0	2.0	5.0	4.0	2.5	3.0	13.0	11.5	8.5	21.0	7.1
Windsor Brook .....	**	3.0	3.0	2.5	3.5	3.0	2.5	3.5	3.0	1.5	2.5	8.0	3.3
Paine Pond .....	**	4.5	7.5	3.0	13.0	8.0	4.5	3.5	5.0	**	**	**	6.1
Unnamed Brook—A .....	**	4.0	8.0	3.0	7.0	5.0	4.5	6.0	**	**	**	**	5.4
Unnamed Brook—B .....	**	6.5	5.5	2.0	5.5	5.0	6.0	9.0	**	**	**	**	5.6

\*Parts per million, except pH.

\*\*No sample obtained—Dry.

Note: Unnamed Brook A is just north of Scituate Town Dump. Unnamed Brook B is southwest of the Foster Nike Site.

**TABLE 12 (Continued)**  
**WATER PURIFICATION WORKS**

\*Chemical and Physical Characteristics of Water in Various Brooks and Reservoirs  
on Scituate Watershed

Year Ended September 30, 1964

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Alkalinity</b>													
Ponaganset Reservoir .....	4.5	2.0	2.0	1.5	2.5	1.5	2.0	2.5	2.5	3.0	2.0	3.0	2.4
Coventry Brook .....	8.5	5.0	5.0	3.5	4.0	4.5	4.0	5.5	6.5	6.5	6.5	6.5	5.5
Wilbur Brook .....	10.5	4.5	4.0	3.0	4.0	4.0	4.0	8.0	9.5	9.0	9.0	8.0	6.5
Westconnaug Reservoir .....	12.0	8.0	8.0	4.0	3.5	4.0	4.0	7.5	8.5	8.5	8.0	8.5	7.0
Barden Reservoir .....	7.5	5.0	3.0	2.0	3.5	3.0	4.0	4.0	4.0	3.5	13.0	5.0	4.8
Cork Brook .....	7.0	3.5	3.0	2.5	3.0	3.5	3.0	4.5	6.0	4.5	5.0	**	4.1
Rush Brook .....	10.5	4.0	4.0	2.5	4.0	4.0	4.5	7.0	7.0	7.0	9.5	9.0	6.1
Huntinghouse Brook .....	14.5	3.5	4.5	2.5	4.5	4.5	4.0	8.0	12.0	11.0	12.0	**	7.4
Harrisdale Brook .....	14.0	9.5	8.0	5.0	6.5	6.0	6.0	9.5	12.5	14.5	12.5	6.5	9.2
Blanchard Brook .....	**	3.5	3.0	3.0	3.0	4.0	3.0	4.5	6.0	**	**	**	3.8
Moswansicut Pond .....	9.5	7.0	7.5	5.5	6.0	6.0	6.0	7.0	7.0	7.0	6.5	7.5	6.9
Regulating Reservoir .....	9.5	6.5	7.0	3.5	5.0	6.0	5.0	7.0	7.5	8.0	7.0	7.0	6.6
Quonapaug Brook .....	14.0	4.0	4.0	3.5	3.5	4.0	4.5	9.0	13.0	13.0	31.0	21.0	10.4
Hemlock Brook .....	8.0	3.5	3.5	2.0	3.0	4.0	3.0	4.0	3.5	4.0	4.0	4.0	3.9
Betty Pond Stream.....	**	4.0	6.0	3.0	3.0	4.0	4.0	4.5	5.0	4.0	**	3.5	4.1
Spruce Brook .....	8.5	3.0	3.5	2.0	3.0	4.0	3.5	4.5	4.5	5.0	5.5	8.5	4.6
Brandy Brook .....	12.5	7.0	8.5	4.0	7.0	5.0	5.5	8.0	10.0	10.0	9.0	9.0	8.0
Moswansicut—South .....	**	11.0	10.0	7.0	8.0	8.0	8.5	13.5	15.5	16.5	15.0	23.0	12.4
Windsor Brook .....	**	4.5	4.0	2.5	3.0	3.0	3.5	5.5	7.0	7.0	5.5	9.5	5.0
Paine Pond .....	**	5.0	5.5	3.0	4.0	4.5	3.0	3.5	2.0	**	**	**	3.8
Unnamed Brook—A .....	**	6.5	5.5	3.5	4.5	4.0	5.0	8.0	**	**	**	**	5.3
Unnamed Brook—B .....	**	4.0	4.0	2.5	3.0	3.5	3.0	4.0	**	**	**	**	3.4

\*Parts per million.

\*\*No sample obtained—Dry.

Note: Unnamed Brook A is just north of Scituate Town Dump. Unnamed Brook B is southwest of the Foster Nike Site.

TABLE 13

## WATER PURIFICATION WORKS

## Chemical and Physical Characteristics of Water in Various Parts of the Distribution System

Year Ended September 30, 1964

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>pH</b>													
Neutaconkanut Reservoir .....	10.3	10.1	10.1	10.1	10.2	10.1	10.2	10.2	10.0	9.9	9.9	9.9	10.1
Phenix Avenue, Cranston .....	10.3	10.1	10.1	10.1	10.1	10.1	10.3	10.2	10.0	9.9	9.9	9.9	10.1
Westminster Street, Olneyville .....	10.3	10.1	10.1	10.1	10.2	10.2	10.3	10.2	10.0	9.9	9.9	9.9	10.1
*Budlong Road, Cranston.....	10.3	10.1	10.1	10.1	10.1	10.2	10.3	10.2	10.0	9.9	9.9	9.9	10.1
Reservoir Avenue, Cranston.....	10.3	10.1	10.1	10.1	10.1	10.1	10.3	10.2	10.0	9.9	9.9	9.9	10.1
T. F. Green Airport, Warwick.....	10.3	10.1	10.1	10.1	10.1	10.1	10.2	10.2	†	†	†	†	10.2
Biltmore Hotel .....	10.3	10.1	10.1	10.1	10.2	10.2	10.3	10.2	10.0	9.9	9.9	9.9	10.1
**Crown Hotel .....	10.3	10.1	10.1	10.1	10.2	10.2	10.3	10.2	10.0	9.9	9.9	9.9	10.1
State Office Building .....	10.3	10.1	10.1	10.1	10.2	10.2	10.3	10.2	10.0	9.9	9.9	9.9	10.1
†Longview Reservoir .....	10.3	10.1	10.2	10.1	10.1	10.2	10.3	10.2	10.0	9.9	9.9	9.9	10.1
Police & Fire Headquarters, Prov.....	10.3	10.1	10.1	10.1	10.1	10.1	10.3	10.2	10.0	9.9	9.9	9.9	10.1
<b>Phenolphthalein Alkalinity</b>													
Neutaconkanut Reservoir .....	7.3	6.9	6.4	5.9	6.4	6.1	6.3	6.3	6.4	6.5	7.3	7.6	6.6
Phenix Avenue, Cranston .....	7.3	6.8	6.3	5.8	6.4	6.1	6.3	6.4	6.3	6.6	7.4	7.7	6.6
Westminster Street, Olneyville .....	7.3	6.8	6.3	5.8	6.5	6.1	6.4	6.5	6.4	6.7	7.4	7.7	6.7
*Budlong Road, Cranston.....	7.4	6.8	6.3	5.8	6.5	6.1	6.3	6.5	6.5	6.7	7.4	7.7	6.7
Reservoir Avenue, Cranston.....	7.3	6.8	6.3	5.9	6.5	6.1	6.4	6.5	6.5	6.7	7.4	7.7	6.7
T. F. Green Airport, Warwick.....	7.3	6.8	6.2	5.7	6.4	6.1	6.3	6.4	†	†	†	†	6.4
Biltmore Hotel .....	7.3	6.8	6.3	5.9	6.4	6.1	6.3	6.5	6.5	6.8	7.5	7.7	6.7
**Crown Hotel .....	7.3	6.9	6.2	5.8	6.5	6.2	6.4	6.5	6.5	6.8	7.5	7.7	6.7
State Office Building .....	7.4	6.8	6.3	5.9	6.6	6.1	6.4	6.5	6.5	6.8	7.5	7.7	6.7
†Longview Reservoir .....	8.0	7.5	6.9	6.4	6.7	6.5	6.6	6.7	6.6	6.9	7.8	8.0	7.1
Police & Fire Headquarters, Prov.....	7.3	6.9	6.2	5.6	6.4	6.1	6.3	6.5	6.4	6.8	7.5	7.7	6.6
<b>Methyl Orange Alkalinity</b>													
Neutaconkanut Reservoir .....	14.7	13.7	12.6	11.9	12.6	12.3	12.6	12.8	12.8	13.3	14.6	15.1	13.3
Phenix Avenue, Cranston .....	14.5	13.5	12.5	11.7	12.6	12.2	12.6	12.8	12.8	13.4	14.7	15.2	13.2
Westminster Street, Olneyville .....	14.7	13.5	12.6	11.7	12.5	12.2	12.6	12.9	12.9	13.6	14.7	15.2	13.3
*Budlong Road, Cranston.....	14.7	13.7	12.6	11.7	12.6	12.2	12.7	12.9	13.0	13.6	14.8	15.3	13.3
Reservoir Avenue, Cranston.....	14.6	13.6	12.4	11.7	12.6	12.3	12.6	12.9	12.9	13.6	14.8	15.3	13.3
T. F. Green Airport, Warwick.....	14.7	13.6	12.4	11.6	12.6	12.3	12.7	12.9	†	†	†	†	12.9
Biltmore Hotel .....	14.6	13.6	12.5	11.8	12.6	12.3	12.6	13.0	13.0	13.7	14.8	15.2	13.3
**Crown Hotel .....	14.6	13.6	12.4	11.7	12.6	12.3	12.7	13.0	13.1	13.7	14.9	15.3	13.3
State Office Building .....	14.7	13.7	12.5	11.8	12.7	12.2	12.8	13.0	13.0	13.7	14.9	15.3	13.4
†Longview Reservoir .....	16.1	15.2	13.7	12.7	13.1	12.8	13.2	13.6	13.5	14.1	15.5	16.3	14.2
Police & Fire Headquarters, Prov.....	14.6	13.7	12.5	11.6	12.6	12.3	12.8	13.1	13.0	13.8	15.0	15.3	13.4
<b>Color</b>													
Neutaconkanut Reservoir .....	3	3	3	4	4	4	4	4	5	5	3	3	4
Phenix Avenue, Cranston .....	3	2	2	4	4	5	3	4	4	5	3	3	4
Westminster Street, Olneyville .....	3	2	2	4	4	4	3	3	4	4	3	3	3
*Budlong Road, Cranston.....	3	2	2	4	4	4	3	4	4	4	3	3	3
Reservoir Avenue, Cranston.....	3	2	2	4	3	4	3	3	4	4	3	3	3
T. F. Green Airport, Warwick.....	3	2	2	4	4	4	3	3	†	†	†	†	3
Biltmore Hotel .....	3	3	2	4	4	5	3	4	4	4	3	3	4
**Crown Hotel .....	3	2	2	4	4	5	3	4	4	5	3	3	4
State Office Building .....	3	2	3	4	3	4	3	4	4	4	3	3	3
†Longview Reservoir .....	4	4	3	5	5	6	6	6	6	7	6	6	5
Police & Fire Headquarters, Prov.....	3	3	3	4	5	5	5	5	5	5	4	3	4

\*Sampling location changed to 5 Garden City Drive, Cranston, on Dec. 26, 1963. Changed again to 1291 Reservoir Avenue on Jan. 16, 1964.

\*\*Sampling location changed to Dexter Manor, Broad St., Providence, on April 28, 1964.

†Sample obtained at Our Lady of Fatima Hospital, North Providence.

†Sampling discontinued effective June 1, 1964. Warwick now obtains its own samples.

TABLE 13 (Continued)

## WATER PURIFICATION WORKS

Chemical and Physical Characteristics of Water in Various Parts of the Distribution System

Year Ended September 30, 1964

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Iron</b>													
Neutaconkanut Reservoir .....	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.01
Phenix Avenue, Cranston .....	.00	.00	.00	.00	.00	.01	.00	.01	.00	.00	.00	.00	.00
Westminster Street, Olneyville .....	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
*Budlong Road, Cranston.....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Reservoir Avenue, Cranston.....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
T. F. Green Airport, Warwick.....	.00	.00	.00	.00	.00	.00	.00	.00	†	†	†	†	.00
Biltmore Hotel .....	.01	.01	.01	.01	.01	.01	.01	.02	.01	.01	.00	.00	.01
**Crown Hotel .....	.01	.01	.01	.01	.01	.02	.01	.02	.01	.01	.00	.00	.01
State Office Building .....	.01	.01	.01	.01	.01	.01	.01	.02	.01	.01	.00	.00	.01
‡Longview Reservoir .....	.06	.06	.05	.05	.04	.05	.05	.05	.05	.06	.05	.04	.05
Police & Fire Headquarters, Prov.....	.01	.02	.02	.02	.03	.04	.03	.03	.03	.03	.02	.01	.02
<b>Chlorides</b>													
Neutaconkanut Reservoir .....	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.1	5.0	5.1	5.0
Phenix Avenue, Cranston .....	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.2	5.0	5.1	5.0
Westminster Street, Olneyville .....	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.2	5.0	5.2	5.0
*Budlong Road, Cranston.....	4.9	5.0	5.0	5.0	5.1	4.9	5.0	5.0	5.0	5.2	5.0	5.1	5.0
Reservoir Avenue, Cranston.....	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.2	5.0	5.1	5.0
T. F. Green Airport, Warwick.....	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	†	†	†	†	5.0
Biltmore Hotel .....	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.2	5.0	5.2	5.0
**Crown Hotel .....	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.2	5.0	5.2	5.0
State Office Building .....	5.0	5.0	5.0	5.0	5.1	5.0	5.0	5.0	5.0	5.2	5.0	5.2	5.0
‡Longview Reservoir .....	5.0	5.0	5.0	5.0	5.0	4.9	5.0	5.0	5.0	5.2	5.0	5.1	5.0
Police & Fire Headquarters, Prov.....	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.2	5.0	5.2	5.0
<b>Nitrites</b>													
Neutaconkanut Reservoir .....	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenix Avenue, Cranston .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Westminster Street, Olneyville .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
*Budlong Road, Cranston.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Reservoir Avenue, Cranston.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
T. F. Green Airport, Warwick.....	.000	.000	.000	.000	.000	.000	.000	.000	†	†	†	†	.000
Biltmore Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
**Crown Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
State Office Building .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
‡Longview Reservoir .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Police & Fire Headquarters, Prov.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
<b>Taste</b>													
Neutaconkanut Reservoir .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Phenix Avenue, Cranston .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Westminster Street, Olneyville .....	0	0	0	0	0	0	0	0	0	0	0	0	0
*Budlong Road, Cranston.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Reservoir Avenue, Cranston.....	0	0	0	0	0	0	0	0	0	0	0	0	0
T. F. Green Airport, Warwick.....	0	0	0	0	0	0	0	0	†	†	†	†	0
Biltmore Hotel .....	0	0	0	0	0	0	0	0	0	0	0	0	0
**Crown Hotel .....	0	0	0	0	0	0	0	0	0	0	0	0	0
State Office Building .....	0	0	0	0	0	0	0	0	0	0	0	0	0
‡Longview Reservoir .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Police & Fire Headquarters, Prov.....	0	0	0	0	0	0	0	0	0	0	0	0	0

\*Sampling location changed to 5 Garden City Drive, Cranston, on Dec. 26, 1963. Changed again to 1291 Reservoir Avenue on Jan. 16, 1964.

\*\*Sampling location changed to Dexter Manor, Broad St., Providence, on April 28, 1964.

‡Sample obtained at Our Lady of Fatima Hospital, North Providence.

†Sampling discontinued effective June 1, 1964. Warwick now obtains its own samples.

TABLE 13 (Continued)

## WATER PURIFICATION WORKS

Chemical and Physical Characteristics of Water in Various Parts of the Distribution System

Year Ended September 30, 1964

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Odor</b>													
Neutaconkanut Reservoir .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Phenix Avenue, Cranston .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Westminster Street, Olneyville .....	0	0	0	0	0	0	0	0	0	0	0	0	0
*Budlong Road, Cranston.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Reservoir Avenue, Cranston.....	0	0	0	0	0	0	0	0	0	0	0	0	0
T. F. Green Airport, Warwick.....	0	0	0	0	0	0	0	0	†	†	†	†	0
Biltmore Hotel .....	0	0	0	0	0	0	0	0	0	0	0	0	0
**Crown Hotel .....	0	0	0	0	0	0	0	0	0	0	0	0	0
State Office Building .....	0	0	0	0	0	0	0	0	0	0	0	0	0
‡Longview Reservoir .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Police & Fire Headquarters, Prov.....	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Fluoride</b>													
Neutaconkanut Reservoir .....	1.00	1.00	0.99	0.99	0.98	0.98	0.98	0.99	1.00	1.01	1.00	1.00	0.99
Phenix Avenue, Cranston .....	1.00	0.99	0.98	0.98	0.97	0.95	0.97	1.00	1.01	0.99	1.00	0.99	0.99
Westminster Street, Olneyville .....	0.98	0.99	0.99	0.98	0.97	0.97	0.98	1.00	1.00	1.01	1.00	1.00	0.99
*Budlong Road, Cranston.....	1.01	0.98	0.99	0.99	0.99	0.98	0.98	1.00	1.00	1.00	1.00	1.00	0.99
Reservoir Avenue, Cranston.....	1.01	0.97	1.00	0.99	0.98	0.99	0.98	1.00	1.01	0.99	1.00	1.00	0.99
T. F. Green Airport, Warwick.....	1.01	0.99	0.99	0.99	0.99	0.99	0.98	1.00	†	†	†	†	0.99
Biltmore Hotel .....	0.99	0.99	1.00	0.98	0.96	0.94	0.97	1.00	1.00	1.00	1.00	1.00	0.99
**Crown Hotel .....	0.99	0.96	0.99	0.98	0.96	0.95	0.97	1.00	1.00	1.00	1.00	1.00	0.98
State Office Building .....	0.99	0.00	0.99	0.98	0.96	0.99	1.00	1.00	1.01	1.01	1.00	1.00	0.99
‡Longview Reservoir .....	1.00	1.00	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Police & Fire Headquarters, Prov.....	1.00	0.99	1.00	0.99	0.97	0.98	1.00	1.00	1.01	0.99	1.00	1.00	0.99

\*Sampling location changed to 5 Garden City Drive, Cranston, on Dec. 26, 1963. Changed again to 1291 Reservoir Avenue on Jan. 16, 1964.

\*\*Sampling location changed to Dexter Manor, Broad St., Providence, on April 28, 1964.

‡Sample obtained at Our Lady of Fatima Hospital, North Providence.

†Sampling discontinued effective June 1, 1964. Warwick now obtains its own samples.

TABLE 14

## WATER PURIFICATION WORKS

## Bacteriological Examination of Water in Process of Filtration

Year Ended September 30, 1964

		BACTERIA PER ML. (48 HOURS ON AGAR AT 20° C.)																
1963-1964	Raw-A.M.			Raw-P.M.			Settled			*Effluent-A.M.			*Effluent-P.M.			Tap		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
October.....	300	8	67	180	16	66	185	30	76	100	10	51	150	10	42	1	0	0
November.....	60	13	30	105	10	42	500	60	215	300	45	119	450	40	143	2	0	0
December.....	75	5	32	70	10	38	700	10	227	350	25	112	350	0	125	1	0	0
January.....	70	6	26	40	8	26	300	1	66	50	1	22	225	1	34	4	0	0
February.....	150	3	50	80	7	45	50	0	7	30	0	5	55	0	7	9	0	0
March.....	30	4	15	40	1	13	35	0	6	300	0	20	40	0	9	8	0	1
April.....	55	5	16	27	3	12	400	0	71	250	4	82	250	0	53	10	0	3
May.....	23	5	13	32	7	14	380	12	104	260	0	99	300	5	73	2	0	0
June.....	47	6	22	40	8	24	75	2	21	100	0	21	45	0	12	2	0	0
July.....	60	7	31	100	11	43	250	1	55	85	0	35	160	0	29	13	0	1
August.....	75	7	36	90	20	49	95	0	26	120	0	18	30	1	9	1	0	0
September.....	150	16	51	300	14	62	40	1	17	16	0	7	20	1	7	2	0	0
For Year.....	300	3	32	300	1	36	700	0	74	350	0	49	450	0	45	13	0	0

\*Before treatment with chlorine and sodium silicofluoride.

A.M. refers to samples obtained in the morning, P.M. to samples obtained in the afternoon.

TABLE 15

## WATER PURIFICATION WORKS

## Bacteriological Examination of Water in Process of Filtration

Year Ended September 30, 1964

BACTERIA PER ML. (24 HOURS ON AGAR AT 35° C.)																	
1963-1964	Raw-A.M.			Raw-P.M.			Settled			*Effluent-A.M.			*Effluent-P.M.			Tap	
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.
October.....	45	3	18	40	3	16	70	0	3	40	0	2	12	0	1	4	0
November.....	14	0	5	11	0	4	35	0	2	50	0	3	95	0	6	1	0
December.....	13	0	4	12	0	3	11	0	1	8	0	0	2	0	0	7	0
January.....	45	0	5	90	1	8	250	0	10	21	0	1	1	0	0	2	0
February.....	20	1	8	42	1	8	95	0	6	2	0	0	0	0	0	34	0
March.....	35	0	8	45	0	8	3	0	1	3	0	0	2	0	0	7	0
April.....	8	1	4	15	0	5	2	0	0	17	0	1	3	0	0	6	0
May.....	87	0	12	16	1	4	15	0	1	15	0	1	3	0	0	2	0
June.....	35	1	7	450	0	25	11	0	1	7	0	1	1	0	0	2	0
July.....	160	1	18	30	1	9	3	0	1	60	0	3	5	0	1	1	0
August.....	200	5	23	80	1	22	7	0	1	30	0	2	10	0	1	2	0
September.....	42	3	19	40	5	19	6	0	1	18	0	2	5	0	1	8	0
For Year.....	200	0	11	450	0	11	250	0	2	60	0	1	95	0	1	34	0

\*Before treatment with chlorine and sodium silicofluoride.

A.M. refers to samples obtained in the morning, P.M. to samples obtained in the afternoon.

**TABLE 16**  
**WATER PURIFICATION WORKS**  
**Bacteriological Examination of Water in Process of Filtration**  
**Year Ended September 30, 1964**

COLIFORM BACTERIA																		
1963-1964	Raw-A.M.			Raw-P.M.			Settled			*Effluent-A.M.			*Effluent-P.M.			Tap		
	No. of	No.	Index	No. of	No.	Index	No. of	No.	Index	No. of	No.	Index	No. of	No.	Index	No. of	No.	Index
	10 ml.	of		10 ml.	of		10 ml.	of		10 ml.	of		10 ml.	of		10 ml.	of	
	Por- tions Tested	Tests Con- firmed		Por- tions Tested	Tests Con- firmed		Por- tions Tested	Tests Con- firmed		Por- tions Tested	Tests Con- firmed		Por- tions Tested	Tests Con- firmed		Por- tions Tested	Tests Con- firmed	
October.....	78	63	.081	46	36	.078	52	3	.006	52	1	.002	46	2	.004	130	0	.000
November.....	72	67	.093	36	30	.083	48	3	.006	48	0	.000	36	1	.003	115	0	.000
December.....	75	74	.099	38	37	.097	50	1	.002	50	0	.000	38	0	.000	125	0	.000
January.....	78	40	.051	44	24	.055	52	3	.006	52	0	.000	44	0	.000	130	0	.000
February.....	75	3	.004	40	8	.020	50	0	.000	50	0	.000	40	0	.000	125	0	.000
March.....	78	15	.019	42	3	.007	52	0	.000	52	0	.000	42	0	.000	130	0	.000
April.....	78	9	.012	44	5	.011	52	0	.000	52	0	.000	44	0	.000	130	0	.000
May.....	72	0	.000	40	3	.008	48	0	.000	48	1	.002	40	0	.000	120	0	.000
June.....	78	0	.000	44	1	.002	52	2	.004	52	0	.000	44	0	.000	130	0	.000
July.....	78	9	.012	44	2	.005	52	1	.002	52	0	.000	44	0	.000	130	0	.000
August.....	75	3	.004	40	2	.005	50	0	.000	50	1	.002	40	0	.000	125	0	.000
September.....	75	36	.048	42	21	.050	50	4	.008	50	4	.008	42	3	.007	125	2	.002
For Year.....	912	319	.035	500	172	.034	608	17	.003	608	7	.001	500	6	.001	1,515	2	.000

\*Before treatment with chlorine and sodium silicofluoride.

A.M. refers to samples obtained in the morning, P.M. to samples obtained in the afternoon.



TABLE 17

## WATER PURIFICATION WORKS

## Bacteriological Examination of Water in Various Brooks and Reservoirs on Scituate Watershed

Year Ended September 30, 1964

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Bacteria per Ml. 48 Hours on Agar at 20° C.</b>													
Ponaganset Reservoir .....	750	49	20	55	15	29	110	900	150	520	550	300	287
Coventry Brook .....	1,100	170	270	60	80	28	150	1,600	1,800	1,900	2,200	10,000	1,613
Wilbur Brook .....	270	1,400	220	420	95	45	190	3,300	1,500	1,400	600	600	837
Westconnaug Reservoir .....	390	1,800	450	850	300	60	140	400	200	430	370	900	524
Barden Reservoir .....	250	160	310	3,400	290	25	95	520	90	450	2,100	500	683
Cork Brook .....	360	105	230	190	110	60	120	550	1,100	400	950	**	380
Rush Brook .....	820	620	480	280	1,500	70	550	4,700	900	1,300	550	4,000	1,314
Huntinghouse Brook .....	550	450	250	430	70	55	600	4,500	125	1,700	1,200	**	903
Harrisdale Brook .....	350	750	550	1,100	140	140	1,200	750	1,000	900	330	390	633
Blanchard Brook .....	**	230	130	950	95	260	420	7,000	2,000	**	**	**	1,386
Moswansicut Pond .....	290	210	80	800	70	30	50	1,800	800	700	820	450	508
Regulating Reservoir .....	4,500	1,400	130	5,000	350	180	40	350	100	60	900	620	1,136
Quonapaug Brook .....	2,300	730	110	700	60	290	180	600	150	900	450	650	635
Hemlock Brook .....	140	350	250	450	130	450	400	220	400	150	300	170	284
Betty Pond Stream .....	**	170	540	900	1,400	280	145	450	4,000	1,100	**	5,000	1,399
Spruce Brook .....	650	650	120	230	130	250	150	800	500	1,500	1,800	5,500	1,023
Brandy Brook .....	600	480	680	6,000	240	1,200	370	4,300	200	750	250	600	1,306
Moswansicut—South .....	**	2,200	750	2,500	450	750	290	8,500	8,000	6,000	12,000	9,000	4,585
Windsor Brook .....	**	450	170	800	50	320	150	2,200	1,400	1,900	9,000	12,000	2,585
Paine Pond .....	**	12,000	500	1,300	200	310	500	4,400	400	**	**	**	2,451
Unnamed Brook—A .....	**	600	800	900	110	200	400	4,800	**	**	**	**	1,116
Unnamed Brook—B .....	**	530	60	110	35	25	33	700	**	**	**	**	213
<b>Bacteria per Ml. 24 Hours on Agar at 35° C.</b>													
Ponaganset Reservoir .....	65	23	1	5	15	3	2	170	85	450	180	105	92
Coventry Brook .....	300	26	12	4	14	7	25	350	3,200	700	500	900	503
Wilbur Brook .....	85	150	10	21	12	13	45	1,800	1,400	1,100	1,300	130	506
Westconnaug Reservoir .....	60	70	22	90	13	5	38	280	60	110	150	450	112
Barden Reservoir .....	55	30	28	130	16	8	75	700	25	170	1,100	400	228
Cork Brook .....	40	35	40	13	1	5	20	260	750	250	280	**	154
Rush Brook .....	330	60	230	12	20	10	27	1,100	4,000	340	400	160	557
Huntinghouse Brook .....	615	65	280	15	5	10	70	850	320	800	1,500	**	412
Harrisdale Brook .....	190	75	300	17	8	17	55	300	1,800	1,200	650	175	399
Blanchard Brook .....	**	42	35	120	35	28	650	3,000	20,000	**	**	**	2,989
Moswansicut Pond .....	160	90	23	35	7	7	12	900	900	150	340	180	234

\*\*No sample obtained—Dry.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is southwest of the Foster Nike Site.

**TABLE 17 (Continued)**  
**WATER PURIFICATION WORKS**

**Bacteriological Examination of Water in Various Brooks and Reservoirs on Scituate Watershed**  
**Year Ended September 30, 1964**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Bacteria per Ml. 24 Hours on Agar at 35° C.</b>													
Regulating Reservoir .....	1,400	110	17	450	14	10	19	170	50	30	550	140	247
Quonapaug Brook .....	510	50	15	50	16	15	25	2,100	600	650	220	90	362
Hemlock Brook .....	22	140	25	45	30	16	32	450	160	55	160	18	96
Betty Pond Stream.....	**	45	13	140	18	14	45	1,200	1,100	5,000	**	7,500	1,508
Spruce Brook .....	400	47	9	10	4	8	21	420	350	200	450	230	179
Brandy Brook .....	50	30	28	800	38	90	350	3,600	160	130	90	110	456
Moswansicut—South .....	**	320	90	360	70	85	300	9,500	18,000	3,500	3,500	6,000	3,793
Windsor Brook .....	**	35	1	22	6	3	30	2,000	1,500	1,600	600	1,500	663
Paine Pond .....	**	800	8	60	7	8	42	3,300	430	**	**	**	582
Unnamed Brook—A .....	**	190	55	24	4	8	55	3,000	**	**	**	**	477
Unnamed Brook—B .....	**	45	17	13	2	0	8	320	**	**	**	**	58
<b>Coliform Bacteria Index per 100 Ml.</b>													
Ponaganset Reservoir .....	110†	6	0	25	0	0	0	0	110†	70	0	6	.....
Coventry Brook .....	70	6	25	25	0	6	25	25	110†	110†	110†	110†	.....
Wilbur Brook .....	110†	25	25	25	6	70	25	110†	20	110†	25	70	.....
Westconnaug Reservoir .....	25	13	25	70	0	0	25	25	110†	25	25	25	.....
Barden Reservoir .....	70	0	6	110†	6	0	6	110†	110†	70	110†	25	.....
Cork Brook .....	25	25	0	25	6	6	6	13	70	110†	70	**	.....
Rush Brook .....	70	25	25	110†	0	25	25	25	25	110†	25	110†	.....
Huntinghouse Brook .....	110†	25	25	70	5	6	25	110†	70	70	110†	**	.....
Harrisdale Brook .....	70	70	25	25	25	6	25	70	70	70	70	110†	.....
Blanchard Brook .....	**	70	70	70	110†	70	0	110†	110†	**	**	**	.....
Moswansicut Pond .....	70	25	6	70	5	0	0	25	70	20	70	110†	.....
Regulating Reservoir .....	110†	70	25	110†	0	6	0	25	110†	25	110†	25	.....
Quonapaug Brook .....	25	110†	25	70	6	0	25	110†	70	25	70	70	.....
Hemlock Brook .....	6	70	25	110†	6	0	25	6	110†	6	0	70	.....
Betty Pond Stream.....	**	25	0	25	0	0	0	6	70	70	**	25	.....
Spruce Brook .....	110†	25	0	20	0	0	25	25	110†	110†	110†	110†	.....
Brandy Brook .....	25	6	0	25	0	70	110†	70	70	110†	13	70	.....
Moswansicut—South .....	**	110†	110†	110†	25	70	110†	110†	110†	110†	110†	110†	.....
Windsor Brook .....	**	25	6	110†	0	0	13	110†	110†	110†	110†	110†	.....
Paine Pond .....	**	110†	25	25	6	6	70	70	110†	**	**	**	.....
Unnamed Brook—A .....	**	110†	110†	25	25	5	70	70	**	**	**	**	.....
Unnamed Brook—B .....	**	25	70	25	6	0	70	25	**	**	**	**	.....

†Indicates Index of 110+.

\*\*No sample obtained—Dry.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is southwest of the Foster Nike Site.

TABLE 18

## WATER PURIFICATION WORKS

## Bacteriological Examination of Water in Various Parts of the Distribution System

Year Ended September 30, 1964

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Bacteria per Ml. 48 Hours on Agar at 20° C.</b>													
Neutaconkanut Reservoir .....	0	0	0	0	0	0	0	1	0	0	0	0	0
Phenix Avenue, Cranston .....	0	0	0	0	0	1	1	1	1	0	0	0	0
Westminster Street, Olneyville .....	0	0	0	0	0	0	0	1	0	0	0	0	0
*Budlong Road, Cranston.....	0	0	0	0	0	1	1	8	1	0	0	0	1
Reservoir Avenue, Cranston.....	0	0	0	0	0	0	1	0	0	0	0	1	0
T. F. Green Airport, Warwick.....	0	0	0	0	0	0	0	10	†	†	†	†	1
Biltmore Hotel .....	0	0	0	0	0	0	1	0	0	0	0	0	0
**Crown Hotel .....	0	0	0	0	0	0	1	0	0	0	0	0	0
State Office Building .....	1	0	0	0	0	0	1	4	0	0	0	0	1
‡Longview Reservoir .....	5	1	0	0	0	0	0	1	0	0	1	1	1
Police and Fire Headquarters, Prov.....	0	0	0	0	0	1	1	0	0	0	0	1	0
<b>Bacteria per Ml. 24 Hours on Agar at 35° C.</b>													
Neutaconkanut Reservoir .....	1	0	0	0	0	0	0	0	0	0	1	0	0
Phenix Avenue, Cranston .....	0	2	1	0	1	0	0	0	0	0	1	0	0
Westminster Street, Olneyville .....	0	3	0	0	0	2	0	0	0	0	0	0	0
*Budlong Road, Cranston.....	1	0	0	0	1	0	0	0	0	0	0	0	0
Reservoir Avenue, Cranston.....	0	0	1	0	1	0	0	0	0	0	0	0	0
T. F. Green Airport, Warwick.....	2	1	0	0	0	0	0	11	†	†	†	†	2
Biltmore Hotel .....	0	0	0	0	0	0	0	0	0	0	2	0	0
**Crown Hotel .....	0	0	0	0	0	0	0	0	0	1	1	0	0
State Office Building .....	0	0	0	0	1	1	0	0	0	0	2	0	0
‡Longview Reservoir .....	0	1	0	0	0	0	4	0	0	8	1	5	2
Police and Fire Headquarters, Prov.....	0	0	0	0	0	1	0	0	0	0	0	2	0
<b>Coliform Bacteria Index per Ml.</b>													
Neutaconkanut Reservoir .....	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenix Avenue, Cranston .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Westminster Street, Olneyville .....	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
*Budlong Road, Cranston.....	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Reservoir Avenue, Cranston.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
T. F. Green Airport, Warwick.....	.000	.000	.000	.000	.000	.000	.000	.000	†	†	†	†	.000
Biltmore Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
**Crown Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
State Office Building .....	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000
‡Longview Reservoir .....	.000	.000	.001	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000
Police and Fire Headquarters, Prov.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

\*Sampling location changed to 5 Garden City Drive, Cranston, on Dec. 26, 1963. Changed again to 1291 Reservoir Avenue on Jan. 16, 1964.

\*\*Sampling location changed to Dexter Manor, Broad St., Providence, on April 28, 1964.

‡Sample obtained at Our Lady of Fatima Hospital, North Providence.

†Sampling discontinued effective June 1, 1964. Warwick now obtains its own samples.

**TABLE 19**  
**WATER PURIFICATION WORKS**  
**Mineral Analysis of Water — Year Ended September 30, 1964**

Parts per Million	RAW WATER*					TAP WATER				
	1963	1964				1963	1964			
	Oct.- Dec.	Jan.- Mar.	Apr.- June	July- Sept.	Avg.	Oct.- Dec.	Jan.- Mar.	Apr.- June	July- Sept.	Avg.
Aluminum.....	0.00	0.01	0.01	0.00	0.01	0.02	0.03	0.07	0.03	0.04
Arsenic.....	.....	0.00	.....	0.00	0.00	.....	0.00	.....	0.00	0.00
Calcium.....	2.82	3.20	3.00	3.30	3.08	8.40	10.40	9.90	10.40	9.78
Chloride.....	4.5	4.8	5.0	5.0	4.8	5.0	5.0	5.0	5.1	5.0
Copper.....	0.01	0.02	0.02	0.05	0.03	0.00	0.00	0.00	0.01	0.00
Fluoride.....	0.14	0.14	0.14	0.15	0.14	0.99	0.97	1.00	1.00	0.99
Hardness.....	10	10	11	11	11	27	28	30	30	29
Iron.....	0.08	0.07	0.05	0.13	0.08	0.02	0.02	0.01	0.01	0.02
Lead.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Magnesium.....	0.20	0.30	0.20	0.20	0.23	0.15	0.10	0.10	0.10	0.11
Manganese.....	0.01	0.02	0.01	0.09	0.03	0.00	0.00	0.00	0.00	0.00
Phenolic Compounds.....	.....	0.001	.....	0.001	0.001	.....	0.000	.....	0.000	0.000
Selenium.....	.....	0.00	.....	0.00	0.00	.....	0.00	.....	0.00	0.00
Silica.....	3.0	4.5	4.5	4.6	4.2	3.0	4.5	4.5	4.3	4.1
Sulphate.....	7.8	8.4	7.5	7.8	7.9	14.0	14.7	14.1	12.8	13.9
Total Solids.....	32	36	35	32	34	55	55	51	53	54
Loss on Ignition.....	14	13	14	13	14	18	18	17	17	18
Total Alkalinity.....	5.2	4.2	4.0	4.3	4.4	13.5	12.2	12.8	14.6	13.3
Phenolphthalein Alkalinity	0.0	0.0	0.0	0.0	0.0	6.8	6.1	6.4	7.3	6.6
Zinc.....	.....	0.0	.....	0.0	0.0	.....	0.0	.....	0.0	0.0

\*Water from bottom of Scituate Reservoir as received at Purification Works.

TABLE 20

## WATER PURIFICATION WORKS

Sanitary Chemical Analysis (P.P.M.) — Year Ended September 30, 1964

1963-1964	RAW WATER*									TAP WATER								
	Ammonia			Dissolved Oxygen			Ammonia			Dissolved Oxygen			Loss on Ignition			Loss on Ignition		
	Free	Alb.	Nitrites	Ni- trates	Chlo- rides	P.P.M.	% Sat.	Total Solids	Igni- tion	Free	Alb.	Nitrites	Ni- trates	Chlo- rides	P.P.M.	% Sat.	Total Solids	Igni- tion
October.....	0.016	0.072	0.000	0.01	4.5	10.4	102.5	30	16	0.000	0.024	0.000	0.01	5.0	.....	.....	54	20
November.....	0.016	0.068	0.000	0.00	4.5	10.6	94.8	34	14	0.012	0.030	0.000	0.00	5.0	.....	.....	55	15
December.....	0.016	0.072	0.000	0.01	4.5	11.9	90.4	33	12	0.008	0.040	0.000	0.01	5.0	.....	.....	56	18
January.....	0.016	0.080	0.000	0.04	4.6	12.6	90.2	38	13	0.008	0.052	0.000	0.04	5.0	.....	.....	55	18
February.....	0.008	0.080	0.001	0.02	4.9	12.9	92.8	34	14	0.004	0.044	0.000	0.01	5.0	.....	.....	54	18
March.....	0.004	0.080	0.000	0.04	4.9	13.2	96.4	37	13	0.004	0.048	0.000	0.06	4.9	.....	.....	57	19
April.....	0.008	0.080	0.001	0.03	5.0	12.0	93.8	35	13	0.004	0.044	0.000	0.04	5.0	.....	.....	55	17
May.....	0.004	0.072	0.001	0.05	4.9	10.2	86.4	36	14	0.004	0.048	0.000	0.06	5.0	.....	.....	51	18
June.....	0.012	0.056	0.001	0.01	5.0	8.0	72.4	34	16	0.012	0.044	0.000	0.03	5.1	.....	.....	48	16
July.....	0.024	0.068	0.000	0.04	5.0	8.2	75.2	32	13	0.002	0.056	0.000	0.06	5.0	.....	.....	53	15
August.....	0.064	0.068	0.000	0.06	4.9	4.1	39.8	31	14	0.016	0.048	0.000	0.07	5.0	.....	.....	53	19
September.....	0.048	0.068	0.000	0.07	5.0	6.6	70.2	32	13	0.012	0.048	0.000	0.07	5.2	.....	.....	52	17
Averages.....	0.020	0.072	0.000	0.03	4.8	10.1	83.7	34	14	0.007	0.044	0.000	0.04	5.0	.....	.....	54	18

\*Water from bottom of Scituate Reservoir as received at Purification Works.

TABLE 21

## WATER PURIFICATION WORKS

Laboratory Examinations Made During the Fiscal Year Ended September 30, 1964

SOURCE OF WATER TESTED	Frequency of Test or Examination	Number of Tests or Analyses Made During the Fiscal Year						Total
		Chemical	Bacteri- ological	Micro- scopical	Sanitary Chemical	Mineral	Miscel- laneous	
I Brooks and Streams on Watershed								
Fourteen Brooks, Two Streams and One Pond.....	Monthly.....	1,260	1,534	.....	66	.....	.....	2,860
II Smaller Storage Reservoirs on Watershed								
Regulating Reservoir .....	Monthly.....	84	102	.....	.....	.....	.....	186
Westconnaug Reservoir .....	Monthly.....	84	102	.....	.....	.....	.....	186
Barden Reservoir .....	Monthly.....	84	99	.....	.....	.....	.....	183
Moswansicut Pond .....	Monthly.....	84	98	.....	.....	.....	.....	182
Ponaganset Reservoir .....	Monthly.....	84	89	.....	.....	.....	.....	173
III Scituate Reservoir								
Surface Water .....	Bi-Weekly.....	208	326	9	155	.....	.....	698
Subsurface Water (See Purif. Wks.—Raw Water).....	.....	.....	.....	.....	.....	.....	.....	.....
IV Pawtuxet River—Below Gainer Dam								
Gainer Dam Meter Chamber.....	Bi-Weekly.....	182	.....	.....	155	.....	.....	337
Fiskeville, R. I. ....	Bi-Weekly.....	182	.....	.....	155	.....	.....	337
Twelve other locations on Pawtuxet River.....	Bi-Weekly.....	2,340	1,737	.....	2,172	.....	.....	6,249
V Water Purification Works								
Raw Water (from Bottom of Scituate Reservoir).....	Daily.....	2,982	3,784	.....	1,440	.....	360	8,566
Raw Water (from Bottom of Scituate Reservoir).....	Bi-Weekly.....	.....	.....	9	26*	.....	.....	35
Raw Water (from Bottom of Scituate Reservoir).....	Monthly.....	.....	.....	.....	72**	.....	.....	72
***Raw Water (from Bottom of Scituate Reservoir).....	Every 13 Weeks.....	.....	.....	.....	.....	36	.....	36
Aerated Influent .....	Daily.....	720	.....	.....	.....	.....	.....	720
Mixer .....	Daily.....	1,845	.....	.....	.....	.....	.....	1,845
Settled .....	Daily.....	2,462	1,235	.....	.....	.....	360	4,057
Settled .....	Bi-Weekly.....	.....	.....	9	26*	.....	.....	35
Settled .....	Monthly.....	.....	.....	.....	48**	.....	.....	48
Filtered .....	Daily.....	1,080	.....	.....	.....	.....	.....	1,080
Filtered .....	Monthly.....	.....	.....	.....	48	.....	.....	48
Unchlorinated Effluent .....	Daily.....	3,182	1,228	.....	1,440	.....	.....	5,850
Unchlorinated Effluent .....	Bi-Weekly.....	.....	.....	9	26*	.....	.....	35
Unchlorinated Effluent .....	Monthly.....	.....	.....	.....	24**	.....	.....	24
Chlorinated Effluent .....	Daily.....	1,524	1,778	.....	1,270	.....	.....	4,572
Raw Water (from Bottom of Scituate Reservoir).....	Daily at 3:00 P.M.....	1,000	1,188	.....	1,000	.....	.....	3,188
Unchlorinated Effluent .....	Daily at 3:00 P.M.....	1,000	1,006	.....	1,000	.....	.....	3,006

TABLE 21 (Continued)

## WATER PURIFICATION WORKS

Laboratory Examinations Made During the Fiscal Year Ended September 30, 1964

SOURCE OF WATER TESTED	Frequency of Test or Examination	Number of Tests or Analyses Made During the Fiscal Year						Total
		Chemical	Bacteri- ological	Micro- scopical	Sanitary Chemical	Mineral	Miscel- laneous	
VI Neutaconkanut Distribution Reservoir								
Sample from nearby Tap.....	Daily.....	1,524	1,778	.....	1,016	.....	.....	4,318
Sample from nearby Tap.....	Bi-Weekly.....	.....	.....	9	.....	.....	.....	9
VII Longview Distribution Reservoir								
Sample from nearby Tap.....	Daily.....	1,524	1,781	.....	1,016	.....	.....	4,321
Sample from nearby Tap.....	Bi-Weekly.....	.....	.....	9	.....	.....	.....	9
VIII Distribution System								
†Providence City Hall Tap Water.....	Daily.....	2,424	2,123	.....	1,515	.....	303	6,365
†Providence City Hall Tap Water.....	Bi-Weekly.....	.....	.....	9	.....	.....	.....	9
†Providence City Hall Tap Water.....	Monthly.....	.....	.....	.....	60	.....	.....	60
***Providence City Hall Tap Water.....	Every 13 Weeks.....	.....	.....	.....	.....	32	.....	32
****Sectional Tests.....	Monthly.....	768	480	.....	360	.....	.....	1,608
Consumers' Complaints (41 during the year).....	.....	340	106	.....	144	.....	.....	590
Disinfection of Newly Laid Mains.....	.....	.....	1,187	.....	144	.....	.....	1,331
†Sectional Tests.....	Daily.....	11,346	13,244	.....	7,564	.....	.....	32,154
IX Miscellaneous Tests								
Coagulation Tests to Determine Chemical Dosages.....	.....	72	.....	.....	.....	.....	36	108
Analysis of Ferri-Floc used for Treatment.....	.....	57	.....	.....	.....	.....	19	76
Analysis of Quicklime used for Treatment.....	.....	19	.....	.....	.....	.....	38	57
Analysis of Sod. Silicofluoride used for Treatment.....	.....	6	.....	.....	.....	.....	.....	6
Water, Filter Sand and Other Materials.....	.....	1,629	5,571	19	639	.....	172	8,030
Totals .....		40,096	40,576	82	21,581	68	1,288	103,691

\*For Oxygen Consumed only.

\*\*Exclusive of Oxygen Consumed.

\*\*\*Composite of 13 Weekly Samples.

\*\*\*\*Samples from 10 Random Dwellings (location changed monthly).

†Sampling location changed to the Providence Journal Building on January 23, 1964.

‡Samples from eight fixed locations Oct. 1, 1963 to May 31, 1964 and from seven fixed locations June 1 to Sept. 30, 1964.

## NEUTACONKANUT HIGH SERVICE PUMPING STATION

1963-1964	ELECTRICALLY-DRIVEN PUMPS								GASOLINE ENGINE-DRIVEN PUMP			
	No. 1 10" Pump 2700 GPM. TDH 90'		No. 2 12" Pump 3800 GPM. TDH 104'		No. 3 16" Pump 7000 GPM. TDH 96'		Power Used*		No. 4 16" Pump 7000 GPM. TDH 96'			
	Operated Hours and		Operated Hours and		Operated Hours and		KWH	Cost	†Operated Hours and	Gasoline Used —	Oil Used —	
	Days	Minutes	Days	Minutes	Days	Minutes			Days	Minutes	Gals.	Qts.
October.....	0	0-00	31	734-30	0	0-00	78,500	\$ 1,242.20	4	4-00	116	0
November.....	0	0-00	30	713-00	0	0-00	87,500	1,268.79	4	4-00	138	0
December.....	0	0-00	31	739-00	0	0-00	77,000	1,161.80	5	5-00	166	0
January.....	0	0-00	31	740-00	0	0-00	77,500	1,161.86	4	4-00	182	0
February.....	0	0-00	29	693-00	0	0-00	87,500	1,269.23	4	4-00	114	0
March.....	2	32-00	31	703-00	0	0-00	75,000	1,142.92	5	5-00	160	0
April.....	7	83-15	29	632-30	0	0-00	80,500	1,304.73	3	3-00	124	0
May.....	0	0-00	29	565-30	9	168-30	.....	.....	4	4-00	116	0
June.....	0	0-00	18	274-00	22	430-00	90,000**	2,699.40**	4	4-00	138	0
July.....	11	87-00	26	566-30	11	182-00	103,500	1,652.40	4	4-00	132	0
August.....	12	115-00	31	738-15	0	0-00	84,500	1,329.91	4	4-00	178	0
September.....	10	72-00	30	712-30	0	0-00	86,000	1,349.83	3	3-00	133	0
Totals.....	42	389-15	346	7,811-45	42	780-30	927,500	\$15,583.07	48	48-00	1,697	0

\*\*For the two months, May and June.

†Engine Test Run.



**TABLE 22 (Continued)**  
**WATER DISTRIBUTION SYSTEM**  
**NEUTACONKANUT HIGH SERVICE PUMPING STATION**  
**Operating Statistics for Year Ended September 30, 1964**

1963-1964	ELECTRICALLY-DRIVEN PUMPS			GASOLINE ENGINE-DRIVEN PUMP		Total Water Pumped — Mil. Gals.
	No. 1 10" Pump 2700 GPM. TDH 90'	No. 2 12" Pump 3800 GPM. TDH 104'	No. 3 16" Pump 7000 GPM. TDH 96'	No. 4 16" Pump 7000 GPM. TDH 96'		
	Water Pumped	Water Pumped	Water Pumped	Water Pumped	For Month	Avg. per Day
	Mil. Gals.	Mil. Gals.	Mil. Gals.	Mil. Gals.		
October.....	0	204.85	0	1.74	206.59	6.66
November.....	0	199.37	0	1.64	201.01	6.70
December.....	0	206.45	0	2.04	208.49	6.73
January.....	0	206.23	0	1.66	207.89	6.71
February.....	0	192.07	0	1.66	193.73	6.68
March.....	5.82	195.63	0	2.09	203.54	6.57
April.....	15.00	175.58	0	1.23	191.81	6.39
May.....	0	157.52	66.76	1.70	225.98	7.29
June.....	0	86.57	160.37	1.64	248.58	8.29
July.....	14.94	151.31	70.29	1.61	238.15	7.68
August.....	20.42	200.13	0	1.73	222.28	7.17
September.....	13.08	194.94	0	1.23	209.25	6.98
Totals.....	69.26	2,170.65	297.42	19.97	2,557.30	6.99

**TABLE 23**  
**WATER DISTRIBUTION SYSTEM**  
**BATH STREET HIGH SERVICE PUMPING STATION**  
**Operating Statistics for Year Ended September 30, 1964**

1963-1964	ELECTRICALLY-DRIVEN PUMPS						GASOLINE ENGINE-DRIVEN PUMPS							
	Pump No. 1 2000 GPM. TDH 98'		Pump No. 2 2000 GPM. TDH 98'		Power Used*		Pump No. 3 2000 GPM. TDH 98'; 150 HP Sterling Engine				Pump No. 4 2000 GPM. TDH 98'; 150 HP Sterling Engine			
	Operated Hours and		Operated Hours and				†Operated		Gasoline		†Operated		Gasoline	
	Days	Minutes	Days	Minutes	KWH	Cost	Days	Minutes	Used	Oil	Days	Minutes	Used	Oil
									Gals.	Qts.			Gals.	Qts.
October.....	18	174-30	21	206-30	20,720	\$ 487.54	1	1-00	8	10	1	1-00	8	10
November.....	15	86-30	18	138-30	15,820	410.57	1	1-00	7	0	1	1-00	7	0
December.....	11	74-30	18	129-30	11,060	335.42	0	0-00	0	0	0	0-00	0	0
January.....	14	118-30	17	134-00	13,300	371.48	3	3-00	28	0	3	3-00	28	0
February.....	16	129-30	14	100-00	15,820	415.26	5	13-00	34	0	4	4-00	34	0
March.....	19	165-00	13	109-45	15,680	381.19	4	3-05	23	0	4	3-45	23	0
April.....	12	108-00	18	206-00	17,640	440.23	5	3-40	17	0	3	3-00	17	0
May.....	28	335-15	30	362-45	32,900	624.73	4	4-00	32	0	4	4-00	32	0
June.....	26	329-45	27	330-30	35,420	649.69	4	4-00	24	0	4	4-00	24	0
July.....	23	218-00	23	253-45	33,040	623.42	1	1-00	9	0	1	1-00	9	0
August.....	2	6-45	25	272-00	28,700	579.15	4	4-00	45	0	4	4-00	45	0
September....	0	0-00	29	341-45	7,560	280.14	4	4-00	7	0	4	4-00	7	0
Totals.....	184	1,746-15	253	2,585-00	247,660	\$5,598.82	36	41-45	234	10	33	32-45	234	10

\*Narragansett Electric Co. Power Rate G.

†Engine Test Run.

**TABLE 23 (Continued)**  
**WATER DISTRIBUTION SYSTEM**  
**BATH STREET HIGH SERVICE PUMPING STATION**  
**Operating Statistics for Year Ended September 30, 1964**

1963-1964	ELECTRICALLY-DRIVEN PUMPS		GASOLINE ENGINE-DRIVEN PUMPS			
	Pump No. 1 2000 GPM. TDH 98'	Pump No. 2 2000 GPM. TDH 98'	Pump No. 3 2000 GPM. TDH 98'; 150 HP Sterling Engine	Pump No. 4 2000 GPM. TDH 98'; 150 HP Sterling Engine	Total Water Pumped — Mil. Gals.	
	Water Pumped — Mil. Gals.	Water Pumped — Mil. Gals.	Water Pumped — Mil. Gals.	Water Pumped — Mil. Gals.	For Month	Avg. per Day
October.....	23.63	27.96	0.13	0.13	51.85	1.67
November.....	11.83	18.76	0.14	0.13	30.86	1.03
December.....	10.31	17.91	0	0	28.22	0.91
January.....	16.43	18.42	0.39	0.39	35.63	1.15
February.....	18.00	13.83	1.73	0.51	34.07	1.17
March.....	22.20	14.77	0.41	0.51	37.89	1.22
April.....	14.84	27.88	0.48	0.41	43.61	1.45
May.....	42.32	45.59	0.50	0.50	88.91	2.87
June.....	41.91	42.34	0.52	0.52	85.29	2.84
July.....	28.29	33.03	0.13	0.13	61.58	1.99
August.....	0.89	37.07	0.53	0.53	39.02	1.26
September.....	0	46.44	0.52	0.52	47.48	1.58
Totals.....	230.65	344.00	5.48	4.28	584.41	1.60

TABLE 24

## WATER DISTRIBUTION SYSTEM

## Aqueduct Distribution Reservoir\*

Operating Statistics for Year Ended September 30, 1964

1963-1964	7 A.M. Statistics on First Day of Month		OPERATING CHARACTERISTICS DURING MONTH											
	Water Level	Storage Mil. Gals.	Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
			Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
October.....	228.81	39.71	229.65	225.69	228.93	41.14	34.35	39.91	3.87	0.90	2.00	6.64	1.54	3.43
November.....	229.15	40.29	230.08	225.63	229.28	41.87	34.25	40.51	4.08	1.04	2.26	7.00	1.78	3.88
December.....	229.73	41.28	230.02	226.59	229.04	41.77	35.90	40.10	3.35	0.84	1.76	5.74	1.44	3.02
January.....	229.43	40.77	229.98	225.63	228.89	41.71	34.25	39.84	2.76	0.94	1.91	4.74	1.62	3.28
February.....	229.65	41.14	229.95	226.71	229.20	41.66	36.10	40.37	2.73	1.21	1.89	4.68	1.83	3.25
March.....	228.71	39.54	230.05	226.77	229.27	41.82	36.21	40.49	2.78	0.82	1.79	4.76	1.41	3.06
April.....	229.60	41.06	230.25	225.96	229.52	42.16	34.82	40.92	3.66	0.90	2.00	6.27	1.54	3.42
May.....	229.25	40.46	230.30	226.37	229.77	42.24	35.52	41.35	3.40	1.25	2.30	5.83	2.15	3.94
June.....	229.80	41.40	230.40	226.81	229.89	42.40	36.28	41.55	3.45	0.80	2.19	5.89	1.37	3.75
July.....	230.29	42.22	230.53	226.83	229.74	42.62	36.31	41.30	3.70	0.54	1.90	6.31	0.89	3.25
August.....	229.33	40.60	230.18	226.31	229.43	42.04	35.42	40.77	3.24	0.71	1.90	5.55	1.00	3.25
September.....	229.74	41.30	230.24	226.48	229.40	42.14	35.71	40.72	3.76	0.99	1.99	6.43	1.70	3.41
For Year.....			230.53	225.63	229.36	42.62	34.25	40.65	4.08	0.54	1.99	7.00	0.89	3.41

\*Storage capacity at overflow elevation of 231.00=43,400,000 gallons. †Average of 7 A.M. statistics.

Note: Water levels are elevations in feet above mean high water in Providence harbor.

TABLE 25

## WATER DISTRIBUTION SYSTEM

## Neutaconkanut Distribution Reservoir\*

Operating Statistics for Year Ended September 30, 1964

1963-1964	7 A.M. Statistics on First Day of Month		OPERATING CHARACTERISTICS DURING MONTH											
	Water Level	Storage Mil. Gals.	Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
			Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
October.....	226.02	40.37	226.45	223.50	226.16	41.12	35.94	40.62	2.91	0.21	1.64	5.11	0.37	2.90
November.....	226.18	40.65	226.84	223.40	226.34	41.82	35.76	40.93	2.59	0.40	1.44	4.55	0.70	2.52
December.....	226.60	41.39	226.70	224.38	226.28	41.57	37.49	40.83	2.00	0.28	1.09	3.52	0.16	1.81
January.....	226.26	40.79	226.72	224.29	226.22	41.61	37.33	40.72	2.33	0.30	1.29	4.10	0.50	2.32
February.....	226.30	40.86	226.69	224.23	226.27	41.55	37.22	40.81	2.45	0.12	1.19	4.32	0.21	2.14
March.....	226.10	40.51	226.69	222.66	226.24	41.55	34.46	40.76	2.54	0.27	1.30	4.47	0.48	2.28
April.....	226.36	40.97	226.74	221.64	225.89	41.64	32.67	40.15	4.94	0.18	1.81	13.21	0.32	3.18
May.....	226.15	40.60	226.48	222.56	226.23	41.18	34.29	40.74	3.76	0.44	1.88	6.61	0.77	3.31
June.....	226.46	41.14	226.62	221.24	226.18	41.43	31.96	40.65	4.80	1.52	2.62	8.45	2.66	4.61
July.....	225.52	39.50	226.86	221.65	226.20	41.86	32.68	40.69	4.10	0.10	2.06	7.21	0.18	3.59
August.....	226.22	40.72	226.68	223.43	226.28	41.54	35.82	40.83	2.98	0.18	1.59	5.25	0.31	2.80
September.....	226.17	40.64	226.80	223.22	226.18	41.75	35.45	40.65	2.95	0.29	1.87	5.19	0.51	3.29
For Year.....	.....	.....	226.86	221.24	226.21	41.86	31.96	40.70	4.94	0.10	1.65	13.21	0.16	2.90

\*Storage capacity at overflow elevation of 227.00=42,090,000 gallons. †Average of 7 A.M. statistics.

Note: Water levels are elevations in feet above mean high water in Providence harbor.

**TABLE 26**  
**WATER DISTRIBUTION SYSTEM**  
**Longview Distribution Reservoir\***

Operating Statistics for Year Ended September 30, 1964

1963-1964	7 A.M. Statistics on First Day of Month		OPERATING CHARACTERISTICS DURING MONTH											
	Water Level	Storage Mil. Gals.	Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
			Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
October.....	304.95	11.92	305.61	302.04	304.89	12.22	10.57	11.89	3.08	1.33	2.13	1.42	0.63	0.99
November.....	305.10	11.99	305.66	302.03	304.78	12.24	10.56	11.84	3.15	1.09	2.02	1.46	0.50	0.94
December.....	305.12	11.99	305.42	302.00	304.73	12.13	10.55	11.81	2.37	0.78	1.75	1.10	0.37	0.82
January.....	305.05	11.96	305.22	302.50	304.84	12.04	10.78	11.86	2.54	1.35	1.92	1.18	0.63	0.89
February.....	305.12	11.99	305.45	302.13	304.88	12.14	10.61	11.88	2.47	1.15	1.98	1.15	0.14	0.88
March.....	304.68	11.79	305.73	302.71	304.92	12.28	10.88	11.90	2.79	1.25	2.00	1.30	0.58	0.93
April.....	305.28	12.07	305.49	301.50	304.86	12.16	10.32	11.87	3.85	1.49	2.04	1.78	0.69	0.95
May.....	304.69	11.79	305.80	299.03	304.80	12.31	9.17	11.85	6.09	1.18	2.31	2.82	0.55	1.07
June.....	305.00	11.94	305.68	297.41	305.00	12.25	8.42	11.94	7.61	1.24	2.67	3.53	0.58	1.26
July.....	302.31	10.69	305.91	298.24	304.56	12.36	8.80	11.73	5.25	1.16	2.13	2.44	0.14	0.95
August.....	304.67	11.78	305.54	301.97	304.73	12.19	10.54	11.81	2.89	0.93	1.94	1.33	0.43	0.90
September.....	304.50	11.71	305.40	301.90	304.71	12.12	10.50	11.80	3.25	1.10	1.98	1.51	0.29	0.89
For Year.....	.....	.....	305.91	297.41	304.81	12.36	8.42	11.85	7.61	0.78	2.07	3.53	0.14	0.96

\*Storage capacity at overflow elevation of 306.00=12,400,000 gallons. †Average of 7 A.M. statistics.

Note: Water levels are elevations in feet above mean high water in Providence harbor.

**TABLE 27**  
**Water Pipe Laid, Removed and Added**  
**Year Ended September 30, 1964**

PIPE LAID IN FEET							
City or Town	6"	8"	10"	12"	16"	24"	Total
Providence.....	5,956.20	3,126.70	6.50	2,599.71	20.18	620.23	12,329.52
Cranston.....	4,930.66	17,613.73	0	584.83	0	0	23,129.22
Johnston.....	1,489.42	8,394.85	0	1,433.90	0	0	11,318.17
North Providence.....	2,538.02	5,352.65	0	0	0	0	7,890.67
Totals.....	14,914.30	34,487.93	6.50	4,618.44	20.18	620.23	54,667.58

PIPE REMOVED IN FEET							
City or Town	6"	8"	10"	12"	16"	24"	Total
Providence.....	10,068.64	3,306.39	617.00	2,482.46	315.00	127.00	16,916.49
Cranston.....	3,622.88	1,436.60	0	0	0	1,023.00	6,082.48
Johnston.....	1,049.40	514.10	0	0	0	0	1,563.50
North Providence.....	0	0	0	0	0	0	0
Totals.....	14,740.92	5,257.09	617.00	2,482.46	315.00	1,150.00	24,562.47

NET LENGTH ADDED TO DISTRIBUTION SYSTEM							
City or Town	6"	8"	10"	12"	16"	24"	Total
Providence.....	—4,112.44	—179.69	—610.50	117.25	—294.82	493.23	—4,586.97
Cranston.....	1,307.78	16,177.13	0	584.83	0	—1,023.00	17,046.74
Johnston.....	440.02	7,880.75	0	1,433.90	0	0	9,754.67
North Providence.....	2,538.02	5,352.65	0	0	0	0	7,890.67
Totals.....	173.38	29,230.84	—610.50	2,135.98	—294.82	—529.77	30,105.11

TABLE 28

Public Water Mains in Use on September 30, 1964

	Providence		Cranston		Johnston		North Providence		Total*		SPECIAL HIGH PRESSURE FIRE SERVICE Providence	
	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles
6-inch.....	<sup>1</sup> 1,483,587.40	280.98	621,968.71	117.80	117,525.18	22.26	<sup>1</sup> 157,510.46	29.83	2,380,591.75	450.87	82.06	0.02
8-inch.....	334,304.19	63.32	329,480.65	62.40	155,670.11	29.48	115,216.41	21.82	934,671.36	177.02	1,233.44	0.23
10-inch.....	12,407.12	2.35	0	0	0	0	0	0	12,407.12	2.35	0	0
12-inch.....	<sup>2</sup> 242,094.53	45.85	102,616.98	19.44	<sup>3</sup> 10,855.71	2.06	32,633.90	6.18	388,201.12	73.53	5,919.13	1.12
16-inch.....	145,019.05	27.46	3,512.31	.67	6,393.63	1.21	0	0	154,924.99	29.34	55,726.64	10.55
20-inch.....	19,775.66	3.75	0	0	0	0	0	0	19,775.66	3.75	0	0
24-inch.....	56,375.11	10.68	4,382.43	.82	31,347.98	5.94	2,368.71	.45	94,474.23	17.89	4,299.44	0.81
30-inch.....	43,992.47	8.33	31,894.62	6.04	0	0	3,753.06	.71	79,640.15	15.08	0	0
36-inch.....	4,555.68	.86	5,511.13	1.05	0	0	0	0	10,066.81	1.91	0	0
42-inch.....	2,893.25	.55	22,607.49	4.28	0	0	0	0	25,500.74	4.83	0	0
48-inch.....	14,918.00	2.83	1,710.97	.32	394.00	.07	0	0	17,022.97	3.22	0	0
60-inch.....	5,559.00	1.05	12,910.89	2.45	4,340.00	.82	0	0	22,809.89	4.32	0	0
66-inch.....	0	0	8,448.00	1.60	0	0	0	0	8,448.00	1.60	0	0
<b>Totals.....</b>	<b>2,365,481.46</b>	<b>448.01</b>	<b>1,145,044.18</b>	<b>216.87</b>	<b>326,526.61</b>	<b>61.84</b>	<b>311,482.54</b>	<b>58.99</b>	<b>4,148,534.79</b>	<b>785.71</b>	<b>67,260.71</b>	<b>12.73</b>

\*Special High Pressure Fire Service Included.

<sup>1</sup>Includes 691.45 feet of 6" main in Pawtucket.<sup>2</sup>Includes 44.47 feet of 12" main in Pawtucket.<sup>3</sup>Includes 146.00 feet of 12" main in Smithfield.<sup>4</sup>Includes 179.30 feet of 6" main in Pawtucket.



**TABLE 29**

**Gates in Use on September 30, 1964**

Stop Gates													Gates on Public Fire Hydrants			Gates on Unwatering Hydrants			Gates on Blow-offs				Total Number of Gates	
PROVIDENCE																								
6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	Total	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total		
4,511	944	17	631	273	28	72	36	6	3	10	0	6,531	1,352	1,567	2,919	2	14	16	1	2	1	4	9,470	
CRANSTON																								
6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	Total	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total		
1,718	796	0	206	9	0	8	16	13	13	4	1	2,784	997	5	1,002	3	5	8	0	2	3	5	3,799	
JOHNSTON																								
6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	Total	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total		
325	323	1	29	12	5	5	0	0	0	2	0	702	265	11	276	3	0	3	0	0	2	2	983	
NORTH PROVIDENCE																								
6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	Total	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total		
431	236	0	68	0	0	2	0	0	0	0	0	737	293	0	293	0	3	3	0	0	0	0	1,033	
TOTALS																								
6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	60"	Total	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total		
6,985	2,299	18	934	294	33	87	52	19	16	16	1	10,754	2,907	1,583	4,490	8	22	30	1	4	6	11	15,285	

Note: The above table includes all gates in the special high pressure fire system in Providence and gates on Neutaconkanut Conduit and Scituate Aqueduct east of the Siphon Chamber.

**TABLE 30****Service Pipes Installed and Removed—Year Ended September 30, 1964**

City or Town	INSTALLED				REMOVED			
	General		Fire Supply	Total	General		Fire Supply	Total
	Copper ¾"-2"	Cast Iron 4"-12"	Cast Iron 4"-12"		Lead or Copper ½"-2"	Cast Iron 2"-8"	Cast Iron 4"-8"	
Providence.....	238	18	15	271	268	6	6	280
Cranston.....	386	5	3	394	87	1	1	89
Johnston.....	171	0	0	171	27	0	0	27
North Providence.....	157	0	0	157	3	0	0	3
Totals.....	952	23	18	993	385	7	7	399

**TABLE 31****Number and Size of Active Services—Year Ended September 30, 1964**

	½"	⅝"	¾"	1"	1¼"	1½"	2"	3"	4"	6"	8"	10"	12"	16"	24"	30"	Totals
Providence.....	231	25,457	7,255	1,533	538	309	499	6	981	872	68	4	8	2	0	0	37,763
Cranston.....	5	7,041	7,597	1,262	43	283	268	0	79	71	26	0	4	0	1	1	16,681
Johnston.....	0	768	2,134	561	10	102	47	0	7	8	2	0	0	0	0	0	3,639
North Providence.....	0	1,088	2,123	573	6	163	60	0	17	8	4	0	1	0	0	0	4,043
Totals.....	236	34,354	19,109	3,929	597	857	874	6	1,084	959	100	4	13	2	1	1	62,126

## TABLE 32

### PUBLIC FIRE HYDRANTS

HYDRANT ACTIVITIES DURING YEAR ENDED SEPTEMBER 30, 1964

	Providence	Cranston	Johnston	North Providence	Totals
Post Hydrants Installed.....	267	38	17	11	333
Post Hydrants Removed.....	12	10	11	7	40
Flush Hydrants Removed.....	251	0	0	0	251

HYDRANTS IN DISTRIBUTION SYSTEM ON SEPTEMBER 30, 1964\*\*

Post Hydrants .....	2,233	1,005	293	296	3,827
Flush Hydrants .....	913	0	0	0	913
Totals .....	3,146	1,005	293	296	*4,740

\*Includes 137 Post Hydrants and 10 Flush Hydrants in Special High Pressure Fire Service in Providence.

\*\*Hydrant statistics in the City of Warwick and the East Smithfield Water District are not included, as those distribution systems are not owned or maintained by the Providence Water Works.

**TABLE 33**  
**NUMBER, MAKE AND SIZE OF METERS ON ACTIVE SERVICES**  
**Year Ended September 30, 1964**

**PROVIDENCE**

Make	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Trident.....	25,096	2,605	759	1,038	1,335	88	70	61	15	5			31,072
Thomson.....	5,175	543	308	55	121	2	4						6,208
Empire.....	48		8	67	23	1							147
Crown.....	17	5	3	4	2								31
Hersey.....				2	3	2	13	68	6				94
Venturi.....												2	2
Totals.....	30,336	3,153	1,078	1,166	1,484	93	87	129	21	5		2	37,554

**\*CRANSTON**

Make	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Trident.....	12,863	839	329	230	245	2	6	13	3	1	1		14,532
Thomson.....	1,874	45	33	9	11								1,972
Empire.....	8												8
Hersey.....					1		3	4					8
Venturi.....											2		2
Totals.....	14,745	884	362	239	257	2	6	16	7	1	3		16,522

\*Includes 1- 6" Trident Compound Meter supplying City of Warwick.  
2- 6" Trident Protectus Meters supplying City of Warwick.  
1-10" Trident Protectus Meter supplying City of Warwick.  
1-12" Trident Crest Meter supplying Kent County Water Authority.  
1-12" Venturi Meter supplying Kent County Water Authority at Water Purification Works.

**\*JOHNSTON**

Make	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Trident.....	2,877	374	78	34	35				1				3,399
Thomson.....	219	12	4		1								236
Totals.....	3,096	386	82	34	36				1				3,635

\*Includes 1-8" Trident Crest Meter supplying East Smithfield Water Co.

**\*NORTH PROVIDENCE**

Make	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Trident.....	3,124	358	173	45	27	1	2	3			1		3,734
Thomson.....	287	7	6	1	1								302
Empire.....				2									2
Hersey.....								5					5
Totals.....	3,411	365	179	48	28	1	2	8			1		4,043

\*Includes 1-12" Trident Crest Meter supplying East Smithfield Water Co.

**TABLE 34**  
**CAPACITY AND CONSUMPTION**

Year Ended September 30	Purification Works Capacity M.G.D.	Total During Year M.G.	Average M.G.D.	CONSUMPTION			Maximum Hour		
				Total M.G.	Maximum Day		Rate in M.G.D.	Percent of Plant Capacity	Percent of Average Day
					Percent of Plant Capacity	Percent of Average Day			
1941.....	61.6	11,020.9	30.2	40.8	66.2	135.1	66.7	108.3	220.9
1942.....	61.6	11,409.3	31.3	38.3	62.2	122.4	54.7	88.8	174.8
1943.....	61.6	11,586.8	31.7	46.7	75.8	147.3	77.0	125.0	242.9
1944.....	61.6	12,538.9	34.3	49.5	80.4	144.3	69.8	113.3	203.5
1945.....	61.6	12,528.9	34.3	43.6	70.8	127.1	71.3	115.7	207.9
1946.....	61.6	12,685.3	34.8	50.5	82.0	145.1	82.1	133.3	235.9
1947.....	61.6	13,169.0	36.1	49.8	80.8	138.0	71.8	116.6	198.7
1948.....	61.6	13,644.7	37.3	54.7	88.8	146.6	82.3	133.6	220.6
1949.....	61.6	13,510.3	37.0	60.2	97.7	162.7	89.3	145.0	241.4
1950.....	61.6	13,373.8	36.6	62.0	100.6	169.4	98.4	159.7	268.9
1951.....	61.6	13,721.6	37.6	56.4	91.6	150.0	91.2	148.1	242.6
1952.....	61.6	13,829.3	37.8	70.0	113.6	185.2	110.4	179.2	292.1
1953.....	61.6	14,182.8	38.9	66.4	107.8	170.7	100.8	163.6	259.1
1954.....	105.0	13,840.6	37.9	68.6	65.3	181.0	118.1	112.5	311.6
1955.....	105.0	14,933.0	40.9	70.2	66.9	171.6	117.1	111.5	286.3
1956.....	105.0	15,145.2	41.4	68.8	65.5	166.2	103.6	98.7	250.2
1957.....	105.0	15,963.8	43.7	84.7	80.7	193.8	131.0	124.8	299.8
1958.....	105.0	14,761.0	40.4	68.5	65.2	169.6	108.7	103.5	269.1
1959.....	105.0	15,430.0	42.3	71.1	67.7	168.1	111.5	106.2	263.6
1960.....	105.0	15,859.0	43.3	77.4	73.7	178.8	120.3	114.6	277.8
1961.....	105.0	16,495.9	45.2	69.3	66.0	153.3	112.3	107.0	248.5
1962.....	105.0	16,687.5	45.7	73.8	70.3	161.5	112.5	107.1	246.2
1963.....	105.0	17,488.8	47.9	87.2	83.0	182.0	129.3	123.1	269.9
1964.....	105.0	18,383.0	50.2	86.0	81.9	171.3	139.6	133.0	278.1

**TABLE 35**  
**CONSUMPTION OF WATER — MILLION GALLONS**  
**Year Ended September 30, 1964**

1963-1964	LOW SERVICE*				HIGH SERVICE†				TOTAL SERVICE*†			
	Max. Day	Min. Day	Avg. Day	Total	Max. Day	Min. Day	Avg. Day	Total	Max. Day	Min. Day	Avg. Day	Total
October.....	43.91	25.90	38.44	1,191.58	9.09	7.19	8.33	258.37	53.00	33.63	46.77	1,449.95
November.....	40.74	21.98	34.93	1,048.04	8.50	6.66	7.73	231.87	49.07	28.64	42.66	1,279.91
December.....	41.76	25.32	35.44	1,098.55	8.57	6.65	7.64	236.74	50.33	31.97	43.07	1,335.29
January.....	42.98	25.90	37.59	1,165.46	8.38	6.76	7.86	243.49	51.36	32.66	45.45	1,408.95
February.....	43.67	28.32	37.95	1,100.61	8.36	6.93	7.86	228.00	52.02	35.30	45.81	1,328.61
March.....	43.73	27.91	38.45	1,191.97	8.52	6.43	7.78	241.16	51.94	34.34	46.23	1,433.13
April.....	44.51	27.35	38.68	1,160.52	8.88	6.87	7.86	235.70	53.39	34.22	46.54	1,396.22
May.....	59.32	29.86	46.08	1,428.32	13.96	7.71	10.15	314.75	71.49	38.11	56.23	1,743.07
June.....	69.05	31.48	52.81	1,584.29	16.97	8.03	11.17	335.10	86.02	39.53	63.98	1,919.39
July.....	65.24	28.12	47.80	1,481.84	14.21	6.89	9.63	298.65	77.82	35.17	57.43	1,780.49
August.....	53.77	31.20	44.90	1,391.86	10.26	6.68	8.43	261.36	63.01	37.87	53.33	1,653.22
September.....	57.15	31.63	46.60	1,398.13	10.39	7.15	8.56	256.66	67.54	39.18	55.16	1,654.79
For Year	69.05(a)	21.98(b)	41.64	15,241.17	16.97(c)	6.43(d)	8.58	3,141.85	86.02(e)	28.64(f)	50.23	18,383.02

(a) June 30; (b) Nov. 10

(c) June 30; (d) March 29

(e) June 30; (f) Nov. 10

\*Includes water supplied to City of Warwick, Kent County Water Authority and to State Institutions.

†Includes water supplied to East Smithfield Water Co.

TABLE 36

## WATER SOLD TO STATE INSTITUTIONS, AND CITY OF WARWICK

Year Ended September 30, 1964

	STATE INSTITUTIONS				CITY OF WARWICK					
	S.S. 50,767 Sockanosset Rd. Cranston — 12" x 5.50" Venturi Meter — Gallons per Month	S.S. 24,215A East St. Cranston — 8" Tri-Prot. Meter — Gallons per Month	Total Gallons per Month	Average Gallons per Day	S.S. 47,269 Petta- consett Cranston — 10" Tri- Protectus Meter — Gallons per Month	S.S. 47,475 Pawtuxet Bridge Cranston — 6" Tri-Comp. Meter — Gallons per Month	S.S. 61,515 Oaklawn Avenue Cranston — 6" Tri- Protectus Meter — Gallons per Month	S.S. 61,780 Dresden Street Cranston — 6" Tri- Protectus Meter — Gallons per Month	Total Gallons per Month	Average Gallons per Day
1963-1964										
October.....	45,127,000	60,675	45,187,675	1,457,667	84,830,000	676,875	5,855,850	13,800,675	105,163,400	3,392,868
November.....	42,201,000	4,050	42,205,050	1,406,835	75,806,000	794,850	5,027,550	9,092,700	90,721,100	3,024,037
December.....	46,012,000	0	46,012,000	1,484,258	81,605,000	Closed 11/18;	5,166,600	10,032,825	96,804,425	3,122,723
January.....	44,266,000	0	44,266,000	1,427,935	75,252,000	"	4,382,325	6,140,325	85,774,650	2,766,924
February.....	43,598,000	3,975	43,601,975	1,503,516	66,665,000	"	3,951,525	4,678,425	75,294,950	2,596,378
March.....	48,051,000	0	48,051,000	1,550,032	76,750,000	Opened 4/8	4,635,375	5,448,600	86,833,975	2,801,096
April.....	44,880,000	946,500	45,826,500	1,527,550	89,344,982	94,725	4,901,250	5,898,300	100,239,257	3,341,309
May.....	44,385,000	1,950	44,386,950	1,431,837	124,675,050	2,156,025	12,929,400	23,550,675	163,311,150	5,268,102
June.....	52,403,000	2,925	52,405,925	1,746,864	161,670,928	3,381,525	18,067,650	33,034,500	216,154,603	7,205,153
July.....	50,265,000	4,350	50,269,350	1,621,592	119,926,248	2,494,632	12,875,325	22,492,125	157,788,330	5,089,946
August.....	51,704,000	15,150	51,719,150	1,668,360	119,677,800	1,392,882	11,109,150	14,540,775	146,720,607	4,732,923
September.....	48,931,000	379,950	49,310,950	1,643,698	107,629,050	976,633	7,733,625	8,181,000	124,520,308	4,150,677
For Year.....	561,823,000	1,419,525	563,242,525	1,538,914	1,183,832,058	11,968,147	96,635,625	156,890,925	1,449,326,755	3,959,909

**TABLE 37**  
**WATER SOLD TO EAST SMITHFIELD WATER COMPANY AND**  
**KENT COUNTY WATER AUTHORITY**

Year Ended September 30, 1964

1963-1964	EAST SMITHFIELD WATER COMPANY				KENT COUNTY WATER AUTHORITY			
	S.S. 51,198 Waterman Street No. Prov.	S.S. 52,403 Dean Avenue Smithfield	Total Gallons per Month	Average Gallons per Day	S.S. 58,985 Oaklawn Avenue Cranston	S.S. 60,757 Purification Works Scituate	Total Gallons per Month	Average Gallons per Day
	12" Tri-Crest Meter	8" Tri-Crest Meter			12" Tri-Crest Meter	12" Venturi Meter		
	Gallons per Month	Gallons per Month			Gallons per Month	Gallons per Month		
October.....	7,765,500	4,546,500	12,312,000	397,161	6,051,000	19,841,000	25,892,000	835,226
November.....	6,942,750	4,387,500	11,330,250	377,675	4,911,000	16,692,000	21,603,000	720,100
December.....	6,972,750	4,779,750	11,752,500	379,113	6,935,250	19,138,000	26,073,250	841,073
January.....	7,363,500	4,525,500	11,889,000	383,516	6,444,000	22,333,000	28,777,000	928,290
February.....	6,393,000	4,191,750	10,584,750	364,991	5,906,250	19,641,000	25,547,250	880,940
March.....	7,206,750	4,677,750	11,884,500	383,371	6,483,000	22,938,000	29,421,000	949,065
April.....	6,864,000	4,126,500	10,990,500	366,350	5,155,500	15,547,000	20,702,500	690,083
May.....	8,747,250	5,017,500	13,764,750	444,024	7,426,500	24,292,000	31,718,500	1,023,177
June.....	9,290,250	5,796,000	15,086,250	502,875	10,596,000	28,375,000	38,971,000	1,299,033
July.....	8,443,500	5,270,250	13,713,750	442,379	8,028,000	25,078,000	33,106,000	1,067,935
August.....	8,105,250	4,900,500	13,005,750	419,540	7,122,000	18,506,000	25,628,000	826,710
September.....	7,579,500	4,950,000	12,529,500	417,650	6,072,000	22,572,000	28,644,000	954,800
For Year.....	91,674,000	57,169,500	148,843,500	406,676	81,130,500	254,953,000	336,083,500	918,261



TABLE 38

## AVERAGE DAILY CONSUMPTION OF WATER PER MONTH IN MILLION GALLONS

Year Ending Sept. 30	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average for Year
1877.....				2.27	2.26	1.84	2.25	2.53	2.94	2.91	2.76	3.01	2.53†
1878.....	2.61	2.22	2.30	2.16	2.15	2.20	2.32	2.85	2.89	3.88	3.12	3.17	2.66
1879.....	2.84	2.39	2.38	2.32	2.93	2.59	2.38	3.22	3.48	3.78	3.52	3.32	2.97
1880.....	3.38	2.89	2.97	2.94	2.86	2.90	2.96	3.68	5.05	4.18	3.92	3.82	3.46
1881.....	3.67	3.35	3.22	3.54	4.07	3.13	2.98	3.54	3.81	4.05	4.46	4.16	3.66
1882.....	3.92	3.60	3.38	3.30	3.27	3.06	3.05	3.24	4.02	4.69	5.09	3.84	3.70
1883.....	3.40	3.33	3.65	3.94	3.74	3.91	3.43	3.82	4.64	5.24	5.18	4.70	4.08
1884.....	3.81	3.67	3.58	4.24	3.87	3.90	3.43	3.79	4.70	4.38	4.06	4.82	4.02
1885.....	4.24	3.67	3.99	4.48	4.73	4.80	4.10	4.10	5.44	5.56	5.01	4.92	4.59
1886.....	4.37	4.20	4.71	4.82	4.75	4.83	4.33	4.53	4.93	6.02	4.88	4.94	4.78
1887.....	4.62	4.24	4.94	5.06	4.90	4.84	4.41	4.90	5.16	5.58	5.00	5.08	4.89
1888.....	4.80	4.40	5.10	5.44	5.79	5.39	4.86	4.84	6.17	6.51	5.87	5.32	5.37
1889.....	5.34	5.18	5.51	5.72	7.34	5.80	5.27	5.75	6.14	5.69	5.59	5.52	5.74
1890.....	5.41	5.17	6.14	6.34	6.79	6.28	6.84	6.60	6.90	8.11	7.13	6.72	6.54
1891.....	6.28	6.08	6.83	6.35	6.53	6.72	6.67	7.55	7.75	7.73	7.78	7.57	6.99
1892.....	7.53	7.32	7.69	7.65	7.83	7.62	7.27	6.77	8.37	9.30	9.11	8.63	7.92
1893.....	8.00	7.65	8.48	9.30	8.85	8.74	8.07	8.58	9.92	10.78	10.50	9.48	9.03
1894.....	8.79	7.85	8.61	9.11	9.07	9.09	8.73	9.97	11.28	12.39	10.76	10.22	9.66
1895.....	10.20	8.86	9.08	9.02	9.82	8.60	7.70	8.78	9.49	8.99	9.50	9.10	9.10
1896.....	8.15	8.19	9.56	10.19	8.79	8.74	8.60	9.26	9.64	9.93	9.70	8.83	9.13
1897.....	8.49	8.05	8.98	8.83	8.52	8.44	8.06	8.27	8.90	9.13	8.70	9.07	8.62
1898.....	8.76	8.29	8.63	8.56	9.09	8.68	8.38	8.35	10.04	10.10	9.44	9.84	9.01
1899.....	8.94	8.75	9.64	9.45	9.53	8.91	8.52	9.18	11.18	10.21	10.12	9.70	9.51
1900.....	9.15	9.27	9.53	9.81	9.49	9.66	9.23	8.59	10.48	12.11	10.95	11.71	10.00
1901.....	9.99	9.54	9.95	10.09	10.52	10.20	8.92	10.05	11.50	12.02	11.69	11.15	10.47
1902.....	10.91	10.70	11.02	11.65	11.00	10.92	10.52	10.48	11.85	12.09	11.97	11.66	11.23
1903.....	11.89	11.81	12.85	12.84	12.62	11.92	12.33	13.92	13.02	13.54	12.91	13.76	12.78
1904.....	13.09	13.89	13.49	14.29	14.58	13.42	12.07	12.72	13.94	14.21	13.18	13.85	13.56
1905.....	14.57	14.88	14.60	14.20	14.65	13.88	13.85	14.77	15.06	16.34	14.30	13.99	14.59
1906.....	13.73	14.96	14.63	15.00	15.07	14.77	14.49	15.01	15.69	15.08	15.74	16.06	15.02
1907.....	15.02	14.37	14.25	15.74	16.24	16.26	15.62	16.29	17.18	18.50	18.00	15.02	16.04
1908.....	15.34	15.13	15.34	15.46	16.07	15.21	14.53	14.67	16.63	16.77	15.42	15.62	15.52
1909.....	15.83	15.80	15.44	15.16	14.87	14.88	13.94	14.04	15.54	17.71	16.15	14.80	15.35
1910.....	14.76	14.66	15.28	15.62	15.65	15.22	14.74	14.72	15.53	17.13	15.95	15.61	15.40
1911.....	15.56	14.98	16.11	16.39	16.27	16.00	15.30	16.19	17.09	19.36	17.09	16.08	16.37
1912.....	16.29	16.49	16.44	18.12	18.14	17.16	16.39	16.70	17.32	20.54	17.62	17.06	17.36
1913.....	17.36	16.72	17.17	17.49	17.98	17.59	17.06	17.12	18.95	19.55	18.40	17.12	17.71
1914.....	16.76	16.87	17.27	17.83	18.52	17.60	16.99	17.43	20.24	17.62	17.09	18.51	17.73
1915.....	17.29	16.43	17.27	17.07	17.60	17.44	16.80	16.68	18.04	16.49	16.76	17.80	17.14
1916.....	16.90	17.03	17.79	18.16	18.47	18.57	17.43	17.57	17.82	17.90	16.58	18.76	17.75
1917.....	18.51	18.08	18.50	19.73	20.62	19.31	18.09	17.67	18.28	19.61	20.03	18.76	18.93
1918.....	18.62	18.71	20.64	23.82	22.98	23.07	22.43	22.31	21.85	22.23	21.50	20.63	21.56
1919.....	20.42	20.31	21.04	21.72	20.94	19.35	19.45	19.60	21.77	20.70	20.40	20.68	20.53
1920.....	20.62	20.18	21.64	23.80	23.16	23.03	20.67	20.45	20.98	21.06	21.58	21.89	21.59

†Average for 9 months.

TABLE 38 (Continued)

## AVERAGE DAILY CONSUMPTION OF WATER PER MONTH IN MILLION GALLONS

Year Ending Sept. 30	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Average for Year
1921.....	21.41	20.46	20.97	21.64	21.43	20.77	20.21	20.92	22.84	21.18	21.63	22.86	21.36
1922.....	22.84	22.16	22.18	24.14	23.64	22.01	21.64	21.49	22.18	21.91	22.11	22.53	22.40
1923.....	22.78	23.23	23.08	23.66	24.96	23.84	22.95	24.12	24.49	23.90	24.08	24.31	23.78
1924.....	24.68	24.09	23.33	24.19	24.58	23.44	23.51	23.28	24.10	25.11	22.48	22.51	23.78
1925.....	22.84	23.70	23.76	24.22	23.61	22.70	23.13	23.03	24.82	23.54	23.20	23.81	23.53
1926.....	23.41	22.47	23.29	23.95	24.12	24.25	23.36	22.80	24.16	24.80	23.94	23.53	23.67
1927.....	21.76	22.60	23.24	22.92	22.41	22.57	22.32	22.68	23.62	23.27	22.27	23.27	22.74
1928.....	23.37	22.99	22.39	23.04	22.80	23.21	22.79	23.83	23.05	24.31	26.69	25.38	23.65
1929.....	26.82	25.54	26.17	26.84	27.01	25.42	23.05	22.91	25.73	26.53	24.94	24.24	25.43
1930.....	23.83	24.24	24.29	23.85	24.88	23.34	23.38	25.15	26.85	26.81	25.95	27.45	25.00
1931.....	26.30	24.04	23.80	23.71	24.36	23.64	23.11	23.76	25.35	26.20	26.22	26.31	24.73
1932.....	25.36	23.42	23.82	23.20	23.23	22.99	22.72	23.47	25.27	25.34	25.16	24.59	24.05
1933.....	24.15	23.65	23.51	24.00	24.25	24.01	23.41	25.32	26.92	28.77	27.65	26.00	25.14
1934.....	24.89	24.43	25.04	25.55	28.05	26.38	24.78	25.78	27.95	31.00	28.77	26.39	26.58
1935.....	26.50	25.39	25.16	26.35	27.06	26.31	25.71	27.02	27.47	29.47	31.14	28.23	27.15
1936.....	29.45	28.03	27.42	27.97	28.73	26.44	25.75	27.02	30.27	30.23	30.79	29.23	28.44
1937.....	27.94	26.72	27.06	25.77	26.13	27.16	25.73	25.93	28.45	31.43	31.85	29.18	29.79
1938.....	27.84	26.42	25.57	25.11	24.67	24.38	23.56	24.56	27.13	26.34	28.82	28.34	26.07
1939.....	27.90	27.21	26.85	27.07	27.62	27.16	26.25	27.48	30.84	32.81	33.62	30.31	28.77
1940.....	30.12	28.96	28.26	28.74	28.06	27.23	25.77	26.15	28.49	30.10	31.57	28.96	28.54
1941.....	29.55	27.86	28.36	28.67	29.02	28.78	29.07	29.91	31.74	32.87	32.66	33.78	30.19
1942.....	32.74	31.44	31.84	31.34	31.21	29.84	29.18	29.76	31.34	32.13	32.14	32.11	31.26
1943.....	29.88	29.27	30.40	29.93	30.67	30.35	30.05	29.65	35.13	36.35	35.47	33.71	31.74
1944.....	31.87	31.25	32.35	32.29	32.52	32.95	31.51	34.27	36.80	39.10	40.60	35.43	34.26
1945.....	33.77	32.77	33.33	34.89	34.57	33.78	33.37	33.23	35.44	35.73	36.34	34.67	34.32
1946.....	32.74	32.27	33.21	34.01	33.69	33.80	33.64	33.59	36.70	40.70	35.92	36.69	34.75
1947.....	36.37	35.34	35.58	35.95	35.83	35.01	33.27	33.94	35.72	37.35	39.34	39.21	36.08
1948.....	38.91	36.19	35.55	34.84	37.31	36.92	36.15	33.95	36.90	39.33	41.55	39.76	37.28
1949.....	36.27	35.34	35.11	33.98	34.00	33.88	33.12	35.12	46.65	44.56	40.18	35.77	37.01
1950.....	34.61	35.94	34.51	33.92	34.34	34.71	33.39	34.90	40.27	43.27	41.40	38.24	36.64
1951.....	39.96	36.91	34.80	36.10	35.92	34.81	34.21	37.21	39.31	43.49	39.98	38.20	37.59
1952.....	36.92	34.79	33.63	34.20	34.59	33.98	33.98	34.33	41.21	54.79	40.66	40.11	37.78
1953.....	37.09	35.75	35.27	34.59	33.95	34.20	34.61	35.63	50.68	46.76	43.63	43.95	38.86
1954.....	38.20	35.43	35.03	34.85	35.63	35.31	35.10	35.05	45.09	45.27	40.72	39.22	37.92
1955.....	39.84	37.82	37.17	37.24	38.42	37.85	37.00	41.54	44.52	49.90	47.08	42.25	40.91
1956.....	40.29	38.30	38.18	38.42	39.31	38.37	38.55	40.08	49.50	44.93	48.86	41.70	41.38
1957.....	40.78	38.65	36.74	39.14	38.43	36.98	38.50	44.48	60.45	57.12	48.16	45.16	43.74
1958.....	42.22	38.27	38.42	39.09	38.20	37.40	40.03	38.60	42.57	45.05	43.60	41.63	40.44
1959.....	40.35	38.01	39.35	39.34	39.46	38.65	39.04	44.02	45.05	45.16	51.33	47.28	42.27
1960.....	41.93	40.00	39.63	39.48	40.19	39.72	40.34	42.06	51.75	49.75	49.49	45.57	43.33
1961.....	42.22	42.53	40.99	41.24	43.54	42.26	41.00	42.96	51.71	51.06	52.80	50.01	45.19
1962.....	43.66	41.94	40.90	42.42	41.91	42.38	42.74	46.45	53.07	51.39	54.38	47.10	45.72
1963.....	45.66	44.44	43.38	44.26	44.81	44.80	45.77	47.96	55.81	55.87	54.40	47.58	47.91
1964.....	46.77	42.66	43.07	45.45	45.81	46.23	46.54	56.23	63.98	57.44	53.33	55.16	50.23

**TABLE 39**  
**FUEL OIL CONSUMPTION**

For Year Ended September 30, 1964

1963-1964	Administration and Operations Building	Hydro Electric Station	Water Purification Plant		Forestry and Maintenance Building	Neutaconkanut Pumping Station	Bath Street Pumping Station	Total	
	Gallons Used No. 6	Gallons Used No. 2	Gallons Used No. 2	Gallons Used No. 6	Gallons Used No. 2	Gallons Used No. 2	Gallons Used No. 2	Gallons Used No. 2	Gallons Used No. 6
October.....	1,797	90	452	2,810	960	0	0	1,502	4,607
November.....	3,876	205	33	5,503	1,299	375	65	1,977	8,879
December.....	6,604	625	0	8,600	2,853	600	235	4,313	15,204
January.....	5,970	470	0	9,089	2,741	600	270	4,081	15,059
February.....	5,936	400	0	9,044	2,838	850	270	4,358	14,980
March.....	4,879	268	0	7,038	2,081	450	165	2,964	11,917
April.....	3,658	272	0	5,857	1,025	225	35	1,557	9,515
May.....	1,283	136	1,005	1,001	1,012	50	0	2,203	2,284
June.....	583	28	1,165	0	91	0	0	1,284	583
July.....	475	25	997	0	0	0	0	1,022	475
August.....	328	15	1,050	0	135	0	0	1,200	328
September.....	1,012	0	1,047	476	485	0	0	1,532	1,488
Totals.....	35,901	2,534	5,749	49,418	15,520	3,150	1,040	27,993	85,319

**TABLE 40**  
**FINANCIAL STATEMENT OF THE PROVIDENCE WATER SUPPLY BOARD**  
**Year Ended September 30, 1964**

**REVENUE**

Water Rents .....	\$2,986,556.95
Hydrant Rental .....	101,317.26
Electric Power .....	10,344.60
Setting Meters .....	5,381.00
Repairing Meters .....	1,353.32
Rents from Non-Operating Property.....	650.76
Repairs to Water Services.....	4,220.30
Repairs to Distribution Mains.....	2,597.62
Repairs to Hydrants .....	2,180.58
Repairs to Gates and Valves.....	117.94
Installation of New Fire Supplies.....	5,465.00
Installation of New Water Services.....	90,351.00
Installation of New Water Mains.....	128,535.18
Revolving Fund—Water Meters .....	12,484.35
Sale of Scrap Iron, Brass, Lead, Etc.....	11,377.77
Sale of Lumber, Pulpwood, Etc.....	1,258.66
Sale of Material .....	260.35
Sale of Abandoned Mains.....	59,627.78
Sundries .....	3,715.51
<b>Total Revenue .....</b>	<b>\$3,427,795.93</b>

**DISBURSEMENTS**

**OPERATING EXPENSE:**

Salaries .....	\$871,045.19
Services Other Than Personal.....	130,253.82
Materials and Supplies .....	261,520.50
Special Items .....	15,382.75
Capital Outlay .....	42,288.26
Other Structures and Improvements (Water Main Extensions).....	249,696.98
Taxes .....	414,161.93
Employees' Retirement System .....	74,619.00
Social Security F.O.A.S.I. ....	27,476.50
<b>Total Operating Expense .....</b>	<b>*\$2,086,444.93</b>
Interest on Floating Debt.....	7,440.56
Interest on Bonded Debt.....	363,818.75
Retirement—Serial Bonds .....	52,967.00
Retirement—Floating Debt .....	54,600.00
Depreciation and Extension Fund.....	600,000.00
Payable to Sinking Fund.....	** 262,524.69
<b>Total Disbursements .....</b>	<b>\$3,427,795.93</b>

Gross Water Rents .....	\$3,075,005.45
Minus Refunds (Current Year) .....	88,421.33
Minus Refunds (Prior Year) .....	27.17
<b>Net Water Rents.....</b>	<b>\$2,986,556.95</b>

\*See Table 41 for detailed account of Operating Expense.

\*\*Subject to change due to anticipated discounts on Outstanding Commitments.

**TABLE 41**  
**WATER SUPPLY BOARD OPERATING EXPENSES**  
**Year Ended September 30, 1964**

**ADMINISTRATIVE**

**Salaries:**

001 Officials .....	\$ 31,787.38	
Clerical—Chief Engineer's Office.....	4,688.85	
Clerical—Accounting .....	41,666.00	
Engineering .....	76,103.96	
Labor—General .....	11,740.04	
008 Sick Leave Payrolls.....	5,348.95	
009 Vacation Payrolls .....	8,392.96	
<b>Total .....</b>		<b>\$179,728.14</b>

**Services Other Than Personal:**

102 Expert Consultant and Other Service Fees.....	\$ 27.00	
109 Fees Not Otherwise Classified.....	269.50	
111 Telephone and Telegraph.....	2,110.07	
112 Postage, Freight and Express.....	142.75	
115 Transportation of Persons—Conventions.....	88.66	
116 Transportation of Persons—Other.....	230.53	
117 Travel Subsistence—Conventions .....	160.55	
118 Travel Subsistence—Other .....	66.12	
119 Special Subsistence .....	9.50	
121 Printing, Binding and Reproduction Services.....	2,437.31	
122 Advertising .....	384.80	
131 Light and Power.....	1,800.00	
141 Repairs—Office Machinery .....	459.31	
142 Repairs—Automobiles .....	961.92	
146 Repairs—Plant Equipment .....	584.05	
150 Repairs—Structures and Improvements.....	7,742.01	
151 Maintenance and Servicing.....	299.73	
181 Laundry and Cleaning.....	108.00	
183 Dues and Subscriptions.....	240.30	
199 Miscellaneous Services .....	9,931.60	
<b>Total .....</b>	<b>\$ 28,053.71</b>	
<b>Total—Services Other Than Personal.....</b>		<b>\$ 28,053.71</b>

**Materials and Supplies:**

201 Stationery and Office Supplies.....	\$ 1,286.33	
202 Small Tools and Shop Supplies.....	17.77	
211 Motor Fuel .....	1,008.95	
212 Lubricants .....	2.12	
213 Tires and Tubes .....	170.56	
214 Repair Parts and Supplies—Trucks and Autos.....	124.88	
231 Medical, Chemical and Laboratory Supplies.....	100.95	
232 Pharmaceuticals .....	2.90	
241 Fuel .....	757.28	
244 Housekeeping Supplies and Minor Equipment.....	154.82	
266 Lumber and Hardware.....	15.63	
268 Plumbing and Electrical Supplies.....	9.16	
272 Valves and Fittings .....	13.09	
299 Miscellaneous Materials and Supplies.....	67.36	
<b>Total .....</b>	<b>\$ 3,731.80</b>	
<b>Outstanding Commitments .....</b>	<b>35.00</b>	
<b>Total—Materials and Supplies.....</b>		<b>\$ 3,766.80</b>

**Special Items:**

350 Blue Cross and Physicians Service.....	\$ 2,414.50	
<b>Total .....</b>		<b>\$ 2,414.50</b>

**Capital Outlay:**

501	Office Furniture, Machinery and Equipment.....	\$	327.58	
502	Books, Maps and Charts.....		19.25	
511	Automobiles .....		4,145.00	
	Total .....	\$	4,491.83	
	Total—Capital Outlay .....			\$ 4,491.83
	Total—Administrative .....			\$ 218,454.98

**SOURCE OF SUPPLY****Hydro Electric Station:****Salaries:**

001	Labor—Operation .....	\$	10,065.69	
	Repairs—Machinery and Equipment.....		194.22	
	Total .....			\$ 10,259.91

**Services Other Than Personal:**

111	Telephone and Telegraph.....	\$	260.90	
146	Repairs—Plant Equipment .....		829.72	
150	Repairs—Structures and Improvements.....		53.90	
	Total .....			\$ 1,144.52

**Materials and Supplies:**

201	Stationery and Office Supplies.....	\$	129.55	
241	Fuel .....		170.27	
266	Lumber and Hardware .....		68.95	
272	Valves and Fittings.....		531.91	
	Total .....			\$ 900.68

**Water Purification Plant:****Salaries:**

001	Supervision .....	\$	11,657.17	
	Labor—Operation .....		45,861.75	
	Technical .....		24,390.11	
	Clerical .....		4,043.06	
	Repairs—Structures and Improvements.....		489.26	
	Repairs—Machinery and Equipment .....		639.71	
	Repairs—Care of Grounds and Buildings.....		4,362.67	
	Total .....			\$ 91,443.73

**Services Other Than Personal:**

109	Fees Not Otherwise Classified.....	\$	1.50	
111	Telephone and Telegraph.....		1,196.33	
112	Postage, Freight and Express.....		30.82	
115	Transportation of Persons—Conventions .....		22.00	
117	Travel Subsistence—Conventions .....		19.45	
121	Printing and Binding .....		54.51	
131	Heat, Light and Power (Gas).....		113.35	
141	Repairs—Office Machinery .....		52.80	
142	Repairs—Trucks and Autos .....		89.89	
146	Repairs—Plant Equipment .....		1,356.15	
150	Repairs—Structures and Improvements .....		1,474.99	
151	Maintenance and Servicing .....		1,448.40	
181	Laundry and Cleaning .....		1,135.94	
183	Dues and Subscriptions .....		4.25	
199	Miscellaneous Services .....		225.90	
	Total .....			\$ 7,226.28

**Materials and Supplies:**

201	Stationery and Office Supplies.....	\$	695.31	
202	Small Tools and Shop Supplies.....		358.65	
204	Wearing Apparel and Personal Supplies.....		76.38	
211	Motor Fuel .....		177.90	

212	Lubricants .....	15.88
214	Repair Parts and Supplies—Trucks and Autos.....	555.85
222	Repair Parts and Supplies—Plant Equipment.....	385.51
231	Ferric Sulphate .....	47,946.68
231	Lime .....	17,296.25
231	Chlorine .....	2,700.00
231	Sodium Silicofluoride .....	16,762.00
231	Miscellaneous Laboratory Supplies.....	1,580.31
241	Fuel .....	3,219.44
244	Housekeeping Supplies .....	680.48
252	Seeds, Fertilizer, Trees and Shrubs.....	606.90
259	Other Agricultural, Horticultural and Landscaping Supplies.....	99.95
265	Fabricated Metal Products.....	476.84
266	Lumber and Hardware .....	142.04
267	Paint and Painters' Supplies.....	385.68
268	Plumbing and Electrical Supplies.....	139.86
271	Pipe .....	77.88
272	Valves and Fittings .....	2,653.08
273	Special Castings .....	20.39
299	Miscellaneous Materials and Supplies.....	13.75
Total .....		\$ 97,066.91

Special Items:

302	Liability Insurance .....	\$ 124.00
Total .....		\$ 124.00

Capital Outlay:

501	Office Furniture, Machinery and Equipment.....	\$ 154.88
502	Books, Maps and Charts.....	42.17
511	Automobiles .....	1,829.00
Total .....		\$ 2,026.05

Scituate Reservoir:

Salaries:

001	Labor—Operation .....	\$ 4,589.58
	Repairs—Care of Grounds.....	4,687.22
Total .....		\$ 9,276.80

Services Other Than Personal:

111	Telephone and Telegraph.....	\$ 133.48
142	Repairs—Trucks and Autos.....	180.09
Total .....		\$ 313.57

Materials and Supplies:

213	Tires and Tubes.....	\$ 37.28
214	Repair Parts and Supplies—Trucks and Autos.....	15.29
252	Seeds, Fertilizer, Trees and Shrubs.....	661.22
Total .....		\$ 713.79

Capital Outlay:

511	Automobiles .....	\$ 1,679.00
Total .....		\$ 1,679.00

Other Reservoirs:

Salaries:

001	Labor—Operation .....	\$ 4,720.34
	Repairs—Care of Grounds.....	1,793.33
	Repairs—Machinery and Equipment.....	73.50
Total .....		\$ 6,587.17

Services Other Than Personal:

142	Repairs—Trucks and Autos.....	\$	103.25	
	Total .....			\$ 103.25

Materials and Supplies:

213	Tires and Tubes .....	\$	116.24	
214	Repair Parts and Supplies—Trucks and Autos.....		7.61	
	Total .....			\$ 123.85

Forestry and Maintenance:

Salaries:

001	Supervision .....	\$	7,326.96	
	Labor—Operation .....		2,061.33	
	Repairs—Care of Grounds.....		13,960.84	
	Total .....			\$ 23,349.13

Services Other Than Personal:

102	Expert Consultant and Other Service Fees.....	\$	92.00	
109	Fees Not Otherwise Classified.....		5.00	
111	Telephone and Telegraph .....		196.48	
112	Postage, Freight and Express.....		3.00	
115	Transportation of Persons—Conventions.....		66.55	
117	Travel Subsistence—Conventions .....		99.45	
118	Travel Subsistence—Other .....		200.00	
142	Repairs—Trucks and Autos .....		217.84	
143	Repairs—Construction and Other Automotive Equipment.....		206.86	
149	Repairs—Other Equipment .....		175.00	
183	Dues and Subscriptions.....		11.50	
184	Hospitalization .....		19.00	
199	Miscellaneous Services .....		102.80	
	Total .....			\$ 1,395.48

Materials and Supplies:

201	Stationery and Office Supplies.....	\$	84.30	
202	Small Tools and Shop Supplies.....		155.51	
204	Wearing Apparel and Personal Supplies.....		194.04	
212	Lubricants .....		187.11	
213	Tires and Tubes.....		139.69	
214	Repair Parts and Supplies—Trucks and Autos.....		832.27	
229	Repair Parts and Supplies—Other Equipment.....		114.55	
231	Medical, Chemical and Laboratory Supplies.....		29.88	
232	Pharmaceuticals .....		6.40	
241	Fuel .....		1,569.63	
244	Housekeeping Supplies and Minor Equipment.....		63.71	
252	Seeds, Fertilizer, Trees and Shrubs.....		893.50	
259	Other Agricultural, Horticultural and Landscaping Supplies.....		2,591.70	
260	Loam .....		240.10	
266	Lumber and Hardware.....		85.39	
267	Paint and Painters' Supplies.....		161.30	
299	Miscellaneous Materials and Supplies.....		29.40	
	Total .....			\$ 7,378.48

Capital Outlay:

511	Automobiles .....	\$	1,679.00	
512	Trucks and Tractors.....		3,295.00	
571	Agricultural and Landscaping Equipment.....		2,748.43	
591	Equipment Not Otherwise Classified.....		605.00	
	Total .....			\$ 8,327.43



**General:****Salaries:**

001	Clerical .....	\$ 1,710.13	
	Labor—Operation .....	8,301.89	
	Repairs—Machinery and Equipment.....	212.33	
	Repairs—Care of Grounds.....	11,212.56	
	Repairs—Gate Valves .....	69.92	
	Repairs—Care of Grounds—Rockland Cemetery.....	463.41	
008	Sick Leave Payrolls.....	2,781.48	
009	Vacation Payrolls .....	7,225.51	
025	Injured Employees' Payrolls.....	1,186.16	
	<b>Total .....</b>		<b>\$ 33,163.39</b>

**Services Other Than Personal:**

109	Fees Not Otherwise Classified.....	\$ 114.00	
112	Postage, Freight and Express.....	201.00	
121	Printing and Binding .....	229.16	
142	Repairs—Trucks and Autos.....	346.99	
143	Repairs—Construction and Other Automotive Equipment.....	217.94	
151	Maintenance and Servicing.....	355.85	
154	Installation of Communication Systems.....	145.75	
	<b>Total .....</b>		<b>\$ 1,610.69</b>

**Materials and Supplies:**

201	Stationery and Office Supplies.....	\$ 105.83	
202	Small Tools and Shop Supplies.....	157.04	
211	Motor Fuel .....	1,948.86	
212	Lubricants .....	37.14	
214	Repair Parts and Supplies—Trucks and Autos.....	61.86	
229	Repair Parts and Supplies—Other Equipment.....	92.71	
231	Medical, Chemical and Laboratory Supplies.....	16.62	
244	Housekeeping Supplies and Minor Equipment.....	8.82	
252	Seeds, Fertilizer, Trees and Shrubs.....	26.95	
	<b>Total .....</b>		<b>\$ 2,455.83</b>

**Special Items:**

350	Blue Cross and Physicians Service.....	\$ 2,472.00	
	<b>Total .....</b>		<b>\$ 2,472.00</b>
	Outstanding Commitments—Services Other Than Personal .....	540.00	
	Outstanding Commitments—Materials and Supplies.....	199.26	
	<b>Total—Source of Supply.....</b>		<b>\$ 309,881.20</b>

**TRANSMISSION AND DISTRIBUTION****Pumping Station:****Salaries:**

001	Labor—Operation .....	\$ 20,495.30	
	Repairs—Machinery and Equipment .....	33.48	
	<b>Total .....</b>		<b>\$ 20,528.78</b>

**Services Other Than Personal:**

109	Fees Not Otherwise Classified.....	\$ 97.09	
111	Telephone and Telegraph.....	626.90	
131	Light and Power.....	21,939.09	
143	Repairs—Construction and Other Automotive Equipment.....	13.72	
146	Repairs—Plant Equipment .....	100.03	
149	Repairs—Other Equipment .....	80.00	
150	Repairs—Buildings .....	144.20	
151	Maintenance and Servicing.....	1,857.01	
181	Laundry and Cleaning.....	48.00	
199	Miscellaneous Services .....	62.00	
	<b>Total .....</b>		<b>\$ 24,968.04</b>

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 183.93	
202	Small Tools and Shop Supplies.....	20.00	
211	Motor Fuel .....	529.32	
212	Lubricants .....	1.57	
222	Repair Parts and Supplies—Plant Equipment.....	75.00	
241	Fuel .....	378.45	
252	Seeds, Fertilizer, Trees and Shrubs.....	228.00	
Total .....			\$ 1,416.27

Capital Outlay:

591	Equipment Not Otherwise Classified.....	\$ 115.80	
Total .....			\$ 115.80

Pipe Lines:

Salaries:

001	Supervision .....	\$ 9,088.50	
	Clerical .....	7,205.46	
	Labor—Operation .....	108,280.42	
	Repairs—Trucks and Autos.....	7,125.13	
	Repairs—Care of Grounds and Buildings.....	8,705.92	
	Repairs—Transmission Mains .....	113.91	
	Repairs—Distribution Mains .....	19,701.31	
	Repairs—Gates and Valves.....	23,335.69	
	Repairs—Hydrants .....	13,908.05	
	Repairs—Services .....	13,054.59	
	New Work—Distribution Mains.....	1,224.03	
	New Work—Gates and Valves.....	10,691.99	
	New Work—Hydrants .....	21,101.00	
	New Work—Services .....	41,661.47	
	New Work—Meters (Emergency).....	350.76	
	Retirement Work—Distribution Mains.....	1,177.88	
	Retirement Work—Gates and Valves.....	150.69	
	Retirement Work—Hydrants .....	134.83	
	Retirement Work—Services .....	3,725.18	
Total .....			\$290,736.81

Services Other Than Personal:

102	Expert Consultant and Other Service Fees.....	\$ 165.00	
109	Fees Not Otherwise Classified.....	51.20	
111	Telephone and Telegraph.....	443.75	
112	Postage, Freight and Express.....	59.33	
121	Printing and Binding.....	83.00	
131	Light and Power.....	493.76	
141	Repairs—Office Machinery .....	36.87	
142	Repairs—Trucks and Autos.....	2,003.17	
143	Repairs—Construction and Other Automotive Equipment.....	2,202.21	
146	Repairs—Plant Equipment .....	102.57	
149	Repairs—Other Equipment .....	50.00	
150	Repairs—Buildings .....	741.11	
151	Maintenance and Servicing.....	328.29	
153	Repairs—Street Openings .....	8,114.00	
154	Installation of Communication Systems.....	110.65	
162	Rental—Automotive and Construction Equipment.....	884.91	
163	Rental—Other Equipment .....	684.00	
165	Rental of Land.....	273.00	
181	Laundry and Cleaning.....	171.52	
199	Miscellaneous Services .....	1,260.19	
Total .....			\$ 18,258.53

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 199.52	
202	Small Tools and Shop Supplies.....	2,030.47	
204	Wearing Apparel and Personal Supplies.....	135.43	
211	Motor Fuel .....	5,442.60	
212	Lubricants .....	466.79	

213	Tires and Tubes.....	994.74	
214	Repair Parts and Supplies—Trucks and Autos.....	3,772.86	
229	Repair Parts and Supplies—Other Equipment.....	48.00	
231	Medical, Chemical and Laboratory Supplies.....	322.16	
241	Fuel—Kerosene Oil.....	255.36	
244	Housekeeping Supplies and Minor Equipment.....	234.04	
252	Seeds, Fertilizer, Trees and Shrubs.....	22.34	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	176.64	
261	Gravel, Sand and Stone.....	551.27	
262	Cement, Plaster and Related Products.....	662.48	
264	Fabricated Cement Products.....	985.93	
265	Fabricated Metal Products.....	108.85	
266	Lumber and Hardware.....	722.33	
267	Paint and Painters' Supplies.....	57.80	
268	Plumbing and Electrical Supplies.....	5,949.77	
269	Construction and Maintenance Materials and Supplies Not Otherwise Classified.....	12.70	
271	Pipe—Cast Iron.....	3,280.19	
271	Pipe—Service.....	5,306.39	
271	Pipe—Asbestos Cement.....	1,456.70	
271	Pipe—Other.....	64.22	
272	Hydrants, Valves and Fittings.....	70,825.19	
272	Gates and Valves.....	25,736.37	
273	Special Castings.....	1,122.10	
279	Water System Materials and Supplies Not Otherwise Classified.....	2.90	
299	Miscellaneous Materials and Supplies.....	150.00	
	<b>Total .....</b>		<b>\$131,096.14</b>
<b>Special Items:</b>			
331	Payment of Claims and Damages.....	\$ 408.80	
	<b>Total .....</b>		<b>\$ 408.80</b>
<b>Capital Outlay:</b>			
512	Trucks and Tractors.....	\$ 22,908.00	
521	Construction and Engineering Equipment.....	775.00	
	<b>Total .....</b>		<b>\$ 23,683.00</b>
<b>Other Structures and Improvements:</b>			
721	New Main Extensions.....	\$198,958.98	
	<b>Total .....</b>		<b>\$198,958.98</b>
<b>Distribution Reservoirs:</b>			
<b>Services Other Than Personal:</b>			
111	Telephone and Telegraph.....	\$ 120.00	
131	Light and Power.....	30.75	
151	Maintenance and Servicing.....	154.10	
199	Miscellaneous Services Not Otherwise Classified.....	125.00	
	<b>Total .....</b>		<b>\$ 429.85</b>
<b>Materials and Supplies:</b>			
201	Stationery and Office Supplies.....	\$ 71.19	
252	Seeds, Fertilizer, Trees and Shrubs.....	784.56	
265	Fabricated Metal Products.....	3.00	
268	Plumbing and Electrical Supplies.....	18.14	
	<b>Total .....</b>		<b>\$ 876.89</b>
<b>General:</b>			
<b>Salaries:</b>			
001	Labor—Operation.....	\$ 1,059.16	
	Repairs—Trucks and Autos.....	2,230.19	
008	Sick Leave Payrolls.....	9,222.35	
009	Vacation Payrolls.....	12,885.88	
025	Injured Employees' Payrolls.....	1,261.07	
	<b>Total .....</b>		<b>\$ 26,658.65</b>

Services Other Than Personal:

121	Printing and Binding.....	\$ 7,134.16	
150	Repairs—Structures and Improvements .....	287.06	
181	Laundry and Cleaning.....	273.55	
199	Miscellaneous Services .....	62.10	
Total .....			\$ 7,756.87

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 152.37	
241	Fuel .....	728.28	
244	Housekeeping Supplies and Minor Equipment.....	48.09	
Total .....			\$ 928.74

Special Items:

350	Blue Cross and Physicians Service.....	\$ 4,713.85	
361	Expenses for Various Ceremonies.....	1,137.40	
Total .....			\$ 5,851.25
Outstanding Commitments—Services Other Than Personal.....			1,086.92
Outstanding Commitments—Materials and Supplies.....			801.75
Outstanding Commitments—New Main Extensions.....			50,738.00
Total—Transmission and Distribution.....			\$ 805,300.07

METERING

Salaries:

001	Supervision .....	\$ 15,251.91	
	Clerical .....	53,549.30	
	Labor—Operation .....	42,012.84	
	Repairing Meters .....	10,204.91	
	Removing and Setting Meters.....	19,023.09	
	Testing Meters .....	4,398.05	
	Inspection—Services .....	4,185.67	
	General—Operation .....	17,656.95	
008	Sick Leave Payrolls.....	5,372.49	
009	Vacation Payrolls .....	7,627.99	
025	Injured Employees' Payroll.....	29.48	
Total .....			\$179,312.68

Services Other Than Personal:

102	Expert Consultant and Other Service Fees.....	\$ 51.20	
109	Fees Not Otherwise Classified.....	24.00	
111	Telephone and Telegraph.....	1,996.77	
112	Postage, Freight and Express.....	1,191.25	
116	Transportation of Persons—Carfares.....	1,051.95	
121	Printing and Binding.....	317.77	
131	Light and Power .....	1,700.00	
141	Repairs—Office Machinery, Furniture and Furnishings.....	1,235.13	
142	Repairs—Trucks and Autos.....	367.79	
146	Repairs—Plant Equipment .....	311.37	
150	Repairs—Structures and Improvements.....	1,069.12	
151	Maintenance and Servicing.....	419.29	
181	Laundry and Cleaning.....	549.75	
199	Miscellaneous Services .....	27,080.72	
Total .....			\$ 37,366.11

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 3,351.44	
202	Small Tools and Shop Supplies.....	729.35	
204	Wearing Apparel and Personal Supplies.....	352.97	
211	Motor Fuel .....	1,521.35	
212	Lubricants .....	68.61	
213	Tires and Tubes.....	145.88	
214	Repair Parts and Supplies—Trucks and Autos.....	500.74	

221	Repair Parts and Supplies—Office Machinery.....	13.25	
222	Repair Parts and Supplies—Machinery and Equipment.....	194.43	
229	Repair Parts and Supplies—Other Equipment.....	24.00	
231	Medical, Chemical and Laboratory Supplies.....	77.07	
241	Fuel .....	483.01	
244	Housekeeping Supplies and Minor Equipment.....	242.00	
252	Seeds, Fertilizer, Trees and Shrubs.....	141.25	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	20.16	
266	Lumber and Hardware.....	7.13	
268	Plumbing and Electrical Supplies.....	769.28	
272	Valves and Fittings.....	595.21	
274	Meter Parts .....	3,873.15	
299	Miscellaneous Materials and Supplies.....	541.46	
	<b>Total .....</b>		<b>\$ 13,651.24</b>
<b>Special Items:</b>			
331	Payment of Claims and Damages.....	\$ 862.00	
350	Blue Cross and Physicians Service.....	3,250.20	
	<b>Total .....</b>		<b>\$ 4,112.20</b>
<b>Capital Outlay:</b>			
501	Office Furniture, Machinery and Equipment.....	\$ 1,524.15	
561	Shop and Plant Equipment.....	441.00	
	<b>Total .....</b>		<b>\$ 1,965.15</b>
	Outstanding Commitments—Materials and Supplies.....	143.87	
	<b>Total—Metering .....</b>		<b>\$ 236,551.25</b>
	Taxes .....		414,161.93
	Employees' Retirement System.....		74,619.00
	Social Security F.O.A.S.I.....		27,476.50
	<b>TOTAL OPERATING EXPENSE.....</b>		<b>\$2,086,444.93</b>

**TABLE 42**  
**STATEMENT OF REVENUE — ESTIMATED AND ACTUAL**  
**Year Ended September 30, 1964**

Account	Estimated Revenue	Actual Revenue
Water Rents .....	\$2,794,000.00	\$2,986,556.95
Hydrant Rental .....	96,000.00	101,317.26
Electricity .....	16,000.00	10,344.60
Stores Account (Meters) .....	6,500.00	12,484.35
Repairing and Setting Meters.....	6,000.00	6,734.32
Fire Supplies and Miscellaneous Repairs.....	8,500.00	14,581.44
New Service Installations.....	78,000.00	90,351.00
New Main Extensions.....	134,000.00	123,535.18
Rentals .....	500.00	650.76
Other Miscellaneous Receipts.....	10,500.00	76,240.07
<b>Total .....</b>	<b>\$3,150,000.00</b>	<b>\$3,427,795.93</b>

**TABLE 43**  
**SUMMARY OF ANNUAL WATER WORKS REVENUES 1930-1964**

Fiscal Years Ended September 30	Receipts from Sale of Water	Miscellaneous Receipts	Total
1930.....	\$1,384,369.54	\$218,844.87	\$1,603,214.41
1931.....	1,414,836.00	237,172.64	1,652,008.64
1932.....	1,375,450.77	223,058.31	1,598,509.08
1933.....	1,345,444.69	212,066.79	1,557,511.48
1934.....	1,387,876.73	184,133.47	1,572,010.20
1935.....	1,409,269.47	237,518.68	1,646,788.15
1936.....	1,427,881.10	265,357.71	1,693,238.81
1937.....	1,429,107.08	229,317.39	1,721,424.47
1938.....	1,426,986.49	106,359.70	1,533,346.19
1939.....	1,491,918.63	124,901.37	1,616,820.00
1940.....	1,551,917.24	115,540.98	1,667,458.22
1941.....	1,615,351.79	114,960.58	1,730,312.37
1942.....	1,679,058.50	103,368.22	1,782,426.72
1943.....	1,629,268.35	86,580.98	1,715,849.33
1944.....	1,761,016.12	87,946.71	1,848,962.83
1945.....	1,812,311.82	99,271.44	1,911,583.26
1946.....	1,808,993.17	123,247.90	1,932,241.07
1947.....	1,877,471.18	124,372.47	2,001,843.65
1948.....	2,005,242.58	222,419.41	2,227,661.99
1949.....	2,031,633.37	229,317.72	2,260,951.09
1950.....	2,082,814.82	199,061.80	2,281,876.62
1951.....	2,078,209.84	214,868.70	2,293,078.54
1952.....	2,053,427.76	322,761.07	2,376,188.83
1953.....	2,093,625.85	343,477.23	2,437,103.08
1954.....	2,146,947.18	302,707.38	2,449,654.56
1955.....	2,166,180.84	379,010.13	2,545,190.97
1956.....	2,236,331.86	371,715.61	2,608,047.47
1957.....	2,262,879.80	322,948.62	2,585,828.42
1958.....	2,273,583.77	318,752.87	2,592,336.64
1959.....	2,255,865.23	374,493.67	2,630,358.90
1960.....	2,528,805.97	330,120.32	2,858,926.29
1961.....	2,758,603.26	351,179.65	3,109,782.91
1962.....	2,794,556.45	440,769.75	3,235,326.20
1963.....	2,947,872.00	366,756.30	3,314,628.30
1964.....	2,986,556.95	441,238.98	3,427,795.93

**TABLE 44**  
**STATEMENT OF WATER WORKS DEPRECIATION AND EXTENSION FUND**  
**Year Ended September 30, 1964**

	Investment	Cash	Due from Other Funds	Total
Balance September 30, 1963.....	\$497,815.00	\$ 6,101.74	\$450,000.00	\$ 953,916.74
Increase During Year Ended September 30, 1964.....	96,638.78	926,546.36	.....	.....
Disbursements During Year Ended September 30, 1964	394,453.78	720,638.78	450,000.00	.....
Accounts Receivable Year Ended September 30, 1964.....	.....	.....	600,000.00	.....
Balance September 30, 1964.....	\$200,000.00	\$212,009.32	\$600,000.00	\$1,012,009.32

**TABLE 45**  
**STATEMENT OF WATER SUPPLY BOARD BONDS OUTSTANDING AND**  
**SINKING FUND REQUIREMENTS ON A 3% BASIS**  
**Year Ended September 30, 1964**

Bonds Payable from Sinking Fund	Rate of Interest %	Year of		Bonds		Sinking Fund Requirements On a 3% Basis
		Issue	Maturity	Issued	Outstanding	
Water Supply .....	4	1924	1964	\$1,500,000.00	\$1,500,000.00	\$1,480,106.67
Water Supply .....	4	1925	1965	2,500,000.00	2,500,000.00	2,412,957.07
Water Supply .....	4	1928	1968	1,500,000.00	1,500,000.00	1,286,890.88
Total Water Supply Debt and Sinking Fund Requirements.....					\$5,500,000.00	\$5,179,954.62
Sinking Fund Assets Allocated to Water Supply Debt per City Controller's Report on Sinking Fund Sep- tember 30, 1964 (Includes \$262,524.69 *Water Operating Balance for Year Ended September 30, 1964 plus Prior Year Adjustments of \$1,033.74 or a total of \$263,558.43).....						\$6,115,520.30
Amount of Surplus of Requirements on 3% Basis.....						\$ 935,565.68

\*Subject to change due to anticipated discounts on Outstanding Commitments, see Table No. 41.

**TABLE 46**  
**STATEMENT OF SERIAL BONDS OUTSTANDING**  
**Year Ended September 30, 1964**

Description	Rate of Interest %	Year of		Serial Requirement	Issued	Bonds Outstanding
		Issue	Maturity			
Additions, Alterations and Im- provements to the Water Purification Works .....	3 1/4	1962	1992	*\$20,000.00	\$1,100,000.00	\$1,080,000.00
New 40 Million Gallon Distribu- tion Reservoir .....	3 1/4	1962	1992	**45,000.00	2,050,000.00	2,005,000.00
Total Serial Bonds and Requirements.....				\$65,000.00	\$3,150,000.00	\$3,085,000.00

Note: Paid from Premium on Bonds \*\$4,202.00 and \*\*\$7,831.00.

**TABLE 47**  
**STATEMENT OF FLOATING DEBT OUTSTANDING**  
**Year Ended September 30, 1964**

	Issued	Interest	Principal	Outstanding
Water Purification Improvements II Note No. 9977.....	\$273,000.00	\$7,166.25	\$54,600.00	\$218,400.00
Water Purification Improvements II Note No. 10023.....	19,000.00	274.31	Nil	19,000.00
Totals--Floating Debt .....	\$292,000.00	\$7,440.56	\$54,600.00	\$237,400.00



**TABLE 48**  
**A SUMMARY OF INVENTORIES OF PERSONAL PROPERTY**  
**Year Ended September 30, 1964**

REMOVABLE PROPERTY INVENTORY.....			\$157,652.02
SOURCE OF SUPPLY:			
Hydro-Electric Station .....	\$ 7,538.72		
Purification Works .....	33,711.83		
Laboratory .....	2,811.52		
General .....	5,394.05		49,456.12
TRANSMISSION AND DISTRIBUTION:			
Pipe Lines .....	\$118,243.49		
Pumping Stations .....	176.36		
Garage .....	6,490.95		124,910.80
METERING .....			41,342.30
SUPPLIES .....			4,513.78
Total Personal Property Inventory.....			\$377,875.02

**TABLE 49**  
**STATEMENT OF STORES REVOLVING FUND**  
**Year Ended September 30, 1964**

Cash Balance September 30, 1963.....		\$ 10,000.00
Outstanding Commitments September 30, 1963.....		32,910.24
Receipts—October 1, 1963 to September 30, 1964.....		99,369.73
Total Available .....		\$142,279.97
Disbursements September 30, 1964.....	\$92,632.66	
Outstanding Commitments September 30, 1964.....	27,162.96	
Transferred as Income to General Fund.....	12,484.35	
Total Disbursements .....		132,279.97
Cash Balance September 30, 1964.....		\$ 10,000.00

**TABLE 50**  
**STATEMENT OF THE MISCELLANEOUS WATER MAIN EXTENSIONS ACCOUNT**  
**Year Ended September 30, 1964**

Transferred from Depreciation and Extension Fund—July 29, 1957.....		\$ 15,000.00
Transferred from Depreciation and Extension Fund—July 15, 1958.....		50,000.00
Transferred from Depreciation and Extension Fund—May 21, 1959.....		60,000.00
Transferred from Depreciation and Extension Fund—July 7, 1961.....		35,000.00
Transferred from Depreciation and Extension Fund—July 24, 1962.....		75,000.00
Transferred from Depreciation and Extension Fund—Jan. 11, 1963.....		60,000.00
Transferred from Depreciation and Extension Fund—Sept. 13, 1963.....		15,000.00
Transferred to Acc't. 3-91 Purification Works—December 26, 1963.....		—1,014.57
Total Available .....		\$308,985.43
Disbursements September 30, 1964.....	\$307,092.17	
Outstanding Commitments September 30, 1964.....	Nil	
Total Disbursements .....		307,092.17
Cash Balance September 30, 1964.....		\$ 1,893.26

TABLE 51

## STATEMENT — ACCOUNT FOR INSERTING NEW VALVES

Transferred from Depreciation and Extension Fund—May 12, 1958.....		\$ 10,000.00
Transferred from Depreciation and Extension Fund—May 13, 1959.....		30,000.00
Transferred from Depreciation and Extension Fund—July 7, 1961.....		65,000.00
Transferred from Depreciation and Extension Fund—May 25, 1962.....		60,000.00
Total Available .....		<u>\$165,000.00</u>
Disbursements September 30, 1964.....	\$137,102.57	
Outstanding Commitments September 30, 1964.....	Nil	
Total Disbursements .....		<u>137,102.57</u>
Cash Balance September 30, 1964.....		\$ 27,897.43

TABLE 52

## SPECIAL VALVE INSERTION ACCOUNT — WEBSTER AVENUE

Transferred from the Depreciation and Extension Fund—March 14, 1962.....		\$75,000.00
Disbursements September 30, 1964.....	\$66,446.28	
Transferred to Depreciation and Extension Fund—September 30, 1964.....	8,553.72	
Total Disbursements .....		<u>75,000.00</u>
Cash Balance September 30, 1964 (Account Closed).....		Nil

TABLE 53

## ADDITIONS, ALTERATIONS, AND IMPROVEMENTS AT THE WATER PURIFICATION WORKS

Authorized Bond Issue (Chapter 102, P. L. of R. I. 1959) Approved May 27, 1959—Acc't. 3-91.....		\$1,100,000.00
Authorized Floating Debt (Chapter 102, P. L. of R. I. 1959—Reforestation Garage) Approved May 27, 1959—Acc't. 3-92 \$300,000.00. Amount Issued.....		292,000.00
Transferred from Depreciation and Extension Fund June 15, 1960—Acc't. 3-93.....		550,000.00
Transferred from Depreciation and Extension Fund June 5, 1962—Acc't. 3-93.....		120,000.00
Income from Deposits for Plans Not Returned.....		75.00
Interest Rebated from Banks December 27, 1962.....		3,928.66
Transferred from Acc't. 3-89 December 26, 1963.....		1,014.57
Total Available .....		<u>\$2,067,018.23</u>
Disbursements—September 30, 1964—Acc't. 3-91.....	\$1,105,318.38	
Disbursements—September 30, 1964—Acc't. 3-92.....	291,082.70	
Disbursements—September 30, 1964—Acc't. 3-93.....	670,000.00	
Total Disbursements .....		<u>2,066,401.08</u>
Cash Balance September 30, 1964.....		\$ 617.15

**TABLE 54****NEW 40-MILLION GALLON WATER DISTRIBUTION RESERVOIR**

Authorized Bond Issue (Chapter 103, P. L. of R. I. 1959) Approved May 27, 1959.....		\$2,150,000.00
Minus Adjustment to Bond Issue—December 11, 1962.....		100,000.00
Corrected Authorized Bond Issue—December 11, 1962.....		2,050,000.00
Transferred from "Construction of New Aqueduct Reservoir Account" Closed September 30, 1959.....		49,759.28
Income from Deposits for Plans Not Returned.....		150.00
Interest Rebated from Banks—January 3, 1963.....		7,731.10
Total Available .....		\$2,107,640.38
Disbursements—September 30, 1964.....	\$2,086,390.40	
Outstanding Commitments—September 30, 1964.....	Nil	
Total Disbursements .....		2,086,390.40
Cash Balance September 30, 1964.....		\$ 21,249.98

**TABLE 55****REPAIRS TO STRUCTURES AT PONAGANSET AND COOMER RESERVOIRS**

Transferred from Depreciation and Extension Fund—Res. No. 298—May 13, 1964.....		\$32,000.00
Disbursements September 30, 1964.....	\$29,101.75	
Outstanding Commitments September 30, 1964.....	Nil	
Total Disbursements .....		29,101.75
Cash Balance September 30, 1964.....		\$ 2,898.25

**TABLE 56****REPAIRS AND IMPROVEMENTS TO THE WESTCONNAUG RESERVOIR DAM**

Transferred from Depreciation and Extension Fund—Res. No. 405—June 19, 1963.....		\$30,000.00
Disbursements September 30, 1964.....		30,000.00
Cash Balance September 30, 1964 (Account Closed).....		Nil

**TABLE 57****REPAIRS AND RENOVATIONS TO THE HYDRO ELECTRIC STATION**

Transferred from Depreciation and Extension Fund—Res. No. 616.....		\$125,000.00
Transferred from Depreciation and Extension Fund—Res. No. 299.....		35,000.00
Total Available .....		\$160,000.00
Disbursements September 30, 1964.....	\$ 29,842.48	
Outstanding Commitments September 30, 1964.....	124,734.88	
Total Disbursements .....		154,577.36
Cash Balance September 30, 1964.....		\$ 5,422.64

**TABLE 58**  
**FURNISHING AND INSTALLING BUTTERFLY VALVES**  
**AT WATER PURIFICATION WORKS**  
**APW-R. I-5G**

Transferred from Depreciation and Extension Fund—Res. No. 568.....		\$110,000.00
Received from U. S. Government.....		63,982.50
Total Available .....		\$173,982.50
Disbursements September 30, 1964:		
D'Amario Plumbing Co. ....	\$127,560.00	
Ernst & Ernst, C.P.A. ....	405.00	
Postage .....	3.60	
Transferred to Depreciation and Extension Fund.....	46,013.90	
Total Disbursements .....		173,982.50
Cash Balance September 30, 1964 (Account Closed).....		Nil

**TABLE 59**  
**FURNISHING AND INSTALLING PROVIDENCE STANDARD POST HYDRANTS**  
**APW-R. I-6G**

Transferred from Depreciation and Extension Fund—Res. No. 568.....		\$ 90,000.00
Received from U. S. Government.....		73,000.00
Total Available .....		\$163,000.00
Disbursements September 30, 1964:		
Fanning and Doorley Construction Company.....	\$151,526.16	
Ernst & Ernst, C.P.A. ....	435.00	
Transferred to Depreciation and Extension Fund.....	11,038.84	
Total Disbursements .....		163,000.00
Cash Balance September 30, 1964 (Account Closed).....		Nil

**TABLE 60**  
**FURNISHING AND INSTALLING NEW 8 MGD WASH WATER PUMPS**  
**AT WATER PURIFICATION WORKS**  
**APW-R. I-7G**

Transferred from Depreciation and Extension Fund—Res. No. 568.....		\$20,000.00
Received from U. S. Government.....		12,255.00
Total Available .....		\$32,255.00
Disbursements September 30, 1964:		
D'Amario Plumbing Co. ....	\$24,300.00	
Flow Controls, Inc. ....	1,014.00	
Advertising .....	16.64	
Ernst & Ernst, C.P.A. ....	210.00	
Transferred to Depreciation and Extension Fund.....	6,714.36	
Total Disbursements .....		32,255.00
Cash Balance September 30, 1964 (Account Closed).....		Nil

**TABLE 61****HYDRAULIC STUDIES OF PRESENT AND PROPOSED TUNNEL AND AQUEDUCT**

Transferred from Depreciation and Extension Fund—Res. No. 340—May 27, 1964.....	\$27,000.00
Disbursements September 30, 1964.....	27,000.00
Cash Balance September 30, 1964 (Account Closed).....	Nil

**TABLE 62****NORTHWESTERLY TRUNK MAIN REINFORCEMENT ACCOUNT**

Transferred from Depreciation and Extension Fund Res. No. 707—Dec. 27, 1963.....	\$415,000.00
Disbursements September 30, 1964.....	\$ 77,984.14
Outstanding Commitments September 30, 1964.....	238,275.22
Total Disbursements .....	316,259.36
Cash Balance September 30, 1964.....	\$ 98,740.64

**TABLE 63****PUMPS—BATH STREET STATION ACCOUNT**

Transferred from Depreciation and Extension Fund—Res. No. 297.....	\$60,000.00
Disbursements September 30, 1964.....	Nil
Outstanding Commitments (Contract) .....	\$54,231.00
Total Disbursements .....	54,231.00
Cash Balance September 30, 1964.....	\$ 5,769.00

**TABLE 64**  
**TAXES PAID TO VARIOUS CITIES AND TOWNS**  
**(October 1, 1963 to September 30, 1964)**

Location of Property	Land Area (Acres)	ASSESSED VALUATIONS			TAX	
		Land	Buildings and Improvements	Total	Rate per \$100	Amount Paid
City of Warwick.....	0.060	\$ 160.00	0	\$ 160.00	\$2.94	\$ 4.70
City of Cranston.....	109.552	28,880.00	\$ 942,340.00	971,220.00	3.40	33,021.48
Town of Foster.....	1,994.280	180,840.00	3,000.00	183,840.00	3.45	6,342.48
Town of Glocester.....	73.300	14,700.00	0	14,700.00	3.65	536.55
Town of Johnston.....	103.130	.....	.....	364,100.00	3.50	12,743.50
Town of North Providence.....	8.529	30,900.00	185,100.00	216,000.00	3.55	7,668.04
Town of Scituate.....	13,169.280	890,000.00	7,410,000.00*	8,300,000.00*	.....	353,787.50**
Total Real Estate.....	15,458.131	.....	.....	\$10,050,020.00	.....	\$414,104.25†

\*Includes \$10,000.00 Tangible Personal.

\*\*Three Equal Payments of \$86,112.50 @ \$4.15 per \$100 and One Payment of \$95,450.00 @ 4.60 per \$100 Tax Rate Were Made on \$8,300,000.00 Total Assessed Valuation.

†In addition to this amount, \$52.80 was paid to the West Glocester Fire District and \$4.88 to the Harmony Fire District.

Land Areas Reduced as Follows:

CRANSTON

Scituate Avenue Condemnation	Plat 1364 Parcel No. 61	4,990 Sq. Ft.
Scituate Avenue Condemnation	Plat 1364 Parcel No. 52	2,512 Sq. Ft.
Sockanosset Cross Road Condemnation	Plat 1361 Parcel No. 12	6,360 Sq. Ft.

TOTAL 13,862 Sq. Ft. or 0.318 Acres

NORTH PROVIDENCE

Mineral Spring Avenue Condemnation	Plat 1101 Parcel No. 54	2,200 Sq. Ft. or 0.051 Acres
------------------------------------	-------------------------	------------------------------

SCITUATE

Scituate Avenue Condemnation	Plat 1364 Parcel No. 191	1.163 Acres
Scituate Avenue Condemnation	Plat 1364 Parcel No. 192	5.317 Acres

TOTAL 6.480 Acres

**TABLE 65**  
**SUMMARY OF STATISTICS**  
**PROVIDENCE WATER SUPPLY BOARD**

YEAR ENDED SEPTEMBER 30, 1964

PROVIDENCE* (City or Town)	PROVIDENCE (County)	RHODE ISLAND (State)
-------------------------------	------------------------	-------------------------

**GENERAL STATISTICS**

Estimated population of Providence (1964)	213,230
Estimated population supplied in suburbs (1964)	177,264
Total population supplied	390,494
Date of construction	1870-76; 1915-28; 1935; 1938-40; 1954; 1960-62
By whom owned	City of Providence
Source of Supply	Surface water collected in Scituate Reservoir and five smaller reservoirs on north branch of Pawtuxet River.
Available storage capacity of six impounding reservoirs	39,746 m.g.
Mode of supply	82.9% by gravity; 17.1% by pumping

**STATISTICS OF CONSUMPTION OF WATER**

1. Estimated population supplied	390,494
2. Total raw water influent for the year, gallons	18,726,478,000
3. Average daily raw water influent, gallons	51,165,000
4. Raw water consumption per capita, gallons daily	131.0
5. Total consumption for the year, gallons	18,383,017,000
6. Total registration on customers' meters, gallons	17,164,001,250
7. Percentage of consumption accounted for on customers' meters	93.37%
8. Average daily consumption, gallons	50,226,820
9. Per capita consumption, gallons daily	128.6
10. Gallons per day to each tap	808
11. Cost of supplying water, per million gallons, based on operating and maintenance expense	\$86.09
12. Cost of supplying water, per million gallons, based on operating and maintenance expense plus fixed charges	\$144.78

**FILTRATION**

1. Type of filters	Rapid Sand
2. Number of filter units	14
3. Capacity of filter plant	14 units @ 7.5=105 m.g.d.
4. Chemicals used	Ferri-Floc, Quicklime, Chlorine and Sodium Silicofluoride
5. Total water filtered during year, gallons	18,534,170,000
6. Average quantity filtered per day, gallons	50,640,000
7. Total filtered water delivered to the distribution system during the year, gallons	18,384,177,000

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\*Supplying Providence, Cranston, and portions of Johnston, North Providence, Warwick, Smithfield, Coventry and West Warwick.

**TABLE 65—Continued**  
**SUMMARY OF STATISTICS**  
**PROVIDENCE WATER SUPPLY BOARD**  
**YEAR ENDED SEPTEMBER 30, 1964**

**STATISTICS RELATING TO THE DISTRIBUTION SYSTEM**

1. Kind of pipe	Asbestos-Cement, Cast Iron, Steel and Concrete
2. Sizes	From 6 to 66 inches
3. Installed	54,667.58 feet
4. Removed	24,562.47 feet
5. Net increase	30,105.11 feet
6. Total now in use	785.71 miles
7. Number of leaks per mile	0.08
8. Range of pressure on mains	14 to 95 pounds
9. Range of pressure on mains (special high pressure fire service)	94 to 130 pounds
10. Number of hydrants installed	333
11. Number removed	291
12. Net increase	42
13. Number of hydrants now in use	4,740
14. Number of stop gates installed	208
15. Number removed	95
16. Net increase	113
17. Number of stop gates now in use	10,754
18. Kind of services	Lead, Copper and Cast Iron
19. Sizes	½-inch to 30 inches
20. Number of service taps installed	993
21. Number removed	399
22. Net increase	594
23. Number of services now in use	62,126
24. Number of meters installed	2,406
25. Number removed or condemned	1,691
26. Net increase	715
27. Number of meters now in use	61,754
28. Per cent of services metered	99.92