

CITY DOCUMENT

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

For the Year Ended September 30, 1963



CITY DOCUMENT

ANNUAL REPORT

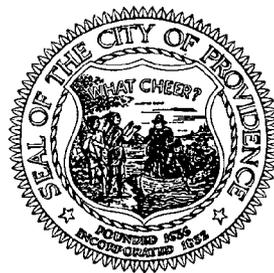
OF THE

WATER SUPPLY BOARD

OF THE

CITY OF PROVIDENCE

RHODE ISLAND



For the Year Ended September 30, 1963

# REPORT

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ADMINISTRATIVE OFFICE  
WATER SUPPLY BOARD  
CITY OF PROVIDENCE  
OCTOBER 1, 1963

TO THE HONORABLE WALTER H. REYNOLDS,  
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-third annual report of the Water Supply Board for the year ended September 30, 1963.

On January 7, 1963 Earl H. Ashley was reappointed a member of the Board for the ensuing term ending on the first Monday in January 1967.

At the re-organization meeting held on January 14, 1963, 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*

IN CITY COUNCIL  
MAR 5 - 1964

READ:  
WHEREUPON IT IS ORDERED THAT  
THE SAME BE RECEIVED.

*Vincent Vespa*  
CLERK

## REPORT OF THE CHIEF ENGINEER

Providence, R. I.

October 1, 1963

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, 1963.

The demands on the system, relative to the consumption of water, continue in ever increasing amounts, with the average for the year ended September 30, 1963 showing an all time high of 47,914,490 gallons used daily. Also in this period, new daily record maximums were established on successive days of June 26 and June 27, when 86,031,000 and 87,215,000 gallons respectively were consumed. The all time high figure of June 27 surpassed the former record peak day of June 17, 1957 by 2,515,000 gallons and exceeds the estimated daily safe yield of the system by 3,195,000 gallons, and is 15,195,000 gallons in excess of the safe yield quantity available for water supply purposes. Additional statistics relative to "Consumption" will be found elsewhere in this report.

The recently completed Additions, Alterations, and Improvements to the Water Purification Works in Scituate continues to receive the most favorable comment from technical, business, civic groups and the general public. The project, which greatly expanded and modernized the treatment facilities at the Water Purification Works, was planned and designed as a joint venture between Mr. Oresto DiSaia, A.I.A., a Providence architect, and the department's engineering force. Construction of this improvement began in June 1960 and a formal dedication by Mayor Walter H. Reynolds was made in August 1962. The whole project, when completed with all incidental and related features, will represent an estimated total expenditure of approximately \$2,090,000.00. A complete description of the Additions, Alterations, and

Improvements is contained in the previous year's report.

On October 24, 1962 the Water Supply Board was host to a group of engineers and administrative water works officials from numerous eastern communities on a guided inspection tour of the expanded and modernized plant facilities, highlighted by a welcoming address from the Chairman of the Water Supply Board and talks describing the advantages and improved operating features of the new facilities. After a buffet luncheon, bus tours of the main Scituate and smaller reservoirs pointing out the forestry and conservation program along the marginal areas completed the program.

The 1963 "Advancement Award" given by the New England Section of the American Water Works Association, in recognition of outstanding achievements of water utilities in the fields of community relations and professional advancement, was formally presented to Mayor Walter H. Reynolds at its April 18, 1963 meeting at the Purification Works. The mayor, in accepting the award on behalf of the Board, delivered a welcoming address to the 204 members and guests in attendance. After a buffet luncheon, guided inspection tours were conducted throughout the plant facilities. A brief talk was given by the Chief Engineer and a technical paper describing fully the improved plant operational features was read by Mr. John J. Collins, the Superintendent of Filtration. The day's program closed with bus tours of reforested areas along the margins of the main Scituate and smaller reservoirs.

"Open House" days for public visitation to the Water Purification Works were held in the Fall of 1962 and Spring of 1963 by

invitation to the public through advertisements in the local newspaper. The response of the public and its reaction to the impressive features of the newly modernized Purification Works was extremely gratifying, with an estimated 3500 visitors attending the Fall visitation and a comparably large group at the Spring visitation.

To acquaint leaders of business and civic organizations with the magnitude and complexities of the Water Purification Works, Mayor Walter H. Reynolds extended personal invitations to the Greater Providence Chamber of Commerce and on July 18 that group toured the treatment plant under the guidance of the department's personnel who described and explained the functions of the equipment and facilities employed in the treatment process from the raw water stage to the finished effluent. It was apparent from the interest shown and the favorable comments made by the several members of the group that the meeting concluded with only the highest impression and admiration for the Water Purification Works.

In cooperation with the School Departments of the various communities served, a new program was adopted during the year, whereby, as a part of their general education, school classes of the advanced grades accompanied by their instructors, were permitted to visit the treatment plant on guided tours which explained the theories, practices, and operational features of a complete Water Purification Works.

On October 17, 1962, following a formal dedication ceremony by Mayor Walter H. Reynolds, the newly completed Aqueduct Distribution Reservoir was placed in service. This facility, on which construction began in February 1960, has added a capacity of 40,030,000 gallons to storage in the low service distribution system. The new reservoir, completely enclosed and underground, is the largest facility of its type constructed in the New England area since 1928 and embraces 21,000 cubic yards of concrete with over 3,500,000 pounds of steel reinforcement. The total

cost of this improvement including land, construction, engineering, and other expense was \$2,086,390.40. The full capacity storage in the distribution system is now increased by 79 per cent and the low service area is improved by an additional 104 per cent of storage.

Under authority of City Council Resolutions 569, 570, 571 and 572, dated November 2, 1962, applications were filed with the Housing and Home Finance Agency, Community Facilities Administration of the United States Government, for Federal Grants, as part of the Accelerated Public Works Program to finance construction of "Installation of Butterfly Valves at the Water Purification Works," "Furnishing and Installing Providence Standard Post Hydrants," "Furnishing and Installing New 8 MGD Wash Water Pumps at the Water Purification Works," and "Installation of a New 8-Inch Water Main in Westminster Street, Providence." All four projects were subsequently approved by the Federal Agency and agreements were made under City Council authorization whereby the government would contribute 50 per cent of the cost of construction. However, it was later decided that the New 8-Inch Water Main in Westminster Street should be installed coincidentally with the construction of the proposed "Westminster Street Pedestrian Mall," and the agreement for this project was terminated by mutual consent. Contract plans and specifications were prepared for the remaining three projects which were awarded to the lowest bidders as follows: Project APW-RI-5G, Furnishing and Installing Butterfly Valves at the Water Purification Works in Scituate, to D'Amario Plumbing Company, Providence R. I., Amount Bid \$127,560.00; Project APW-RI-6G, Furnishing and Installing Providence Standard Post Hydrants, to Fanning and Doorley Construction Co., Inc. of Providence, Amount Bid \$143,380.00, and Project APW-RI-7G, Furnishing and Installing New 8 MGD Wash Water Pumps at the Water Purification Works in Scituate, to D'Amario Plumbing Company of Providence, Amount Bid \$24,300.00. Construc-

tion, employing on-site labor was initiated on all three projects during the early Spring and it is anticipated that completion of the three projects will be made before the end of the 1963 calendar year. The amount of Federal Grants, participating to the extent of 50 per cent of project costs, totalled \$150,500.00 for all three projects.

Early in the year an inspection was made of the three 24-inch secondary feeder water mains suspended from the bridge deck over the Providence River in the vicinity of Memorial Square. As a result of this inspection, and a careful examination of the supporting structural members, it was decided to make immediate repairs to the steel hangers, and authority was obtained from the Board of Contract and Supply to obtain contractual assistance for this work. The Fanning and Doorley Construction Co. of Providence was engaged, and promptly began the work of replacement and repairs to the pipe supports. All hangers on the three 24-inch mains were either replaced or provided with additional structural reinforcements, new neoprene bridge pads were installed at the pipe seats, all joints in the mains were recaulked, and the three lines were cleaned, sandblasted, and given a heavy application of a protective bituminous coating. These procedures were necessary because of the severe conditions of exposure and corrosion in this area. The total cost of this work by the contractor was \$31,549.53 and was completed January 17, 1963.

The program of replacement of the largest valves in the distribution system was continued during the year with the removal of three 48-inch undependable gate valves from the 60-inch Neutaconkanut Conduit and their replacement with the newer type of butterfly valves. Also installed in the 48 and 36-inch sections of the Neutaconkanut Conduit were three thirty-six inch butterfly valve replacements for the older gate valves. These valves were purchased in the previous year under competitive bidding and were supplied, conforming to AWWA standard

specifications, by the W. S. Rockwell Co. of Fairfield, Connecticut. The replacements were by necessity made on successive week-end shutdowns in the Spring and Fall when the demand on the system was lowest, and were completed without particular incident. To continue this program towards full completion, contract bid specifications were prepared for furnishing an additional three (3) 48-inch butterfly valves conforming to AWWA Specifications C-504-58 and the W. S. Rockwell Co. of Fairfield, Connecticut was again the low bidder receiving a contract award in the amount of \$20,428.95. Delivery is scheduled for early Spring in the coming year and installation is planned previous to the months of heavy system demand.

Inspection of the dams of the reservoirs above the main Scituate Reservoir made in June 1963 showed evidence of need of certain repairs, and to properly determine the extent of this work authority was obtained from the Board of Contract and Supply for outside contractual assistance in conducting exploratory investigations and to make the necessary repairs. The services of the Fanning and Doorley Construction Co. of Providence were obtained on a cost plus basis, and Westconnaug Reservoir in the Town of Foster was first drained of storage. Repairs made, including removal of the old wooden gate house, construction of a new draw off chamber, installation of new draw off gate valve, rebuilding of side-walls and approach slab at the spillway channel, and cement concrete sealing of the inner face of the downstream rubble masonry wall, were completed at a total cost of \$17,685.04, and refilling began on July 31, 1963. Barden Reservoir also was then completely drained for inspection and repairs. Extensive repairs were made here to the spillway wall consisting of a complete repointing of the joints in the downstream face of the granite. New concrete approach slabs were constructed at the spillway level. A new intake trash rack was installed, the blow-off gate and operator were thoroughly cleaned, painted, re-

conditioned, and lubricated, and the wooden gate house was completely rebuilt on new concrete sills. New wooden blow-off gates were installed at the old mill intake structure, a new geared floor stand installed, the masonry shaft completely repointed, the wooden superstructure was rebuilt and painted, and a new timber trestle was built from the top of the dam to the mill intake structure. The masonry walls along the upstream face of the dam and along Hemlock Road were rebuilt and repointed with cement mortar, and new gravel access roads were constructed from the west end of the dam to Ponaganset Road. The total cost for this work was \$16,281.10, and was completed on September 20, 1963 at which time the refilling began.

The Neutaconkanut Distribution Reservoir was removed from service and completely drained for inspection and repairs on March 21, 1963. This is the first time that this facility has been drained since it was first placed in service in 1927. A thorough and complete inspection of the interior surfaces of walls, beams, columns, slabs, and footings was made with no visible structural defects anywhere within the reservoir. Repairs were necessarily made to the 60-inch float operated inlet valve consisting of new steel guide rails and structural supporting members, installation of new guide rollers and pins, repairs to the steel shutters, and a complete cleaning and repainting of the entire metal float assembly. The substructure of the gate house was thoroughly cleaned and the reservoir was restored to service on April 15, 1963.

The Hydro-Electric Station at Gainer Dam was removed from service for the period October 23 to 29, 1962 for the purpose of making a complete inspection of the hydraulic turbine, wicket gate mechanism, hydraulic governor, and the 2300-volt water wheel generator. The services of field representatives of the Allis Chal-

mers Manufacturing Co. of York, Pennsylvania and the Westinghouse Electric Corporation were engaged to provide the technical assistance necessary to make required adjustments to the various components, and to determine the overall condition of the equipment. Minor repairs and field adjustments were made during the inspection period but written reports subsequently received from the manufacturers recommended that major repairs and replacements should be undertaken in the near future. These reports and recommendations have been evaluated and it is planned to schedule these repairs for the coming year. During the period of shutdown, water was discharged to the Pawtuxet River through the 36-inch blow-off valve at the base of Gainer Dam, and all electrical power required for operation of the Water Purification Works was received from the system of the Narragansett Electric Company. On December 4, a complete inspection, repair, and adjustment was made to the 15,000 foot-pound Hydraulic Governor by a representative of the Sorenson Governor Service of Bridgeport, Connecticut. No further work is anticipated on the Hydraulic Governor. The last complete inspection of the Hydro-Electric Station equipment was made in December 1959.

In June 1963 a contract was awarded to the Clavin Fielding Co. of Providence, R. I. in the amount of \$2,997.00, the lowest bidder, for Interior and Exterior Repainting of the Hydro-Electric Station. This work proceeded without incident and was completed on August 29, 1963.

The insertion of two 42-inch gate valves in the Crosstown Feeder at Webster Avenue Providence, where this feeder intersects the 60-inch Neutaconkanut Conduit, was completed in May of this year without any interruption whatsoever to service in either the 42-inch or the 60-inch feeders. This intersection, which is one of the most critical control points in the entire distribution system, could not

be removed from service without a most serious effect on flows and pressures throughout the entire distribution system, and for this reason the more costly valve insertion program was adopted. A contract was awarded, in the previous year, for furnishing and inserting these 42-inch valves, to the Fanning and Doorley Construction Co., Inc. of Providence who were the successful low bidder, in the amount of \$66,590.00. An unusual aspect of this project, which caused a long delay in the delivery of the valve materials and the necessary attendant inserting machine, was that a 42-inch valve insertion had never been made in a cast iron main and the manufacturer, the A. P. Smith Mfg. Co. of East Orange, New Jersey, was required to manufacture and demonstrate at their plant, the successful use of this highly specialized equipment. A representative of this department witnessed the successful trial installation at the Smith plant, and permission was then given to proceed with the actual field installation. The work of making the two 42-inch insertions was accomplished with only minor difficulties and was completed in less than one month's working time. The appraised value of these inserted valves, complete in place, will represent approximately \$39,000.00 per unit.

The City of East Providence, in December 1962, based on reports of Consulting Engineers retained by them for the purpose of making studies and recommendations for improvements to their supply, and coincident with the preparation of an application to the Housing and Home Finance Agency for Federal Assistance, made, through their Mayor Raymond L. Murray, a formal request for obtaining water from the Providence System. At the January 1963 Session of the General Assembly of the State of Rhode Island an act was passed in Amendment of Section 18 of Chapter 1278 of the Public Laws of 1915 entitled "An Act to Furnish the City of Providence with a Supply of Pure Water", to include the City of East Providence within the communities having the right to take and

receive water from said storage reservoir or reservoirs for use for domestic, fire, and other ordinary municipal water supply purposes.

Because of the increasing general interest in the Providence Water System, and in recognition of the tremendously favorable response to the original Sound Color Film, "You Can't Live Without It," which was first shown to members of the City Council and department heads on April 14, 1952, it was voted to replace the outdated film with a new up to date release of the department's operations and facilities. The Board of Contract and Supply subsequently authorized retaining the services of Frank McCabe and Associates Inc., a Providence Advertising and Public Relations firm for this work at a cost of \$11,000.00. The completed work will be a 16-mm. sound color release with musical background and professional narration, and is expected to be ready for release in the coming Spring.

The engineering office began work on the preparation of contract plans and specifications for completion of the 24-inch Northwesterly Trunk Main Reinforcement. The first portion of this improvement was constructed in 1954, between the Neutaconkanut Pumping Station in Johnston and Putnam Pike in North Providence. Because of the difficulties inherent to crossing of the Woonasquatucket River in Centerdale, alternate routes are being investigated for consideration. The completion of the Northwesterly Trunk Main Reinforcement will complete the loop and connect the existing 24-inch main directly to Longview Reservoir. This project, with an estimated cost of approximately \$400,000.00, is scheduled for release to contract bidders in the Spring of 1964.

The installation of new extensions to the distribution system and the replacement and relocation of existing mains required the installation of 55,362 feet of various size and kind of pipe. A major part of this footage was installed by contractors under competitive bidding. Three contracts involving 41,531 feet of main ex-

tensions and replacements were awarded during the year; two to the C. Brito Construction Company for 28,549 feet, and one to the Fanning and Doorley Construction Company for 12,982 feet.

In connection with the construction of Interstate Route 95 in Providence the M. A. Gammino Construction Company installed 8,466 feet of cast iron main and appurtenances during the year. This footage consisted of 2,244 feet of 6-inch, 1,020 feet of 8-inch, 1,071 feet of 12-inch, 3,431 of 16-inch, and 700 feet of 30-inch. This company also installed 412 feet of 6-inch asbestos cement main in connection with the development of the Lippitt Hill Re-development Project in Providence; 1,246 feet of 6-inch and 4,099 feet of 12-inch cast iron main in connection with the development of the Huntington Expressway Industrial Park in Providence, and 75 feet of 8-inch, 913 feet of 12-inch and 666 feet of 16-inch cast iron main in connection with the Fox Point Hurricane Barrier now under construction in Providence.

Other extensions involved the installation of 1,278 feet of main consisting of 956 feet of 6-inch asbestos cement main, 89 feet of 8-inch cast iron main, 171 feet of 8-inch and 62 feet of 12-inch asbestos cement main which was laid by the department's forces.

Two hundred and eleven main installations were made in various streets during the year. At the end of the year approximately 6,200 feet of main extensions contracted for remained to be laid.

On June 18, 1963 a contract was awarded to the A. E. Bragger Construction Company for the installation of 49 post hydrants on the distribution system.

Under the terms of the contract, the contractor furnished all materials except the hydrants, which were furnished by the department. Work started on September 9, 1963, and at the end of the year 27 installations, or 55% of the work, had been completed.

Capital improvements, excluding the project under the Gilbane contract for additions, alterations and improvements to the Water Purification Works, totalled \$3,070,643.30 during the year of which \$2,086,390.40 was for the new Aqueduct Low Service Distribution Reservoir, \$416,899.53 for main extensions, \$218,463.93 for gate valves, \$251,374.57 for hydrants and \$97,514.87 for new services.

Applications for water service totalled 1,006, or 166 less than in the previous year. Of this number 105 required extensions to the distribution system. A total of 907 new services were installed, 888 general supplies and 19 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, 1963, the net sewer rental collection totalled \$142,167.24.

Automotive and construction equipment owned and in use by the department totalled 28 various trucks, 19 passenger cars including 2 jeeps, 9 compressors, 2 trenchers, various pumps, and other miscellaneous equipment. The records of the department indicate that trucks were operated a total of 40,310 truck hours at a cost of 73.3 cents per hour, and passenger cars were driven a total of 216,407 miles at a cost of 6.9 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, 1963 a total of 44.58 inches was recorded, which is 3.75 inches less than the 48-year (1916-1963) average of 48.33 inches. The rainfall for the year was 92% of the long term average and 67% of the maximum of 66.28 inches, established during the year ended September 30, 1958.

There were five long periods when no rainfall was recorded, ranging in duration from seven to eleven days. The three longest periods occurred from October 13 to 22, 1962, November 23 to December 3, 1962, and from December 31, 1962 to January 10, 1963. There were two periods of seven days of successive rainfall, with the most productive of these occurring from October 4 to 10, 1962. During this interval a total of 6.172 inches was recorded, with a maximum of 3.85 inches on October 5, and a minimum of 0.002 inches on October 8. During the other seven day period, September 15 to 21, 1963, a total of only 1.35 inches was measured, with a maximum of 0.70 inches on September 20, and a minimum of 0.016 inches on September 15.

The total rainfall of 44.58 inches was the sixteenth lowest yearly rainfall experienced during the 48-year (1916-1963) period, the lowest being for the year ended September 30, 1957 when a total of 33.43 inches was recorded. During the months of October 1962 and September 1963, the monthly rainfall exceeded the 48-year averages for those respective months; the maximum monthly rainfall occurring in October when 8.95 inches were measured. This was 5.31 inches greater than the 48-year average and was the second highest rainfall recorded for October, the maxi-

imum for that month being 11.48 inches measured in October 1956. Based on the eleven month period November 1962 through September 1963, the total rainfall of 35.63 inches during that time was the fourth lowest of the corresponding periods during the 48 years of record. The lowest total rainfall for the eleven month interval was 30.47 inches in the year ended September 30, 1957; the second and third lowest were for the years ended September 30, 1930 and September 30, 1925, respectively. The minimum monthly rainfall during the past year occurred in August when a total of 1.65 inches was recorded, an amount 2.76 inches below the long term average for that month. The maximum day's rainfall for the year occurred on October 5, 1962, when a total of 3.85 inches was recorded, with the station at Rocky Hill measuring 3.98 inches.

The runoff for the year totalled 19.08 inches, which was 5.90 inches less than the 48-year (1916-1963) average of 24.98 inches. It was the ninth lowest yearly runoff during the 48 years of observations, the lowest being 12.02 inches for the year ended September 30, 1930. During the months of October and November the monthly runoff exceeded the 48-year averages for those respective months. The maximum monthly runoff occurred in March when 4.47 inches were recorded, an amount 0.26 inches less than the long term average for that month. April, which along with March is usually one of the highest months for runoff, yielded only 1.69 inches, or 2.17 inches less than the 48-year average. The minimum monthly runoff occurred in August when minus 0.25 inches was recorded, an amount 0.78 inches less than the long term average for that month.

Statistical rainfall and runoff data for the year ended September 30, 1963, 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, 1962 the water in Scituate Reservoir was at elevation 277.14, or 6.87 feet below the spillway level. The total storage then amounted to 29,840,000,000 gallons, or 80.6% of capacity. At the end of the year, October 1, 1963, the reservoir was at elevation 278.08, or 5.93 feet below the spillway level, with a storage of 30,780,000,000 gallons, or 83.2% of capacity. From October 1, 1962 the elevation decreased to 276.83 on October 5, or 7.18 feet below spillway level. The total storage at that time amounted to 29,530,000,000 gallons, or 79.8% of capacity, the smallest amount in storage during the entire year. Following a rapid rise to 278.11 on October 13 the elevation then decreased gradually to 277.37 on October 31. A moderately rapid rise then occurred to elevation 280.79 on December 11. A gradual decrease to 278.52 on February 12, 1963 was followed by a negligible increase to elevation 279.05 on March 1. The elevation then rose rapidly to 283.61 on April 1, and after minor fluctuations reached 284.06 on May 4; this was 0.05 feet above spillway level of 284.01. From this point it increased gradually to the maximum for the year of 284.63 on May 22 and 23, or 0.62 feet above spillway level. At this time the total storage amounted to 37,706,000,000 gallons, or 101.9% of capacity. From this point the elevation decreased at a moderately rapid and steady rate to 278.08 on October 1, 1963.

On October 1, 1962 the combined storage on the watershed, including Regulating, Westconnaug, Barden, Moswansicut, Ponaganset and Scituate Reservoirs, amounted to 33,906,000,000 gallons, or 82.2% of combined total capacity. At the end of the year, October 1, 1963, the combined storage was 33,518,000,000 gallons, or 81.2% of capacity. The maximum combined storage was on May 25, when 41,760,000,000 gallons, which is 101.2% of capacity, were impounded. The minimum combined storage was on September 28,

and on October 1, 1963, when 33,518,000,000 gallons, which is 81.2% of capacity, were impounded.

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

The total draft from the Scituate Watershed for the year was 31,151,670,000 gallons, or an average of 85,350,000 gallons per day. The draft for water supply purposes was 18,530,510,000 gallons, or an average of 50,770,000 gallons per day. The discharge into the north branch of the Pawtuxet River totalled 12,621,160,000 gallons, equal to 34,580,000 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 30,763,670,000 gallons, or an average of 84,280,000 gallons per day, which was 1,070,000 gallons per day less than the average daily draft, and 26,020,000 gallons per day less than the 110,300,000 gallons per day average yield for the 48-year period 1916 through 1963.

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

## SCITUATE WATERSHED FORESTRY AND MAINTENANCE OPERATIONS—1963

The New England Section, Society of American Foresters held its summer field meeting in Rhode Island on September 5-6, 1963. Much of the program, the theme of which was Water Resources and Watershed Management, took place on the Scituate Reservoir Watershed. Foresters representing agencies from the six New England States were shown the modern facilities and equipment utilized by forestry and maintenance personnel in operations on the watershed. Scheduled stops on the watershed included: (1) an explanation of turf maintenance on Gainer Dam, (2) a release of underplanted spruce on Batten Meeting House Firelane, (3) a serious *Fomes annosus* infection of white spruce in a plantation adjacent to East Road, and (4) a thinning and improve-

ment operation in plantations west of the village of North Scituate. The highly successful meeting was brought to a conclusion with a tour of the Purification Works.

#### *THE MAINTENANCE PROGRAM*

Intensification of turf management procedures continued during 1963. Optimum nutrient and pH levels were attained on most turfed areas by proper, seasonal application of fertilizer and lime. Research in turf renovation techniques brought about the use of a new mulch product. The Special Products Department of International Paper Company, headquartered in Mobile, Alabama, cooperated in a trial application of its wood-fiber product, Turfiber. A slurry mix of Turfiber, grass seed, and fertilizer was hydraulically applied to portions of Gainer Dam, Gainer Dike, and the South Settling Basin slope in May and September of 1963. Extended droughty periods during spring and summer hindered the success of those renovation projects done in May. Preliminary inspection of areas treated in September indicates favorable establishment of new turf.

Chemical brush control with herbicides proceeded at an increased pace during the 1963 growing season. Herbicidal treatments by spraying or in combination with mechanical measures were accomplished on a total of 13.7 miles of woods roads and fire lanes, 13.1 miles of roadside fenceline and 3.5 miles of aqueduct and rights-of-way. Fewer manhours and less treating material were required for areas undergoing a second chemical brush control operation. This is an indication of the mortality and growth setback incurred by brush species when initially sprayed in 1960 and 1961. It is general policy to spray all stumps of brush hardwoods with an Ammate solution during maintenance or clearing operations to prevent vigorous resprouting and costly control operations in the future.

Improvements were made along the access road to Rockland Cemetery. Decadent European lindens that lined the access road were removed and replaced by

European larch. Forestry crews made additional improvements to fencelines and forest stands bordering Danielson Pike, East Road, Plainfield Pike, and Tunk Hill Road. Routine maintenance to fencing, fire lanes, rights-of-way, distribution reservoirs, pipelines, and other watershed facilities was accomplished as necessary.

#### *THE FORESTRY PROGRAM TIMBER PRODUCTION*

Development of local market for pine piling afforded opportunity to harvest 303 red-pine poles from approximately 15 acres of plantations. The poles were selectively removed from red-pine plantations established in 1925. The poles, that averaged 35 to 40 feet in length, yielded a sizable stumpage return to the Water Supply Board. It is noteworthy that scattered infection centers of *Fomes annosus* root disease occurred throughout the plantations from which the poles were harvested. In some instances, trees displaying early symptoms of the disease were removed for piling. The piling sale proved to be opportune because of threatened mortality of pine by *F. annosus*.

Conditions were favorable for the sale of red cedar for such products as tobacco poles, fence posts, and shavings for animal bedding. The sale of pulpwood stumpage increased significantly as 1925.95 tons of softwood and hardwood pulpwood were removed in thinnings and improvement operations. Because of a limited market, pulpwood operations were restricted during the summer and fall months thus preventing an even greater sale of pulpwood material. In other improvement operations, 137.5 cords of fuelwood and 6980 board feet of logs were sold.

#### *CULTURAL OPERATIONS*

Approximately 35 acres of underplanted white spruce were released from over-story oak adjacent to the Battery Meeting House Firelane. Characteristic fire scars, decay, and borer damage were common to the low-quality oak of sapling size. Oak and brush hardwood less than

four inches in diameter were cut with a brushking and the stumps treated with Ammate to prevent resprouting. Larger trees were killed by application of Ammate to an axe frill. Similar operations were carried out on 15.2 acres in other forested areas of the watershed. The Little Beaver Tree Girdler was used to release 6.5 acres of white pine in the Spring Brook Road area. Other cultural work performed during the year included pruning, pre-commercial thinning, and mechanical release of recently planted conifers.

### REFORESTATION

Reforestation of the recently acquired property on the upper reaches of Barden Reservoir was begun in 1963. An access woods road leading to the property from Central Pike was cleared and prepared for future use. Abandoned fields totaling 13.85 acres and associated with the new property were planted to white pine, European larch, and hemlock at various mixtures and spacings. A total of 15,170 trees were planted on 22.87 acres during the spring planting season. Site preparation was necessary on almost all of the areas planted.

### PROTECTION OF THE WATERSHED

*Fires:* The 1963 spring fire season necessitated 25 successive days of operation by the Tunk Hill Fire Tower. The 100-foot tower was manned a total of 302 hours on 39 high-hazard days during the months of March, April, and May. Many fires burned considerable acreage throughout the State; however, City of Providence watershed lands continued to escape damaging forest fires. Only one small fire of insignificant acreage burned on City property adjacent to Betty Pond Road. The Tunk Hill Fire Tower continues to offer invaluable assistance to the State Division of Forests in the quick detection of fires within the extensive coverage area of the tower. It became necessary during the year to perform important maintenance to the structural steel fire tower. A complete painting of the tower and replacement of the observation cabin floor, all

stair treads, and landings were included in the maintenance.

*Forest Insects:* Damaging insect populations did not noticeably change from previous yearly levels on the watershed forests. Pales weevil (*Hylobius pales*) continues to damage natural reproduction of planted conifers in areas where recent cutting of pine has occurred.

Although not directly related to the forest-insect problem, grubs were responsible for considerable damage to turf at the Purification Works during the summer and fall of 1962. The extremely cold 1962-63 winter apparently caused extensive natural mortality of Japanese and May beetle populations resulting in much improved turf conditions during the 1963 growing season.

*Forest Diseases:* Infection centers of *Fomes annosus* root and butt disease continue to be found in numerous locations throughout plantations on the watershed. A general decline in growth and vigor in certain spruce plantations has been definitely attributed to *F. annosus*. Samples taken from infected spruce in plantations bordering East Road produced pure cultures of *F. annosus* at the Forest Insect and Disease Laboratory of the U. S. Forest Service, New Haven, Connecticut. Spruce do not usually suffer immediate mortality from the disease, but are subject to butt and heart rot and eventual complete deterioration of the tree rendering it useless for timber purposes. In some instances, the disease has gained entry in young spruce plantings by infecting stumps of trees removed by Christmas-tree poachers.

The long-term effects of *F. annosus* must be a major consideration in the silvicultural treatment of coniferous stands and particularly forest plantations. Experience in Europe and this country has shown the disease to display its most severe pathogenic tendencies in abandoned agricultural soils planted to conifers. Whether the disease will continue to cause mortality and loss of timber volume in second growth stands or future forest rotations

on sites with an agricultural history is a question for future research.

*Control of Trespass:* It became necessary to prosecute through local authorities six chronic violators of watershed property. Repeated trespass by youthful offenders necessitated the referral of 13 juveniles to the local police department for disciplinary action. Incidents involving illegal roadside dumping and vandalism were also resolved in cooperation with police authorities. A total of 349 violations of watershed property were recorded during the year.

#### GAINER DAM—HYDRO-ELECTRIC PLANT

The Hydro-Electric Station at Gainer Dam was taken out of service from October 23 to October 29, 1962, inclusive, for the purpose of making repairs to the water wheel and generating equipment. During the time of shutdown, water was discharged to the Pawtuxet River below Gainer Dam through the 36-inch blow-off outlet from the south 60-inch steel pipe aqueduct. A detailed description of repairs made is included elsewhere herein.

Other than the period of shutdown, satisfactory operation was continued for the balance of the year with the plant operating a total of 259 days or 2,684 hours.

Power generated from the discharge of 12,318,210,000 gallons of water through the 1875 KVA Hydro-Electric Turbo Generator to the Pawtuxet River amounted to 2,153,900 kilowatt hours, using 5,719 gallons of water for each kilowatt hour generated. Of the power generated, 1,873,800 kilowatt hours, or 87.00%, was sold to the Narragansett Electric Company, and 246,940 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 109.69 million gallons per day.

Hydro-Electric Plant statistics on the basis of the "Contract Year" with the Nar-

ragansett 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 18,530,516,000 gallons, or an average of 50,769,000 gallons per day; the maximum for any one day being 88,004,000 gallons on June 27, 1963 and the minimum 29,431,000 gallons on September 21, 1963.

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 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 1,780,089 pounds, or an average of 4,877 pounds daily; with a maximum for any one day of 8,861 pounds on June 27, 1963 and a minimum of 2,542 pounds on September 21, 1963. The dosage averaged 0.67 grains per gallon, the maximum for any one day being 0.72 grains per gallon and the minimum 0.49 grains per gallon.

Quicklime used during the year totalled 1,642,570 pounds, or an average of 4,500 pounds daily; with a maximum for any one day of 7,810 pounds on June 27, 1963 and a minimum of 2,374 pounds on December 8, 1962. The lime dosage averaged 0.62 grains per gallon, the maximum for any one day being 0.74 grains per gallon and the minimum 0.47 grains per gallon.

Filters were operated a total of 70,176.71 hours during the year, at an average of 192.26 filter hours per day; the average length of filter runs being 65.36 hours, which is 12.77 hours, or 16.3 per cent less than the average of 78.13 hours for the previous year. The maximum daily average of filter runs was 129.50 hours on October 8, 1962 as compared to a maximum of 128.71 hours during the previous year; and the minimum was 38.03 hours on April 6, 1963 as compared to a minimum of 39.75 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 32 inches rise per minute and an average sand expansion of 33%. 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 28 to 33 inches per minute rise and an average sand expansion of 27%. 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 40%. A total of 194 tests were made dur-

ing the year to determine the sand expansion and rate of rise. The total wash water used was 132,765,000 gallons, an average of 364,000 gallons per day, or 122,477 gallons per wash. The 132,765,000 gallons of wash water used was 17.6% more than the 112,896,000 gallons for the previous year.

The total water filtered for the year amounted to 17,665,255,000 gallons, an average of 48,398,000 gallons daily; the maximum day being 87,635,000 gallons on June 27, 1963, and the minimum 27,785,000 gallons on September 22, 1963. The average rate of filtration per filter was 6,040,000 gallons per day, and the average amount of water filtered per filter per run was 16,450,000 gallons, or 12.4% less than the 18,780,000 gallons for the previous year.

The total plant effluent, or pure water delivered to the Scituate Aqueduct and the Kent County Water Authority, totalled 17,532,490,000 gallons, an average of 48,034,000 gallons per day, with a maximum of 86,972,000 gallons on June 27, 1963 and a minimum of 27,499,000 gallons on September 22, 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 17,273,596,000 gallons, an average of 47,325,000 gallons per day. Sodium silicofluoride used during the year totalled 218,053 pounds, or an average of 597 pounds per day; with a maxi-

imum for any one day of 1,068 pounds on June 27, 1963 and a minimum of 349 pounds on September 22, 1963. The actual dosage of fluoride ion averaged 0.90 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 17,314,539,000 gallons, an average of 47,437,000 gallons per day. Water delivered to Kent County is chlorinated separately by their facilities. Chlorine used during the year totalled 58,959 pounds, or an average of 162 pounds per day; with a maximum for any one day of 290 pounds on June 27, 1963 and a minimum of 96 pounds on September 22, 1963. The chlorine dosage averaged 0.41 parts per million, the maximum and minimum dosages being 0.44 and 0.38 parts per million. Chlorine residual of the water at a point adjacent to the main aqueduct averaged 0.039 parts per million, and of the tap water at the Providence City Hall 0.012 parts per million.

The following statistics show that the chemical cost of treatment for the year ended September 30, 1963 was \$4.58 per million gallons, or 1.7% less than the figure of \$4.66 last year. The price per ton of Ferri-Floc increased from \$53.05 for the period October 1, 1962 to August 25, 1963, to \$54.05 for shipments received from August 26 to September 30, 1963; the price per ton was \$53.05 for the entire previous year. Quicklime was purchased for \$20.47 a ton from October 1, 1962 to June 11, 1963; shipments received between June 12 and the end of the year cost \$20.40 per ton. This compares with \$21.02 down to \$20.47 per ton during the prior fiscal year. The price per ton of sodium silicofluoride increased from \$139.35 for the period October 1, 1962 to August 5, 1963, to \$164.40 for deliveries received from August 6 to September 30, 1963; the price per ton was \$139.35 during the entire previous year. Chlorine was purchased for

\$135.00 per ton, the same price that was paid during the year ended September 30, 1962.

	Year Ended Sept. 30, 1962	Year Ended Sept. 30, 1963
Ferri-Floc .....	0.67 G.P.G.	0.67 G.P.G.
Quicklime .....	0.65 G.P.G.	0.62 G.P.G.
Sodium Silicofluoride.....	*0.94 P.P.M.	*0.90 P.P.M.
Chlorine .....	0.40 P.P.M.	0.41 P.P.M.
Length of Filter Runs...78.13	Hrs.	65.36 Hrs.
Tap Water Color.....	5 P.P.M.	5 P.P.M.
Tap Water Iron.....	0.01 P.P.M.	0.01 P.P.M.
Cost of Chemicals per M.G. of Water Treat- ed .....	\$4.66	\$4.58

\*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, 1962 to August 25, 1963 at \$53.05 per ton, and for the period August 26 to September 30, 1963 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 ( $Fe_2(SO_4)_3$ ). 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 ( $Fe_2(SO_4)_3$ ).

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 98 average days' supply.

Analysis of the Ferri-Floc received has shown an average ferrous iron content of 0.73%, which is 0.77% 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 73.29%, or 4.29% more than the minimum of 69% permitted by specification requirements. The average amount of material passing a 20 mesh per inch screen was 45.9% 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
October 1, 1962.....	0.50	72.00	50.1
October 10, 1962.....	0.66	74.07	38.3
November 14, 1962.....	0.74	73.82	35.0
November 19, 1962.....	0.66	74.00	54.4
November 23, 1962.....	0.67	74.07	44.4
January 28, 1963.....	0.67	73.39	47.8
January 30, 1963.....	0.52	76.04	49.9
February 11, 1963.....	0.69	73.89	40.0
March 25, 1963.....	0.75	70.67	50.6
April 3, 1963.....	0.79	73.18	42.2
April 12, 1963.....	0.86	72.03	51.9
May 27, 1963.....	0.76	71.35	49.6
June 3, 1963.....	0.77	72.85	50.3
June 5, 1963.....	0.75	72.57	52.2
July 8, 1963.....	0.89	74.00	48.6
July 22, 1963.....	0.74	72.67	49.2
July 31, 1963.....	0.93	73.86	22.8
August 26, 1963.....	0.74	73.14	47.7
September 4, 1963.....	0.73	74.21	44.2
September 6, 1963.....	0.78	74.00	47.7

All deliveries met specification requirements with respect to ferrous iron and ferric sulphate contents, but thirteen failed to meet screen size requirements. The manufacturer was notified to this effect and requested to conform to his obligations.

Quicklime was obtained under contract with the New England Lime Company, Adams, Mass. from October 1, 1962 to June 11, 1963 at a price of \$20.47 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 90.0% 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 94.1%, which is 4.1% greater than specification requirements. The per cent of material passing a 4 mesh per inch screen was 100% on every delivery and the per cent retained on a 100 mesh per inch screen averaged 99.4%. 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
October 17, 1962.....	95.0	99.6
October 24, 1962.....	94.5	99.1
October 31, 1962.....	92.6	99.4
December 19, 1962.....	93.3	99.7
December 31, 1962.....	94.2	99.3
January 2, 1963.....	94.2	98.8
February 25, 1963.....	95.0	99.7
March 6, 1963.....	93.8	99.8
March 11, 1963.....	94.2	99.6
May 13, 1963.....	94.2	98.8

The table shows that all ten deliveries met specification requirements.

Shipments of quicklime received on and after June 12, 1963 were obtained under contract with the Standard Lime and Cement Company, Division of Martin Marietta Corporation, Baltimore, Maryland 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 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 (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 93.0%, which is 3.0% greater than specification requirements. The per cent of material passing a 3/4-inch screen was 100% on every delivery and the per cent retained on a 10 mesh per inch screen averaged 98.9%. 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 10 mesh per inch screen:

Date Received	Percent Available Calcium Oxide	Percent Retained on a 10 Mesh per Inch Screen
June 12, 1963.....	92.3 .....	97.0
June 17, 1963.....	92.8 .....	99.7
June 26, 1963.....	94.7 .....	99.6
July 1, 1963.....	94.7 .....	99.5
July 3, 1963.....	92.3 .....	99.5
July 8, 1963.....	90.1 .....	96.3
September 11, 1963.....	93.7 .....	99.4
September 30, 1963.....	93.5 .....	99.9

The table shows that all eight 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 107 average days' supply.

Sodium silicofluoride was purchased under contract with the Henry Sundheimer Company, New York, for the period October 1, 1962 to August 5, 1963 at \$139.35 per ton, and for the period August 6 to September 30, 1963 at \$164.40 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 seven shipments received was 99.2%. The following table shows the date of delivery and per cent of sodium silicofluoride:

Date Received	Percent Sodium Silicofluoride
October 22, 1962.....	99.6
January 2, 1963.....	99.4
February 11, 1963.....	99.2
April 11, 1963.....	99.5
June 10, 1963.....	99.4
August 6, 1963.....	98.5
September 30, 1963.....	98.9

The table shows that all seven 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 134 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, 1962 to September 30, 1963 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 99 average days' supply.

Number 6 fuel oil used for heating the plant from October 1962 to May 1963, and during September 1963, totalled 53,121 gallons, an average of 4,427 gallons per month. Number 2 fuel oil was used from October 1962 to January 1963, and from April to September 1963, for heating water. The amount used totalled 5,123 gallons, an average of 427 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, the Providence City Hall, and 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 13,074 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 101,749 which, based on a forty-hour work week, means that the water was receiving one test or another every 74 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 Standards. The following table taken from 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
2,500 and under.....	1
10,000 .....	7
25,000 .....	25
100,000 .....	100
1,000,000 .....	300
2,000,000 .....	390
5,000,000 .....	500

The population served by the City of Providence water supply is approximately 387,241. In accordance with the above table, and recommendations given in the Standards, the minimum number of bacteriological samples that should be obtained from the distribution system per month for this population is 200. The actual number of bacteriological samples obtained in the distribution system for the year amounted to a total of 3,345 or an average of 279 per month, a figure 40% greater than recommended by the Standards and 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 2,961,740,000 gallons, or an average of 8,114,356 gallons per day.

Neutaconkanut Station pumped 1,456,100,000 gallons through the east Venturi and 1,029,725,000 gallons through the west Venturi meter for a total of 2,485,825,000 gallons, or 6,810,479 gallons per day, and Bath Street Station pumped 475,915,000 gallons, or 1,303,877 gallons per day.

The total power required for pumping at both stations amounted to 1,191,360 kilowatt-hours. Neutaconkanut Station required 988,500 kilowatt-hours, and Bath Street Station 202,860 kilowatt-hours. The cost of power at both stations was \$20,054.10, or \$6.77 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 fifty hours and fifteen minutes, pumping 21,210,000 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 twenty-five hours and thirty minutes, pumping 3,330,000 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 new 40.03 million gallon Aqueduct Low Service Distribution Reservoir, located off Scituate Avenue in Cranston, is described in an earlier section of this report. It was placed in service October 17, 1962, and has been in continuous and satisfactory operation during the year. The 38.58 million gallon Neutaconkanut Low Service Distribution Reservoir on Neutaconkanut Hill, Johnston, was removed from service from March 21 to April 15, 1963 to make repairs to the float valve and appurtenances. The 11.94 million gallon Longview High Service Distribution Reservoir at Mineral Spring Avenue and Smithfield Road in North Providence has been in continuous and satisfactory operation throughout the year.

The addition of Aqueduct Reservoir has increased the total storage in the system by 79 per cent, and the low service distribution system storage by 104 per cent.

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 nec-

essary 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 the major part of the repairs to and the replacement of the appurtenances.

The amount of pipe laid during the year, all sizes, totalled 55,361.93 feet including 39,602.63 feet of asbestos cement pipe and 15,759.30 feet of cement lined cast iron pipe.

A total of 36,504.55 feet of pipe was removed or abandoned, resulting in a net increase to the distribution system of 18,857.38 feet. In the City of Providence there was a decrease that amounted to 15,616.91 feet. In the City of Cranston there was an increase of 21,345.87 feet, in the town of Johnston the increase amounted to 6,998.02 feet and the town of North Providence 6,130.40 feet.

At the end of the year the total length of mains in the distribution system aggregated 780.01 miles including 12.86 miles in the special high service fire system in the City of Providence. Asbestos cement pipe in the system totalled 908,682.69 feet, consisting of 484,765.16 feet of 6-inch, 383,639.16 feet of 8-inch, 28,247.77 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 57,111.15 feet, consisting of 2,380.54 feet of 16-inch, 32,694.08 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 1,895,653.21 feet of 6-inch, 521,801.36 feet of 8-inch, 13,017.62 feet of 10-inch, 357,817.37 feet of 12-inch, 144,223.99 feet of 16-inch, 16,360.34 feet of 20-inch, 62,309.92 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 3,106,006.84 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 193. In Providence a total of 102 stop gates was installed, forty-five 6-inch including two inserting valves, eleven 8-inch, twenty-five 12-inch, twelve 16-inch including four butterfly valves, two 30-inch butterfly valves, two 36-inch butterfly valves, two 42-inch inserting valves, and three 48-inch butterfly valves. In Cranston a total of 56 stop gates was installed, seventeen 6-inch including one inserting valve, thirty-five 8-inch, and four 12-inch. Stop gates installed in Johnston totalled 20 including four 6-inch and sixteen 8-inch, and in North Providence a total of 15 was installed, eight 6-inch and seven 8-inch.

Stop gates removed or abandoned totalled 150, one hundred and six 6-inch, twenty-three 8-inch, twelve 12-inch, one 16-inch, one 30-inch, one 36-inch, and three 48-inch in Providence, two 6-inch in Cranston and one 6-inch in Johnston.

At the end of the year there was a total of 10,641 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, two 30-inch, three 36-inch, one 42-inch, five 48-inch, and one 60-inch butterfly valves.

Hydrant gates installed during the year totalled 242; in Providence 185 six-inch and 7 eight-inch, in Cranston 32 six-inch and 1 eight-inch, in Johnston 13 six-inch, and in North Providence 4 six-inch. Hydrant gates removed or abandoned during the year totalled 65, all in Providence, including 19 six-inch and 46 eight-inch. Hydrant gates in use at the end of the year totalled 4,347.

Gates on un-watering hydrants and blow-offs 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 15,029.

Details of gates in use September 30, 1963 are shown in Table 29 of the Appendix.

Private pipes connected to the distribution system at the end of the year totalled 200. In Providence there was a total of 114, in Cranston 53, in Johnston 15 and in North Providence a total of 18.

A total of 907 services including general and five supplies was installed during the year; 205 in Providence, 410 in Cranston, 134 in Johnston, and 158 in North Providence. The number of active services in the system at the end of the year, including both general and fire supplies, totalled 61,527 consisting of 61,476 metered services and 51 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 4,698, which included 3,534 post type and 1,164 flush type hydrants. Post hydrant installations totalled 484, including 377 which replaced flush type hydrants, 32 replacing post type hydrants and 75 new post type hydrant installations including 26 in Providence, 33 in Cranston, 12 in Johnston and 4 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 52 during the year, 25 occurring at joints and 27 as a result of ruptured mains. Leaks at joints averaged 1 for every 31.20 miles of mains, while total leaks averaged 1 for every 15.00 miles of main.

The number of meters repaired and tested in our Meter Repair Shop was 8,526 while those receiving attention in the field numbered 175, making a total of 8,701, or 892 more than during the previous year. The cost of meter repairs in the shop averaged \$2.16 per meter as against \$2.35

last year. Meters requiring service in the field involved an average expenditure of \$2.69 during the current year as compared with \$2.42 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, 1963, not including 41,391,000 gallons used in filling Neutaconkanut Reservoir following completion of repairs to the float valve and appurtenances, amounted to 17,488,789,000 gallons, or an average of 47,914,490 gallons per day. This average was 2,195,205 gallons per day more than the average for the previous year. The increase occurred during every month of the year, ranging from 20,000 gallons per day in August to 4,480,000 gallons per day in July.

On June 27, 1963 a maximum daily record was established when the consumption totalled 87,215,000 gallons. This exceeded the previous maximum of 86,031,000 gallons made on the day before—June 26. It marked the third time the daily consumption exceeded the estimated safe yield of 84,020,000 gallons, the first time having been on June 17, 1957 when the former maximum of 84,700,000 gallons occurred. An analysis of the hourly consumption for June 27, 1963 showed that the peak demand for that day came between 6 and 7 P. M. when the consumption rate was 129,340,000 gallons per day. A high demand was also observed from 7 to 8 P. M. when the rate during that hour was 127,660,000 gallons per day. This compares with a peak demand rate of 131,040,000 gallons per day between 11 A. M. and 12 Noon on June 17, 1957.

The maximum month's consumption was in July when 1,731,860,000 gallons were used, and the minimum month was February when 1,254,639,000 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, 1963 totalled \$3,314,628.30, an increase of \$79,302.10 over the previous year. Revenue from the sale of water alone was \$2,947,872.00, an increase over the previous year of \$153,315.55. The remaining income of \$366,756.30 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 a decrease of \$74,013.45.

During the year total payments for water main extensions amounted to \$114,464.53, a decrease over the previous year of \$51,670.37. Income from service connection charges amounted to \$90,755.00, a decrease over the previous year of \$9,439.00. At the end of the year, unpaid water bills totalled \$240,585.58 as compared with \$278,953.13 at the beginning of the year, or 7.3% of the total net billing. Miscellaneous Accounts Receivable amounted to \$12,426.97 at the end of the year as compared with \$11,077.40 at the beginning of the year.

Operating Expenses, including Taxes, Employees' Retirement System and Social Security payments totalled \$2,055,330.58, an increase over the previous year of \$97,022.11.

Interest on the Bonded Debt, Payment to the Sinking Fund, plus the appropriation to the Water Depreciation and Extension Fund, totalled \$1,259,297.72. The aggregate of all expenditures of the Board during the year was \$2,860,330.58, which, deducted from the gross revenue of \$3,314,628.30, leaves a net balance of \$454,-

297.72. According to law this reverts to the Sinking Fund for the retirement of water bonds.

During the present fiscal year ended September 30, 1963, \$2,500,000.00 Sinking Fund Bonds were retired. This leaves a balance of \$7,500,000.00 of Sinking Fund Bonds still outstanding.

In December 1962, Serial Bonds were issued in the amount of \$3,150,000.00 to cover the cost of our new 40-Million Gallon Covered Reservoir in the City of Cranston and the new Additions, Alterations and Improvements at the Water Purification Works in Scituate, R. I.

The total bonded debt as of September 30, 1963 is \$10,650,000.00 and the reserve for the retirement of bonds \$7,612,340.19, which leaves a net bonded debt at the end of the present fiscal year of \$3,037,659.81 and outstanding short term notes of \$292,000.00 which will be paid from operating revenue during the next five years.

Financial accounts of the department, tabulation of water works property, statements of revenues, various funds, outstanding bonds and sinking fund requirements, inventories and other statistics may be found in Tables 40 to 57 of the Appendix.

A summary of statistics of the Providence Water Supply Board for the year ended September 30, 1963 may be found in Table 58 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, 1963.
2. SCITUATE WATERSHED—Monthly and Yearly Rainfall in Inches for 48 Years, 1916-1963.
3. SCITUATE WATERSHED—Monthly and Yearly Runoff in Inches for 48 Years, 1916-1963.
4. SCITUATE WATERSHED—Monthly and Yearly Percent of Rainfall Collected for 48 Years, 1916-1963.
5. SCITUATE WATERSHED—Statistics of Storage for Year Ended Sept. 30, 1963.
6. SCITUATE WATERSHED—Statistics of Draft and Yield for Year Ended Sept. 30, 1963.
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, 1963.
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—1941-1963.
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 1877-1963.
39. FUEL OIL CONSUMPTION.
40. FINANCIAL STATEMENT OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1963.
41. OPERATING EXPENSES OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1963.
42. STATEMENT OF REVENUE—Estimated and Actual for Year Ended Sept. 30, 1963.
43. ANNUAL WATER WORKS REVENUES—Summary, 1930-1963.
44. WATER WORKS DEPRECIATION AND EXTENSION FUND.
45. BONDED INDEBTEDNESS AND SINKING FUND REQUIREMENTS.
46. STATEMENT—Serial Bonds Outstanding.
47. PERSONAL PROPERTY INVENTORIES as of Sept. 30, 1963.
48. STORES REVOLVING FUND.
49. MISCELLANEOUS WATER MAIN EXTENSIONS ACCOUNT.
50. ACCOUNT FOR INSERTING NEW VALVES.
51. SPECIAL VALVE INSERTION ACCOUNT—Webster Avenue.
52. ADDITIONS, ALTERATIONS AND IMPROVEMENTS AT THE WATER PURIFICATION WORKS.
53. NEW 40-MILLION GALLON WATER DISTRIBUTION RESERVOIR.
54. LAND PURCHASE AT BARDEN RESERVOIR.
55. STATEMENT—PITOMETER SURVEY ACCOUNT.
56. REPAIRS AND IMPROVEMENTS TO THE WESTCONNAUG RESERVOIR DAM.
57. WATER WORKS PROPERTY—Valuations and Taxes.
58. SUMMARY OF WATER WORKS STATISTICS—For Year Ended Sept. 30, 1963.

**TABLE 1**  
**MONTHLY RAINFALL IN INCHES ON SCITUATE WATERSHED**  
**For Year Ended September 30, 1963**

1962-1963	STATIONS ON WATERSHED					Average
	Rocky Hill	Hopkins Mills	North Scituate	Westcott	Gainer Dam	
October.....	9.95	7.07	9.07	8.56	10.12	8.95
November.....	4.57	3.96	4.04	3.98	4.45	4.20
December.....	3.16	2.69	3.22	2.79	3.04	2.98
January.....	3.44	3.23	3.18	2.97	3.31	3.23
February.....	3.36	3.30	3.71	3.24	3.44	3.41
March.....	4.51	3.38	3.65	3.46	3.57	3.71
April.....	2.18	2.19	1.92	2.02	1.82	2.03
May.....	3.34	2.86	2.76	2.88	3.45	3.06
June.....	2.19	3.92	2.04	4.66	3.98	3.36
July.....	3.95	4.09	3.48	3.65	2.76	3.59
August.....	1.90	1.82	1.42	1.57	1.56	1.65
September.....	4.72	4.44	4.10	4.34	4.43	4.41
Total.....	47.27	42.95	42.59	44.12	45.93	44.58*
Monthly Average .....	3.94	3.58	3.55	3.68	3.83	3.72

\*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	7.88	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	4.86	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	5.95	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
48 Years Average.....	3.64	4.63	4.02	4.11	3.81	4.44	4.18	3.53	3.62	3.81	4.41	4.13	48.33*	Avg.	48.34
48 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
48 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	2.33	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	0.32	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
48 Years Average.....	0.88	1.90	2.50	2.84	2.77	4.73	3.86	2.42	1.19	0.64	0.53	0.72	24.98*	Avg.	24.93
48 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
48 Years Minimum.....	-0.20	0.15	0.42	0.73	1.18	2.42	1.43	0.53	-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	103.2	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	142.8	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
48 Years Average.....	24.2	41.0	62.2	69.1	72.7	106.5	92.3	68.6	32.9	16.8	12.0	17.4	51.7	Avg.	51.6
48 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
48 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

(# Estimated.

TABLE 5

SCITUATE WATERSHED

(92.8 Square Miles)

Statistics of Storage for Year Ended September 30, 1963

1962-1963	1 Regulating Reservoir		2 Westconnaug Reservoir		3 Barden Reservoir		4 Moswansicut Reservoir		5 Ponaganset Reservoir		6 Scituate Reservoir		Total 1-6	
	Elev. M. G.	Avail. Storage	Elev. M. G.	Avail. Storage	Elev. M. G.	Avail. Storage	Elev. M. G.	Avail. Storage	Elev. M. G.	Avail. Storage	Elev. M. G.	Avail. Storage	Avail. Storage M. G.	% of Total Avail.
October	283.90	303	453.57	419	345.22	863	301.40	665	633.07	694	277.14	29,440	32,384	81.5
November	285.70	437	454.72	484	345.60	898	302.05	730	633.65	739	277.54	29,840	33,123	83.3
December	285.62	431	453.97	441	345.30	869	302.00	725	633.70	743	280.09	32,471	35,680	89.8
January	285.60	429	453.12	393	345.20	861	301.99	724	633.60	735	280.12	32,501	35,648	89.7
February	285.60	429	454.47	470	345.25	865	301.95	720	633.60	735	278.98	31,280	34,499	86.8
March	285.59	428	453.87	436	345.20	861	301.95	720	633.55	731	279.05	31,355	34,531	86.9
April	285.65	433	454.52	473	345.45	881	302.02	727	633.95	762	283.61	36,183	39,459	99.3
May	285.80	445	452.07	341	345.65	897	302.07	732	633.64	738	283.64	36,215	39,368	99.0
June	285.60	429	450.22	248	345.30	869	301.97	722	633.55	731	284.54	37,205	40,204	101.2
July	285.55	425	**442.17	3	345.30	869	301.82	707	633.30	712	283.55	36,118	38,834	97.7
August	285.35	409	442.17	3	**314.66	0	301.75	700	633.10	697	282.41	34,399	36,708	92.4
September	284.40	338	442.17	3	314.66	0	301.30	655	632.80	675	280.07	32,450	34,121	85.8
Maximum for Year	November 10	454	November 1	464	November 10	913	October 6	746	March 30	766	May 22, 23	37,306	40,238	101.2
Minimum for Year	September 28	280	September 28	3	September 28	0	September 14, 28	636	September 21	664	September 28	29,130	31,996	80.5
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	"	0	"	453						
3. Barden	"	345.10;	"	853	"	1,066	"	863						
4. Moswansicut	"	301.90;	"	1,781	"	49	"	715						
5. Ponaganset	"	633.05;	"	742	"		"	693						
6. Scituate Reservoir	Spillway Elev.	284.01;	Total Storage	4,257 M.G.;	Dead Storage	1,122 M.G.;	Total Available Storage	*3,135 M.G.						
Total 1-6				37,011		400		36,611						
			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.

\*\*Reservoir drained to make repairs to dam, spillway and gate house structures.

\*\*\*Reservoir drained to make repairs to dam, spillway and gate house structures.

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

**Draft and Yield for the Year Ended September 30, 1963**

1962-1963	DRAFT FROM SCITUATE RESERVOIR Million Gallons					WATERSHED YIELD Million Gallons			
	To River Over Spillway	Below Through Gatehouse	Gainer Dam Total	To Water Purification Works	Total For Month	Average per Day	For Month	Average per Day 1962-1963	48-Year Mean 1916-1963
October.....	0	668.97*	668.97	1,640.21	2,309.18	74.49	3,048.18	98.33	45.78
November.....	0	710.15	710.15	1,528.59	2,238.74	74.62	4,795.74	159.86	102.14
December.....	0	2,007.65	2,007.65	1,450.55	3,458.20	111.55	3,421.20	110.36	130.06
January.....	0	2,650.86	2,650.86	1,415.55	4,066.41	131.17	2,922.41	94.27	147.75
February.....	0	1,699.16	1,699.16	1,302.59	3,001.75	107.21	3,033.75	108.35	159.55
March.....	0	823.57	823.57	1,455.87	2,279.24	73.52	7,207.24	232.49	246.07
April.....	0	1,347.82	1,347.82	1,467.25	2,815.07	93.84	2,724.07	90.80	207.51
May.....	78.08	563.72	641.80	1,548.90	2,190.70	70.67	3,026.70	97.64	125.90
June.....	47.43	463.01	510.44	1,734.07	2,244.51	74.82	874.51	29.15	63.97
July.....	0	520.03	520.03	1,760.12	2,280.15	73.55	154.15	4.97	33.30
August.....	0	432.59	432.59	1,747.48	2,180.07	70.32	—406.93	—13.13	27.57
September.....	0	608.12	608.12	1,479.53	2,087.65	69.59	—37.35	—1.25	38.71
For Year.....	†125.51	12,495.65*	12,621.16	18,530.51	31,151.67	85.35	30,763.67	84.28	110.30

†Includes Flashboard Leakage.

\*Of this amount, 177.44 M. G. were discharged to the Pawtuxet River through the 36-inch blow-off outlet from the south 60-inch steel pipe aqueduct.

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	Yearly
1926.....	0	160,000	40,000	0	0	0	0	0	0	0	0	0	200,000
1927.....	0	60,000	150,000	0	0	0	0	0	0	0	0	0	210,000
1928.....	0	10,000	10,000	0	0	0	0	0	0	0	0	0	20,000
1929.....	0	10,000	75,000	0	0	0	0	0	0	0	0	0	85,000
1930.....	0	40,000	40,000	0	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	0	99,000
1932.....	0	40,000	40,000	0	0	0	0	20,000	0	0	0	0	100,000
1933.....	0	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	0	1,898,000
1936.....	0	453,700	111,000	0	14,400	0	0	20,000	15,000	26,000	0	0	640,100
1937.....	0	481,100	0	0	0	0	0	213,200	0	0	0	0	694,300
1938.....	0	229,000	21,693	0	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	0	819,000
1940.....	0	267,387	618,828	0	45,916	0	67,750	0	0	0	0	0	999,881
1941.....	0	51,000	295,650	0	0	0	0	34,350	0	0	0	0	381,000
1942.....	0	0	308,120	0	0	0	0	0	0	0	0	0	308,120
1943.....	0	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	0
1945.....	0	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	0
1947.....	0	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	0
1949.....	0	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	0
1951.....	0	0	1,500	12,000	0	0	0	0	0	0	0	0	13,500
1952.....	0	20,000	0	0	0	0	0	10,000	0	0	10,000	0	40,000
1953.....	0	10,000	0	0	0	0	0	6,000	0	0	0	0	16,000
1954.....	2,000	0	0	2,000	0	0	0	0	0	0	6,000	0	10,000
1955.....	0	0	5,000	0	0	0	0	0	0	0	5,000	0	10,000
1956.....	0	0	5,000	0	4,500	0	0	0	0	0	0	0	9,500
1957.....	0	0	6,000	0	0	0	0	0	0	0	0	0	6,000
1958.....	0	2,700	2,000	0	0	0	0	0	0	0	0	0	4,700
1959.....	0	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	0	15,654
1961.....	0	0	2,300	144	0	0	0	0	0	2,000	0	0	4,444
1962.....	0	0	5,000	0	0	0	0	150	0	2,000	2,000	0	9,150
1963.....	0	0	5,000	0	0	0	0	170	0	5,000	5,000	0	15,170
<b>TOTALS.....</b>	<b>2,140</b>	<b>2,638,427</b>	<b>2,814,965</b>	<b>14,928</b>	<b>101,221</b>	<b>136,000</b>	<b>121,750</b>	<b>821,271</b>	<b>219,049</b>	<b>38,000</b>	<b>31,461</b>	<b>0</b>	<b>6,939,212</b>

**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

\*1875 KVA 3 Phase, 60 Cycles, 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, 1963**

1962-1963	Influent Aerator — Hours Operated	Plant Influent		Water Filtered		Wash Water		Plant Effluent		Plant Effluent		Number of Filters		
		Mil. Gals.	Average per Day	Mil. Gals.	Average per Day	Mil. Gals.	Average per Day	Mil. Gals.	Average per Day	Flow — Hours	Hours	Max.	Min.	Avg.
October.....	745.0	1,640,208	52.910	1,430,638	46.150	10,363	0.334	0.7	1,420,275	45.815	745.0	13.5	3.5	9.7
November.....	718.4	1,528,592	50.953	1,342,291	44.743	13,313	0.444	1.0	1,328,978	44.299	720.0	12.5	1.5	9.0
December.....	744.0	1,450,546	46.792	1,354,626	43.698	9,522	0.307	0.7	1,345,104	43.390	744.0	12.0	3.0	7.5
January.....	744.0	1,415,546	45.663	1,383,907	44.642	11,314	0.365	0.8	1,372,593	44.277	*735.3	11.0	3.5	7.7
February.....	672.0	1,302,592	46.521	1,263,612	45.129	8,693	0.310	0.7	1,254,919	44.319	**669.0	10.5	3.0	7.7
March.....	744.0	1,455,674	46.957	1,399,560	45.148	7,804	0.252	0.6	1,391,776	44.896	744.0	11.5	4.0	7.7
April.....	719.0	1,467,253	48.908	1,422,081	47.403	10,645	0.355	0.7	1,411,436	47.048	719.0	13.0	3.5	8.1
May.....	744.0	1,548,900	49.965	1,501,833	48.446	13,455	0.434	0.9	1,488,378	48.012	744.0	12.0	4.0	8.3
June.....	720.0	1,734,074	57.802	1,690,494	56.350	15,771	0.526	0.9	1,674,723	55.324	720.0	14.0	3.5	7.9
July.....	739.5	1,760,116	56.778	1,742,817	56.220	12,047	0.389	0.7	1,730,770	55.831	744.0	13.0	4.0	7.7
August.....	741.0	1,747,484	56.370	1,699,834	54.837	11,247	0.363	0.7	1,688,687	54.474	744.0	11.0	3.0	7.6
September.....	715.0	1,479,531	49.318	1,433,442	47.781	8,591	0.286	0.6	1,424,861	47.495	720.0	11.5	3.0	7.4
Totals.....	8,745.9	18,550,516	.....	17,665,255	.....	132,765	.....	.....	17,532,490	.....	8,748.3	.....	.....	.....
Average.....	728.8	.....	50.769	.....	48.398	.....	0.364	0.8	.....	48.034	729.0	.....	.....	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.

\*Plant effluent shut down for 5.0 hours on January 12 to replace influent sluice gate with a butterfly valve in filter number 2, and for 3.7 hours on January 26 for identical work in filter number 3.

\*\*Plant effluent shut down for 3 hours on February 9 to replace influent sluice gate with a butterfly valve in filter number 4.

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

Operating Statistics for Year Ended September 30, 1963

1962-1963	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	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.....	4.78	78	2.5	90.68	136,069	4,389	0.58	141,617	4,568	0.60	4,717	152	0.40	17,855	577	0.91
November.....	5.00	111	3.7	58.57	120,422	4,014	0.55	124,181	4,139	0.57	4,365	146	0.40	16,690	556	0.91
December.....	5.85	87	2.8	64.32	125,867	4,060	0.61	113,401	3,658	0.55	4,535	146	0.41	16,904	545	0.91
January.....	5.83	115	3.7	53.09	140,743	4,540	0.70	125,797	4,058	0.62	4,695	151	0.42	17,298	558	0.91
February.....	5.84	87	3.1	61.96	132,225	4,559	0.71	117,173	4,185	0.63	4,331	155	0.42	15,683	560	0.90
March.....	5.85	78	2.5	71.53	147,720	4,765	0.71	130,384	4,206	0.63	4,774	154	0.41	17,336	559	0.90
April.....	5.84	88	2.9	66.62	148,783	4,959	0.71	130,451	4,348	0.62	4,798	160	0.41	17,683	589	0.90
May.....	5.86	100	3.2	62.37	156,323	5,043	0.71	138,238	4,459	0.63	4,990	161	0.41	18,444	595	0.89
June.....	7.18	113	3.8	50.72	175,086	5,836	0.71	151,706	5,057	0.61	5,569	186	0.41	20,566	686	0.89
July.....	7.26	86	2.8	64.95	177,151	5,715	0.70	159,406	5,142	0.63	5,784	187	0.41	21,236	685	0.89
August.....	7.25	80	2.6	73.48	177,784	5,785	0.71	160,952	5,192	0.64	5,626	181	0.40	20,773	670	0.89
September.....	6.47	61	2.0	85.27	141,916	4,731	0.67	149,264	4,975	0.71	4,775	159	0.41	17,545	585	0.89
Totals.....	.....	1,084	.....	.....	1,780,089	.....	.....	1,642,570	.....	.....	58,959	.....	.....	218,053	.....	.....
Average.....	6.04	.....	3.0	65.36	.....	4,877	0.67	.....	4,500	0.62	.....	162	0.41	.....	597	0.90

Total filter hours for year, 70,176.71; average per day, 192.26.  
Average quantity of water filtered per filter per run, 16.45 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, 1963**

Chemicals	Pounds of Chemicals Used		Total Gallons of Water Treated	Cost of Chemicals	Pounds of Chemicals Used per	Cost of Chemicals per
	Total	Lbs. per Day (Average)			1,000,000 Gals. of Water Treated (Average)	1,000,000 Gals. of Water Treated
Ferri-Floc.....	1,780,089	4,877	18,529,137,000	\$47,216.86	96.07	\$2.55
Quicklime.....	1,642,570	4,500	18,528,174,000	16,795.34	88.65	0.91
Chlorine.....	58,959	162	17,314,539,000	3,979.73	3.41	0.28
Sodium Silicofluoride.....	218,053	597	17,273,596,000	15,298.60	12.62	0.89
<b>Totals.....</b>	<b>3,699,671</b>	<b>.....</b>	<b>.....</b>	<b>\$83,290.53</b>	<b>.....</b>	<b>\$4.58</b>

Price of Ferri-Floc—From Oct. 1, 1962 to Aug. 25, 1963—\$53.05 per ton; from Aug. 26 to Sept. 30, 1963—\$54.05 per ton.

Price of Quicklime—From Oct. 1, 1962 to June 11, 1963—\$20.47 per ton; from June 12 to Sept. 30, 1963—\$20.40 per ton.

Price of Chlorine—From Oct. 1, 1962 to Sept. 30, 1963—\$0.0675 per pound.

Price of Sodium Silicofluoride—From Oct. 1, 1962 to Aug. 5, 1963—\$139.35 per ton; from Aug. 6 to Sept. 30, 1963—\$164.40 per ton.

**TABLE 11**  
**WATER PURIFICATION WORKS**  
**\*Chemical and Physical Characteristics of Water in Process of Filtration**  
**Year Ended September 30, 1963**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Alkalinity</b>													
Raw.....	5.3	5.0	4.4	4.1	4.3	4.6	4.3	4.5	4.2	4.1	4.6	5.6	4.6
**Effluent.....	16.9	15.7	14.0	14.2	14.1	14.5	14.3	14.3	13.8	14.1	14.4	17.2	14.8
Tap.....	16.1	14.2	12.4	12.2	12.4	12.8	12.8	12.7	12.3	12.6	13.0	15.3	13.2
<b>Hardness</b>													
Raw.....	9	10	10	10	10	10	10	10	10	10	10	10	10
**Effluent.....	28	26	26	26	27	27	27	26	26	27	27	29	27
Tap.....	28	26	26	26	27	27	27	27	26	27	27	29	27
<b>pH</b>													
Raw.....	6.6	6.6	6.5	6.3	6.2	6.2	6.4	6.4	6.3	6.2	6.2	6.3	6.4
Aerated Influent.....	4.6	4.3	4.3	4.2	4.3	4.2	4.3	4.3	4.3	4.4	4.4	4.5	4.3
Treated.....	10.5	10.3	10.4	10.3	10.3	10.3	10.3	10.3	10.4	10.4	10.4	10.5	10.4
Settled.....	10.4	10.2	10.3	10.3	10.2	10.2	10.2	10.2	10.2	10.3	10.3	10.4	10.3
Filtered.....	10.3	10.2	10.3	10.3	10.2	10.1	10.1	10.1	10.2	10.2	10.3	10.3	10.2
**Effluent.....	10.3	10.2	10.3	10.3	10.2	10.1	10.1	10.1	10.2	10.2	10.3	10.3	10.2
Tap.....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.1	10.1	10.2	10.1
<b>Free CO<sub>2</sub></b>													
Raw.....	3.3	1.5	1.5	2.1	3.1	2.7	2.0	1.9	2.9	4.3	5.5	6.8	3.1
Aerated Influent.....	6.1	5.9	5.9	6.9	7.4	7.1	6.6	6.6	6.7	7.4	7.3	7.3	6.8
<b>Phenolphthalein Alkalinity</b>													
Treated.....	11.3	10.7	9.4	9.3	9.4	9.9	9.9	9.9	9.4	9.8	9.8	11.4	10.0
Settled.....	10.7	9.7	8.9	8.6	8.9	9.1	9.0	9.0	8.7	8.8	9.0	10.6	9.3
Filtered.....	10.5	9.6	8.8	8.5	8.8	9.0	8.8	8.9	8.5	8.7	8.9	10.1	9.1
**Effluent.....	10.4	9.6	8.7	8.5	8.8	9.0	8.7	8.9	8.4	8.6	8.8	10.0	9.0
Tap.....	8.2	7.2	6.4	6.1	6.3	6.5	6.5	6.5	6.3	6.3	6.5	7.5	6.7
<b>Color</b>													
Raw.....	13	8	10	12	12	12	11	11	9	9	10	12	11
**Effluent.....	5	4	5	6	6	6	6	6	5	5	5	4	5
Tap.....	4	4	4	5	6	6	5	5	4	4	4	4	5
<b>Turbidity</b>													
Raw.....	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.2
Settled.....	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
**Effluent.....	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Iron</b>													
Raw.....	0.24	0.07	0.05	0.06	0.06	0.03	0.03	0.03	0.03	0.04	0.08	0.20	0.08
Settled.....	.18	.35	.35	.44	.41	.30	.23	.22	.24	.21	.19	.17	.27
**Effluent.....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Tap.....	.01	.01	.01	.02	.02	.01	.01	.01	.01	.00	.00	.02	.01
<b>Manganese</b>													
Raw.....	0.10	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.14	0.03
Settled.....	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
**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.....	0.15	0.15	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.13	0.12	0.13	0.13
**Effluent.....	.12	.13	.11	.11	.11	.11	.10	.11	.10	.11	.11	.11	.11
Tap.....	1.00	1.00	1.00	.99	.98	.99	1.00	1.00	1.00	.99	1.01	1.00	1.00
<b>Temperature (°F.)</b>													
Air (Average of Daily Maximum).....	61	47	34	34	33	47	59	71	79	84	80	73	59
Air (Average of Daily Minimum).....	39	28	14	17	13	26	33	43	59	64	59	50	37
Raw Water.....	56	48	38	35	36	37	43	50	53	53	54	56	47
Water on Filters.....	56	46	37	34	35	38	44	52	58	61	60	58	48
Tap.....	58	51	44	40	41	42	48	54	59	61	61	60	52

\*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, 1963**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Color</b>													
Ponaganset Reservoir .....	5	5	5	6	6	5	3	3	9	10	23	4	7
Coventry Brook .....	23	23	15	17	12	16	22	23	24	17	23	20	20
Wilbur Brook .....	85	37	30	28	27	22	45	48	104	110	120	35	58
Westconnaug Reservoir .....	13	12	10	12	10	12	10	9	15	14	12	16	12
Barden Reservoir .....	23	27	25	23	18	13	18	29	28	39	35	18	25
Cork Brook .....	12	18	12	12	9	12	13	11	14	12	**	11	12
Rush Brook .....	30	35	23	17	17	5	15	22	38	26	35	7	23
Huntinghouse Brook .....	17	25	13	11	12	13	17	18	14	**	**	**	16
Harrisdale Brook .....	17	18	18	17	12	15	17	18	23	11	17	8	16
Blanchard Brook .....	150	80	70	70	65	33	110	155	235	**	**	**	108
Moswansicut Pond .....	11	17	12	16	13	12	13	12	14	9	13	7	12
Regulating Reservoir .....	15	17	18	18	14	12	12	16	20	11	30	11	16
Quonapaug Brook .....	115	.....	50	52	37	40	100	120	210	290	**	24	104
Hemlock Brook .....	25	35	30	27	22	12	30	23	24	65	35	18	29
Betty Pond Stream.....	23	15	14	12	7	6	15	12	17	58	**	**	18
Spruce Brook .....	28	35	19	22	15	22	33	39	55	64	**	**	33
Brandy Brook .....	65	65	50	45	29	32	48	68	13	38	23	17	41
Moswansicut—South .....	11	12	10	9	10	11	19	21	62	98	**	**	26
Windsor Brook .....	15	22	13	13	11	12	13	22	24	**	**	**	16
Paine Pond .....	35	35	35	20	18	10	13	22	27	12	15	**	22
Unnamed Brook—A .....	**	38	28	23	18	32	56	64	**	**	**	**	37
Unnamed Brook—B .....	**	12	10	7	5	10	9	12	**	**	**	**	9
<b>Turbidity</b>													
Ponaganset Reservoir .....	0.2	0.1	0.3	0.4	0.2	0.1	0.2	0.3	0.2	0.3	0.3	0.4	0.3
Coventry Brook .....	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.1	0.1	0.2
Wilbur Brook .....	0.3	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.9	0.3	0.3	0.1	0.3
Westconnaug Reservoir .....	0.3	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.4	0.3	0.4	0.3	0.3
Barden Reservoir .....	0.3	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.8	0.7	0.6	0.2	0.3
Cork Brook .....	0.3	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.4	0.3	**	0.2	0.2
Rush Brook .....	0.3	0.1	0.4	0.2	0.2	0.1	0.3	0.3	0.4	0.2	0.3	0.5	0.3
Huntinghouse Brook .....	0.3	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.4	**	**	**	0.2
Harrisdale Brook .....	0.4	0.1	0.3	0.3	0.2	0.2	0.2	0.3	0.5	0.3	0.1	0.2	0.3
Blanchard Brook .....	0.3	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	**	**	**	0.2
Moswansicut Pond .....	0.3	0.1	0.1	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.1	0.1	0.2
Regulating Reservoir .....	0.3	0.1	0.3	0.3	0.1	0.3	0.2	0.3	0.1	0.3	0.1	0.3	0.2
Quonapaug Brook .....	0.2	.....	0.1	0.3	0.1	0.1	0.2	0.3	0.7	0.5	**	0.3	0.3
Hemlock Brook .....	0.3	0.1	0.2	0.2	0.2	0.2	0.7	0.4	0.2	0.4	0.1	0.3	0.3
Betty Pond Stream.....	0.3	0.1	0.3	0.2	0.2	0.1	0.2	0.3	0.4	1.0	**	**	0.3
Spruce Brook .....	0.4	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.3	**	**	0.2
Brandy Brook .....	0.3	0.1	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.1	0.3	0.3
Moswansicut—South .....	0.2	0.1	0.2	0.4	0.2	0.2	0.2	0.5	1.1	2.5	**	**	0.6
Windsor Brook .....	0.2	0.1	0.3	0.2	0.2	0.1	0.4	0.2	0.1	**	**	**	0.2
Paine Pond .....	0.3	0.1	0.5	0.4	0.1	0.1	0.2	0.4	0.3	0.6	0.1	**	0.3
Unnamed Brook—A .....	**	0.1	0.3	0.3	0.1	0.2	0.1	0.3	**	**	**	**	0.2
Unnamed Brook—B .....	**	0.1	0.3	0.2	0.1	0.1	0.1	0.3	**	**	**	**	0.2

\*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, 1963

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Iron</b>													
Ponaganset Reservoir .....	0.02	0.01	0.10	0.12	0.10	0.02	0.01	0.03	0.24	0.15	0.25	0.04	0.09
Coventry Brook .....	.02	.02	.00	.02	.02	.01	.01	.02	.06	.03	.05	.07	.03
Wilbur Brook .....	.25	.15	.07	.07	.10	.11	.10	.31	.84	.90	.80	.12	.32
Westconnaug Reservoir .....	.05	.02	.06	.11	.02	.04	.08	.14	.18	.19	.20	.17	.11
Barden Reservoir .....	.05	.03	.07	.12	.10	.02	.04	.13	.48	1.60	.50	.06	.27
Cork Brook .....	.01	.02	.01	.01	.01	.03	.01	.02	.05	.05	**	.07	.03
Rush Brook .....	.07	.05	.07	.03	.02	.05	.15	.19	.47	.55	.60	1.18	.29
Huntinghouse Brook .....	.02	.07	.03	.02	.02	.02	.03	.09	.16	**	**	**	.05
Harrisdale Brook .....	.02	.01	.08	.12	.05	.03	.05	.27	.28	.05	.20	.16	.11
Blanchard Brook .....	1.50	.16	.15	.25	.50	.11	.20	.40	1.00	**	**	**	.47
Moswansicut Pond .....	.01	.01	.05	.02	.02	.01	.02	.05	.04	.04	.10	.00	.03
Regulating Reservoir .....	.01	.01	.04	.03	.05	.02	.05	.12	.14	.13	.25	.42	.11
Quonapaug Brook .....	.35	.....	.15	.07	.17	.02	.10	.25	1.24	1.20	**	.05	.36
Hemlock Brook .....	.25	.01	.03	.04	.07	.01	.04	.13	.18	.35	.45	.23	.15
Betty Pond Stream.....	.01	.01	.07	.10	.02	.02	.10	.10	.23	.10	**	**	.08
Spruce Brook .....	.02	.00	.00	.02	.02	.05	.00	.06	.10	.15	**	**	.04
Brandy Brook .....	.30	.04	.07	.20	.12	.28	.06	.38	.08	.35	.30	.01	.18
Moswansicut—South .....	.07	.05	.06	.20	.20	.00	.30	.66	1.80	4.25	**	**	.76
Windsor Brook .....	.02	.01	.01	.00	.03	.00	.00	.04	.08	**	**	**	.02
Paine Pond .....	.02	.01	.10	.05	.03	.00	.00	.06	.40	.02	.25	**	.09
Unnamed Brook—A .....	**	.01	.02	.01	.35	.01	.01	.06	**	**	**	**	.07
Unnamed Brook—B .....	**	.00	.00	.03	.01	.01	.00	.01	**	**	**	**	.01
<b>Manganese</b>													
Ponaganset Reservoir .....	0.03	0.04	0.05	0.08	0.04	0.04	0.05	0.03	0.05	0.04	0.04	0.00	0.04
Coventry Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Wilbur Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Westconnaug Reservoir .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00
Barden Reservoir .....	.00	.00	.01	.01	.01	.00	.00	.00	.00	.00	.05	.00	.01
Cork Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	**	.00	.00
Rush Brook .....	.01	.00	.00	.02	.00	.04	.00	.00	.00	.00	.01	.01	.01
Huntinghouse Brook .....	.02	.01	.00	.00	.00	.00	.00	.00	.02	**	**	**	.01
Harrisdale Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
Blanchard Brook .....	.01	.03	.03	.01	.02	.00	.00	.00	.00	**	**	**	.01
Moswansicut Pond .....	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.01	.00	.00
Regulating Reservoir .....	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.01	.00	.00
Quonapaug Brook .....	.00	.....	.03	.00	.00	.00	.00	.00	.00	.00	**	.00	.00
Hemlock Brook .....	.00	.00	.00	.02	.00	.00	.05	.00	.00	.00	.00	.00	.01
Betty Pond Stream.....	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	**	**	.00
Spruce Brook .....	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	**	**	.00
Brandy Brook .....	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Moswansicut—South .....	.00	.00	.01	.14	.00	.00	.00	.01	.15	.05	**	**	.04
Windsor Brook .....	.00	.00	.00	.01	.00	.00	.00	.00	.00	**	**	**	.00
Paine Pond .....	.02	.00	.03	.04	.04	.00	.00	.03	.00	.00	.00	**	.01
Unnamed Brook—A .....	**	.00	.00	.00	.00	.00	.00	.00	**	**	**	**	.00
Unnamed Brook—B .....	**	.00	.03	.03	.03	.00	.00	.02	**	**	**	**	.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, 1963**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>pH</b>													
Ponaganset Reservoir .....	5.1	4.9	4.8	4.9	4.9	4.9	5.1	5.1	5.1	5.2	5.4	5.7	5.1
Coventry Brook .....	6.5	6.0	6.4	6.1	6.8	6.0	6.4	6.4	6.5	6.9	6.7	6.7	6.5
Wilbur Brook .....	6.1	5.5	6.0	5.8	5.8	5.9	6.2	6.2	6.5	6.7	6.7	6.1	6.1
Westconnaug Reservoir .....	6.9	6.2	7.0	6.2	6.2	6.1	6.4	6.6	6.6	6.9	7.1	7.2	6.6
Barden Reservoir .....	6.5	5.5	6.0	5.9	5.9	6.0	6.3	6.3	6.5	6.8	7.1	6.9	6.3
Cork Brook .....	6.3	5.7	6.3	5.8	5.9	5.8	6.2	6.3	6.5	6.7	**	6.5	6.2
Rush Brook .....	6.4	5.9	6.2	5.9	6.3	6.2	6.3	6.4	6.5	6.5	6.3	6.3	6.3
Huntinghouse Brook .....	6.7	6.1	6.5	6.0	6.2	6.0	6.2	6.7	6.8	**	**	**	6.4
Harrisdale Brook .....	7.0	6.4	6.7	6.3	6.5	6.3	7.3	7.1	7.4	7.3	7.0	7.4	6.9
Blanchard Brook .....	4.7	5.1	5.5	5.2	5.2	5.6	5.7	5.7	5.8	**	**	**	5.4
Moswansicut Pond .....	6.7	6.7	6.8	6.7	6.6	6.2	7.0	6.5	6.5	6.9	7.1	6.9	6.7
Regulating Reservoir .....	6.9	6.5	6.7	6.5	6.2	6.4	6.9	6.8	7.0	7.3	7.2	7.2	6.8
Quonapaug Brook .....	6.1	6.6	5.7	5.7	5.4	5.7	6.0	6.2	6.3	6.3	**	6.0	6.0
Hemlock Brook .....	6.0	5.5	6.5	5.9	5.9	5.7	6.1	6.5	6.5	6.8	6.9	6.7	6.3
Betty Pond Stream.....	6.1	6.0	5.8	5.7	5.7	5.7	6.3	6.2	6.4	6.3	**	**	6.0
Spruce Brook .....	5.9	5.5	6.4	5.9	5.8	5.7	6.0	6.2	6.6	6.5	**	**	6.1
Brandy Brook .....	7.4	6.6	7.8	6.6	6.7	6.0	6.3	6.5	6.7	6.9	6.8	5.6	6.7
Moswansicut—South .....	9.0	6.5	6.5	6.3	6.5	6.2	6.6	6.7	6.8	6.6	**	**	6.8
Windsor Brook .....	7.0	5.9	6.2	6.0	6.3	6.4	6.3	6.8	6.7	**	**	**	6.4
Paine Pond .....	5.8	5.7	5.7	5.7	5.4	5.6	6.0	5.9	6.0	5.5	5.2	**	5.7
Unnamed Brook—A .....	**	6.6	5.9	5.8	5.8	6.0	6.9	6.3	**	**	**	**	6.2
Unnamed Brook—B .....	**	6.1	5.4	5.6	5.7	5.6	5.6	5.6	**	**	**	**	5.7
<b>Free CO<sub>2</sub></b>													
Ponaganset Reservoir .....	2.5	3.5	3.0	6.0	6.5	2.5	3.0	3.5	3.0	4.0	3.0	3.0	3.6
Coventry Brook .....	3.5	5.0	5.0	4.5	3.5	2.0	3.0	4.0	4.0	3.0	5.0	5.0	4.0
Wilbur Brook .....	12.0	7.5	11.0	9.0	10.0	5.0	5.0	8.0	6.0	7.0	9.5	6.5	8.0
Westconnaug Reservoir .....	2.0	2.5	3.0	2.0	3.5	1.5	1.5	3.0	2.5	3.0	3.0	2.0	2.5
Barden Reservoir .....	2.0	3.5	5.0	4.0	5.5	1.5	2.0	3.5	3.5	7.0	4.0	4.0	3.8
Cork Brook .....	5.0	3.5	5.0	5.0	4.0	2.5	3.0	3.5	3.0	5.0	**	4.0	4.0
Rush Brook .....	5.0	3.5	4.0	4.0	3.5	17.5	6.0	5.0	6.0	7.5	11.0	11.0	7.0
Huntinghouse Brook .....	3.0	3.0	5.0	5.0	5.0	1.5	2.0	4.0	5.0	**	**	**	3.7
Harrisdale Brook .....	2.5	3.5	5.0	5.0	5.0	0.0	1.0	3.0	1.5	3.5	3.0	2.0	2.9
Blanchard Brook .....	12.0	9.5	23.0	30.0	30.0	2.0	6.5	3.0	10.0	**	**	**	14.0
Moswansicut Pond .....	2.0	2.5	2.0	2.0	4.0	1.5	1.5	3.0	3.0	3.0	3.0	3.0	2.5
Regulating Reservoir .....	3.0	3.0	3.0	5.0	5.0	1.0	2.0	10.0	1.5	2.5	3.0	1.0	3.3
Quonapaug Brook .....	13.0	9.0	23.0	23.0	16.0	1.5	6.5	9.0	10.5	17.0	**	10.0	12.6
Hemlock Brook .....	5.0	5.0	5.0	6.0	4.5	1.5	4.0	3.0	2.0	4.0	4.0	2.5	3.9
Betty Pond Stream.....	3.0	4.0	17.0	14.0	8.0	2.0	3.0	3.5	3.5	4.5	**	**	6.3
Spruce Brook .....	6.0	6.0	6.0	6.0	4.5	2.5	3.5	4.5	4.0	5.0	**	**	4.8
Brandy Brook .....	3.0	4.0	4.0	3.0	2.0	1.0	1.5	4.0	2.0	4.0	6.0	3.0	3.1
Moswansicut—South .....	0.0	6.5	5.0	8.0	5.5	0.0	2.0	5.0	5.5	15.0	**	**	5.3
Windsor Brook .....	2.5	7.0	3.5	5.0	4.0	1.5	2.0	3.0	2.5	**	**	**	3.4
Paine Pond .....	8.0	7.5	11.0	14.0	12.0	1.5	2.0	6.0	2.5	4.0	6.0	**	6.8
Unnamed Brook—A .....	**	6.0	9.0	14.0	8.0	1.5	4.5	5.0	**	**	**	**	6.9
Unnamed Brook—B .....	**	3.0	7.5	10.0	8.0	1.5	5.0	7.5	**	**	**	**	6.1

\*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, 1963**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Alkalinity</b>													
Ponaganset Reservoir .....	3.5	2.5	2.0	1.5	2.5	2.5	2.5	2.5	1.5	2.0	2.5	4.0	2.5
Coventry Brook .....	5.0	5.0	5.5	4.5	5.0	4.5	5.5	5.0	6.0	9.0	7.0	7.0	5.8
Wilbur Brook .....	8.0	4.0	4.0	5.0	4.5	4.5	5.0	6.0	7.0	10.0	11.0	6.5	6.3
Westconnaug Reservoir .....	8.0	5.0	4.5	4.5	4.5	5.0	4.5	5.0	6.0	9.5	10.5	11.0	6.5
Barden Reservoir .....	4.5	4.0	3.0	3.0	3.5	3.5	3.5	5.0	5.5	13.0	13.5	9.0	5.9
Cork Brook .....	5.5	3.5	4.0	4.0	4.5	3.5	4.0	5.5	5.5	7.0	**	6.0	4.8
Rush Brook .....	6.0	5.5	5.0	4.0	4.5	3.5	6.0	7.5	8.5	9.0	10.5	12.0	6.8
Huntinghouse Brook .....	7.0	8.0	5.5	5.0	5.5	4.0	6.5	7.5	11.5	**	**	**	6.7
Harrisdale Brook .....	9.5	8.0	7.5	7.0	8.0	7.0	8.5	9.5	11.5	14.5	14.0	13.5	9.9
Blanchard Brook .....	5.5	4.5	5.0	4.0	4.5	4.0	5.5	4.5	5.5	**	**	**	4.8
Moswansicut Pond .....	6.0	7.5	7.0	7.5	7.0	6.5	7.0	7.0	7.0	8.0	7.5	8.0	7.2
Regulating Reservoir .....	7.5	8.0	7.0	6.0	7.0	5.0	7.0	7.5	8.0	8.5	9.5	9.0	7.5
Quonapaug Brook .....	8.0	6.5	5.0	5.0	5.5	5.0	6.5	4.5	11.0	15.5	**	5.0	7.0
Hemlock Brook .....	5.0	6.0	3.5	4.0	3.5	3.5	3.5	4.0	4.5	6.5	7.5	7.0	4.9
Betty Pond Stream.....	5.0	5.5	6.0	5.0	5.0	4.0	5.5	4.5	5.0	5.0	**	**	5.1
Spruce Brook .....	5.5	5.0	4.0	3.5	6.0	3.0	4.0	4.0	5.0	6.5	**	**	4.7
Brandy Brook .....	9.0	7.0	6.5	9.5	8.0	5.5	7.5	9.0	6.0	10.0	9.5	9.0	8.0
Moswansicut—South .....	16.5	12.5	12.0	9.5	10.5	11.0	10.5	12.0	9.0	24.0	**	**	12.8
Windsor Brook .....	7.5	4.5	5.0	4.0	4.0	3.5	4.0	5.0	6.0	**	**	**	4.8
Paine Pond .....	5.0	4.5	5.0	4.0	4.5	3.5	3.5	4.5	4.0	3.0	2.5	**	4.0
Unnamed Brook—A .....	**	10.0	6.0	5.5	6.0	6.0	6.5	7.0	**	**	**	**	6.7
Unnamed Brook—B .....	**	4.5	4.0	4.5	3.5	3.5	3.5	5.0	**	**	**	**	4.1

\*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 13**

**WATER PURIFICATION WORKS**

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

**Year Ended September 30, 1963**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>pH</b>													
Neutaconkanut Reservoir .....	10.2	10.1	10.2	10.1	10.1	10.1	10.1	10.0	10.1	10.1	10.1	10.2	10.1
Phenix Avenue, Cranston .....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.1	10.1	10.2	10.1
Westminster Street, Olneyville .....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.1	10.1	10.2	10.1
Budlong Road, Cranston.....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.2	10.1	10.2	10.1
Reservoir Avenue, Cranston.....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.2	10.1	10.2	10.1
T. F. Green Airport, Warwick.....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.1	10.1	10.2	10.1
Biltmore Hotel .....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.2	10.1	10.2	10.1
Crown Hotel .....	10.2	10.1	10.1	10.2	10.1	10.1	10.1	10.0	10.1	10.2	10.1	10.2	10.1
State Office Building .....	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.1	10.2	10.1	10.2	10.1
*Longview Reservoir .....	10.2	10.1	10.2	10.1	10.1	10.1	10.1	10.0	10.1	10.2	10.2	10.2	10.1
**10 Westminster Street.....	10.2	10.1	10.1	10.1	10.1	10.1	10.0	10.0	10.1	10.1	10.1	10.2	10.1
<b>Phenolphthalein Alkalinity</b>													
Neutaconkanut Reservoir .....	8.3	7.8	6.8	6.2	6.2	6.5	6.5	6.5	6.3	6.3	6.5	7.4	6.8
Phenix Avenue, Cranston .....	8.2	7.2	6.3	6.2	6.2	6.5	6.4	6.5	6.1	6.3	6.5	7.5	6.7
Westminster Street, Olneyville .....	8.2	7.2	6.4	6.1	6.2	6.5	6.4	6.5	6.3	6.3	6.5	7.6	6.7
Budlong Road, Cranston.....	8.1	7.2	6.4	6.1	6.2	6.5	6.5	6.5	6.3	6.4	6.5	7.6	6.7
Reservoir Avenue, Cranston.....	8.1	7.2	6.3	6.1	6.2	6.5	6.5	6.5	6.3	6.3	6.5	7.6	6.7
T. F. Green Airport, Warwick.....	8.2	7.2	6.4	6.1	6.2	6.5	6.5	6.5	6.3	6.4	6.5	7.5	6.7
Biltmore Hotel .....	8.2	7.3	6.4	6.2	6.2	6.5	6.5	6.5	6.3	6.3	6.5	7.5	6.7
Crown Hotel .....	8.3	7.2	6.5	6.2	6.2	6.5	6.4	6.5	6.3	6.4	6.5	7.5	6.7
State Office Building .....	8.3	7.2	6.5	6.2	6.2	6.5	6.5	6.5	6.3	6.4	6.5	7.5	6.7
*Longview Reservoir .....	9.0	8.0	7.6	6.6	6.5	6.6	6.6	6.7	6.6	6.5	6.7	7.6	7.1
**10 Westminster Street.....	8.2	7.2	6.3	6.0	6.1	6.4	6.5	6.5	6.3	6.3	6.5	7.5	6.7
<b>Methyl Orange Alkalinity</b>													
Neutaconkanut Reservoir .....	16.4	14.7	13.2	12.2	12.2	12.9	12.9	12.8	12.4	12.6	13.0	15.1	13.4
Phenix Avenue, Cranston .....	16.1	14.4	12.4	12.2	12.2	12.6	12.8	12.8	12.1	12.4	12.9	15.3	13.2
Westminster Street, Olneyville .....	16.2	14.3	12.5	12.3	12.2	12.6	12.9	12.8	12.3	12.5	13.0	15.3	13.2
Budlong Road, Cranston.....	16.1	14.2	12.5	12.1	12.4	12.8	12.9	12.9	12.3	12.7	13.0	15.4	13.3
Reservoir Avenue, Cranston.....	16.1	14.2	12.3	12.2	12.2	12.7	12.8	12.8	12.4	12.6	13.0	15.3	13.2
T. F. Green Airport, Warwick.....	16.0	14.3	12.3	12.3	12.2	12.7	12.8	12.8	12.3	12.7	13.0	15.4	13.2
Biltmore Hotel .....	16.0	14.3	12.5	12.2	12.3	12.7	12.9	12.8	12.4	12.6	13.0	15.2	13.2
Crown Hotel .....	16.3	14.1	12.5	12.2	12.2	12.6	12.7	12.9	12.4	12.6	13.0	15.3	13.2
State Office Building .....	16.4	14.2	12.5	12.2	12.3	12.8	13.0	13.0	12.4	12.7	13.0	15.2	13.3
*Longview Reservoir .....	18.0	15.9	14.6	13.6	13.1	13.1	13.3	13.6	13.4	13.4	13.7	15.5	14.3
**10 Westminster Street.....	16.4	14.2	12.5	12.2	12.4	12.8	12.9	12.8	12.4	12.6	13.1	15.4	13.3
<b>Color</b>													
Neutaconkanut Reservoir .....	5	4	4	5	6	6	5	5	5	5	5	4	5
Phenix Avenue, Cranston .....	4	3	4	5	6	6	5	5	4	4	4	3	4
Westminster Street, Olneyville .....	4	3	4	5	6	6	5	4	4	4	4	3	4
Budlong Road, Cranston.....	4	3	4	5	6	5	5	4	4	4	4	3	4
Reservoir Avenue, Cranston.....	4	3	4	5	6	6	5	4	4	4	4	3	4
T. F. Green Airport, Warwick.....	5	4	4	5	6	6	5	4	4	4	4	3	5
Biltmore Hotel .....	4	4	4	5	6	6	5	5	4	4	4	4	5
Crown Hotel .....	4	3	4	5	6	6	5	5	4	4	4	3	4
State Office Building .....	4	3	4	5	6	6	6	5	4	4	4	4	5
*Longview Reservoir .....	5	5	5	5	7	6	6	6	6	6	5	5	6
**10 Westminster Street.....	4	4	4	5	6	6	5	4	4	4	4	4	5

\*Sample obtained at Our Lady of Fatima Hospital.

\*\*Sampling location changed to Police and Fire Headquarters, La Salle Square, effective December 1.

**TABLE 13 (Continued)**

**WATER PURIFICATION WORKS**

**Chemical and Physical Characteristics of Water in Various Parts of the Distribution System  
Year Ended September 30, 1963**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Iron</b>													
Neutaconkanut Reservoir .....	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01
Phenix Avenue, Cranston .....	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
Westminster Street, Olneyville .....	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
Budlong Road, Cranston.....	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
Reservoir Avenue, Cranston.....	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
T. F. Green Airport, Warwick.....	.01	.01	.01	.01	.02	.00	.00	.00	.00	.00	.00	.00	.01
Biltmore Hotel .....	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
Crown Hotel .....	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.00	.00	.01
State Office Building .....	.01	.00	.00	.01	.01	.00	.02	.01	.01	.01	.01	.01	.01
*Longview Reservoir .....	.05	.06	.05	.02	.05	.06	.06	.06	.06	.05	.06	.06	.05
**10 Westminster Street.....	.01	.01	.01	.01	.02	.01	.01	.01	.01	.01	.01	.01	.01
<b>Chlorides</b>													
Neutaconkanut Reservoir .....	4.4	4.3	4.5	4.5	4.6	5.0	4.9	4.7	4.5	4.6	4.9	5.0	4.7
Phenix Avenue, Cranston .....	4.1	4.2	4.5	4.5	4.7	5.0	4.7	4.6	4.5	4.6	4.9	5.0	4.6
Westminster Street, Olneyville .....	4.2	4.3	4.5	4.5	4.7	5.0	4.8	4.7	4.5	4.6	4.9	5.0	4.6
Budlong Road, Cranston.....	4.3	4.3	4.5	4.5	4.7	4.9	4.7	4.6	4.4	4.6	4.9	5.0	4.6
Reservoir Avenue, Cranston.....	4.2	4.3	4.5	4.5	4.7	5.0	4.8	4.7	4.5	4.6	4.9	5.0	4.6
T. F. Green Airport, Warwick.....	4.3	4.3	4.5	4.5	4.7	5.0	4.7	4.6	4.5	4.5	4.9	5.0	4.6
Biltmore Hotel .....	4.3	4.3	4.5	4.5	4.7	5.0	4.8	4.7	4.5	4.5	4.9	5.0	4.6
Crown Hotel .....	4.3	4.2	4.5	4.5	4.8	5.0	4.8	4.6	4.5	4.5	4.9	5.0	4.6
State Office Building .....	4.2	4.3	4.5	4.5	4.7	5.0	4.8	4.6	4.6	4.5	4.9	5.0	4.6
*Longview Reservoir .....	4.4	4.3	4.5	4.5	4.8	4.9	4.9	4.7	4.6	4.6	4.9	5.0	4.7
**10 Westminster Street.....	4.3	4.3	4.5	4.5	4.7	5.0	4.8	4.7	4.5	4.6	4.9	5.0	4.7
<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	.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
**10 Westminster Street.....	.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	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
**10 Westminster Street.....	0	0	0	0	0	0	0	0	0	0	0	0	0

\*Sample obtained at Our Lady of Fatima Hospital.

\*\*Sampling location changed to Police and Fire Headquarters, La Salle Square, effective December 1,

**TABLE 13 (Continued)**

**WATER PURIFICATION WORKS**

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

**Year Ended September 30, 1963**

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	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
**10 Westminster Street.....	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Fluoride</b>													
Neutaconkanut Reservoir .....	1.00	1.00	1.00	0.99	0.98	1.00	1.01	1.01	1.00	1.00	1.01	1.01	1.00
Phenix Avenue, Cranston .....	0.99	1.00	1.01	0.99	0.99	1.00	1.00	1.00	1.11	1.00	1.02	1.00	1.01
Westminster Street, Olneyville .....	0.98	1.00	1.00	0.98	0.98	0.99	1.00	1.00	1.00	0.99	1.00	1.02	1.00
Budlong Road, Cranston.....	0.99	1.00	1.00	1.00	0.98	0.99	0.99	1.00	1.13	1.01	1.00	1.07	1.01
Reservoir Avenue, Cranston.....	1.00	1.00	1.02	0.99	0.98	1.00	1.00	1.00	1.01	1.00	1.03	1.01	1.00
T. F. Green Airport, Warwick.....	0.99	0.99	1.00	0.99	0.98	1.00	1.00	1.00	1.02	1.01	1.01	1.02	1.00
Biltmore Hotel .....	1.00	0.99	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.01	1.00	0.99	1.00
Crown Hotel .....	0.99	0.99	1.00	1.01	0.98	1.00	0.99	1.00	1.00	1.01	1.01	1.00	1.00
State Office Building .....	0.99	0.98	0.99	1.01	0.99	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00
*Longview Reservoir .....	0.99	0.99	0.99	1.00	0.99	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.00
**10 Westminster Street.....	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.02	1.00	1.01	1.01	1.01	1.00

\*Sample obtained at Our Lady of Fatima Hospital.

\*\*Sampling location changed to Police and Fire Headquarters, La Salle Square, effective December 1.

**TABLE 14**

**WATER PURIFICATION WORKS**

**Bacteriological Examination of Water in Process of Filtration**

**Year Ended September 30, 1963**

1962-1963	BACTERIA PER ML. (48 HOURS ON AGAR AT 20° C.)													
	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.....	85	7 39	140	18 52	180	9 48	85	0 37	105	11 47	1	0 0		
November.....	63	4 29	75	14 37	2,200	7 439	900	13 215	850	0 208	1	0 0		
December.....	30	1 11	21	5 18	3,000	0 287	1,800	0 166	450	3 93	1	0 0		
January.....	42	1 10	35	2 10	3,000	0 354	700	1 107	350	0 59	1	0 0		
February.....	95	1 18	50	4 15	400	20 77	115	15 55	150	15 50	1	0 0		
March.....	110	5 38	150	8 41	400	5 89	260	15 87	150	10 61	6	0 2		
April.....	79	5 30	70	1 23	600	27 178	900	25 213	400	8 145	5	0 1		
May.....	39	7 20	35	5 17	500	8 98	400	17 115	200	16 69	1	0 0		
June.....	400	2 40	250	4 31	80	2 25	120	2 39	90	2 30	2	0 0		
July.....	50	2 19	90	3 23	70	0 20	120	0 24	80	1 21	1	0 0		
August.....	85	8 47	90	3 38	140	1 29	55	0 18	50	1 20	1	0 0		
September.....	160	9 60	160	17 57	220	26 86	150	11 43	110	17 55	7	0 1		
<b>For Year.....</b>	<b>400</b>	<b>1 30</b>	<b>250</b>	<b>1 30</b>	<b>3,000</b>	<b>0 144</b>	<b>1,800</b>	<b>0 93</b>	<b>850</b>	<b>0 72</b>	<b>7</b>	<b>0 0</b>		

\*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, 1963**

1962-1963	BACTERIA PER ML. (24 HOURS ON AGAR AT 35° C.)															
	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.....	85	2	16	4	16	3	0	0	0	0	20	0	1	2	0	0
November.....	30	0	6	13	0	5	2	0	13	0	1	3	0	0	2	0
December.....	65	0	5	4	0	2	30	0	1	10	0	11	0	1	16	0
January.....	20	0	3	6	0	2	3	0	3	0	0	3	0	0	28	0
February.....	16	0	2	8	0	1	4	0	1	15	0	5	0	0	6	0
March.....	7	0	1	5	0	2	3	0	0	9	0	6	0	1	5	0
April.....	40	0	4	12	0	2	3	0	0	1	0	12	0	1	5	0
May.....	8	0	2	22	0	3	10	0	1	1	0	5	0	0	300	0
June.....	18	0	6	12	0	5	8	0	1	19	0	20	0	2	3	0
July.....	13	0	5	12	0	4	120	0	5	9	0	4	0	1	1	0
August.....	32	0	6	10	1	5	17	0	1	2	0	9	0	1	45	0
September.....	180	0	29	110	1	21	90	0	5	15	0	25	0	3	2	0
For Year.....	180	0	7	110	0	6	120	0	1	19	0	25	0	1	300	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, 1963**

COLIFORM BACTERIA																		
1962-1963	Raw-A.M.			Raw-P.M.			Settled			*Effluent-A.M.			*Effluent-P.M.			Tap		
	No. of 10 ml. Portions Tested	Index per ml.	Con- firmed ml.	No. of 10 ml. Portions Tested	Index per ml.	Con- firmed ml.	No. of 10 ml. Portions Tested	Index per ml.	Con- firmed ml.	No. of 10 ml. Portions Tested	Index per ml.	Con- firmed ml.	No. of 10 ml. Portions Tested	Index per ml.	Con- firmed ml.	No. of 10 ml. Portions Tested	Index per ml.	Con- firmed ml.
October.....	78	68	0.087	44	33	0.075	52	2	0.004	52	0	0.004	44	0	0.000	130	2	0.002
November.....	69	65	.094	38	34	.089	46	4	.009	46	2	.004	38	0	.000	115	0	.000
December.....	75	72	.096	36	36	.100	50	8	.016	50	0	.000	36	0	.000	125	0	.000
January.....	78	68	.087	44	38	.086	52	1	.002	52	0	.000	44	0	.000	130	0	.000
February.....	69	10	.014	38	5	.013	46	0	.000	46	0	.000	38	0	.000	115	0	.000
March.....	78	9	.012	42	7	.017	52	0	.000	52	0	.000	42	0	.000	130	0	.000
April.....	78	12	.015	42	6	.014	52	0	.000	52	0	.000	42	0	.000	130	0	.000
May.....	75	7	.009	44	1	.002	50	0	.000	50	0	.000	44	0	.000	125	0	.000
June.....	75	5	.007	40	2	.005	50	0	.000	50	2	.004	40	0	.000	125	0	.000
July.....	78	5	.006	42	5	.012	52	0	.000	52	1	.002	42	0	.000	130	0	.000
August.....	78	5	.006	42	5	.012	52	0	.000	52	0	.000	42	0	.000	130	0	.000
September.....	72	21	.029	40	14	.035	48	0	.000	48	0	.000	40	3	.008	120	0	.000
For Year.....	903	347	.038	492	186	.038	602	15	.002	602	5	.001	492	3	.001	1,505	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, 1963**

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 .....	300	45	35	450	12	15	90	190	550	670	140	230	227
Coventry Brook .....	1,000	85	60	85	60	42	220	280	370	950	1,800	2,700	638
Wilbur Brook .....	1,500	110	150	220	75	50	1,500	350	480	1,300	550	1,800	674
Westconnaug Reservoir .....	900	115	120	180	150	55	1,200	240	240	600	320	520	387
Barden Reservoir .....	840	190	160	250	220	145	600	350	410	16,500	650	370	1,724
Cork Brook .....	2,100	68	80	50	30	170	140	260	340	2,100	**	330	515
Rush Brook .....	3,500	75	140	65	150	180	260	520	1,600	500	500	850	695
Huntinghouse Brook .....	1,800	180	120	270	105	440	400	220	1,100	**	**	**	515
Harrisdale Brook .....	700	230	90	300	350	600	350	400	550	520	750	450	441
Blanchard Brook .....	510	70	55	120	40	130	630	750	800	**	**	**	345
Moswansicut Pond .....	550	40	36	450	55	150	92	900	350	850	550	900	410
Regulating Reservoir .....	400	750	45	2,500	2,100	800	80	350	95	250	280	5,000	1,054
Quonapaug Brook .....	1,500	140	140	140	25	90	120	450	520	280	**	2,100	500
Hemlock Brook .....	280	95	105	110	90	540	165	65	300	320	210	700	248
Betty Pond Stream.....	325	110	350	900	250	700	180	210	450	690	**	**	417
Spruce Brook .....	650	55	52	190	170	65	370	320	320	750	**	**	294
Brandy Brook .....	900	320	45	600	400	320	420	3,000	150	210	90	450	575
Moswansicut—South .....	4,000	600	75	550	130	600	2,300	2,500	6,000	9,000	**	**	2,576
Windsor Brook .....	820	140	30	280	14	160	240	700	430	**	**	**	313
Paine Pond .....	280	170	27	650	500	45	500	900	500	450	350	**	397
Unnamed Brook—A .....	**	350	60	520	75	90	550	750	**	**	**	**	342
Unnamed Brook—B .....	**	120	33	85	15	210	85	130	**	**	**	**	97
<b>Bacteria per Ml. 24 Hours on Agar at 35° C.</b>													
Ponaganset Reservoir .....	40	2	30	90	6	5	5	35	320	450	310	160	121
Coventry Brook .....	115	9	11	12	12	10	20	150	140	370	130	550	127
Wilbur Brook .....	110	7	10	13	10	17	35	140	600	600	450	450	204
Westconnaug Reservoir .....	44	6	9	15	6	15	42	105	150	240	65	320	85
Barden Reservoir .....	21	17	9	16	2	7	28	110	160	18,000	320	300	1,583
Cork Brook .....	75	13	7	11	10	18	8	35	70	560	**	900	155
Rush Brook .....	55	10	75	8	7	29	27	90	800	800	280	650	236
Huntinghouse Brook .....	150	17	215	15	7	13	30	180	240	**	**	**	96
Harrisdale Brook .....	15	20	13	26	10	8	35	19	170	750	550	550	181
Blanchard Brook .....	170	12	17	18	9	10	1,400	2,200	220	**	**	**	451
Moswansicut Pond .....	90	8	1	17	6	12	29	600	500	2,300	350	800	393

\*\*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, 1963**

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 .....	20	32	5	33	9	7	12	150	90	420	120	1,500	200
Quonapaug Brook .....	250	9	6	19	5	14	18	400	270	310	**	700	182
Hemlock Brook .....	110	20	12	7	7	3	15	25	130	270	170	110	73
Betty Pond Stream.....	230	22	12	19	19	7	110	160	180	900	**	**	166
Spruce Brook .....	85	120	3	5	8	2	30	90	400	540	**	**	128
Brandy Brook .....	95	190	21	90	20	25	90	210	65	290	65	65	102
Moswansicut—South .....	650	130	15	35	40	180	300	750	1,500	8,000	**	**	1,160
Windsor Brook .....	60	25	17	12	2	20	16	45	110	**	**	**	34
Paine Pond .....	53	18	9	4	4	4	180	500	450	600	200	**	184
Unnamed Brook—A .....	**	23	18	10	7	22	13	110	**	**	**	**	29
Unnamed Brook—B .....	**	9	17	4	3	15	16	120	**	**	**	**	26
<b>Coliform Bacteria Index per 100 Ml.</b>													
Ponaganset Reservoir .....	6	0	0	25	0	0	0	0	13	25	70	25	.....
Coventry Brook .....	70	0	6	13	70	0	6	0	25	110†	110†	110†	.....
Wilbur Brook .....	110†	70	25	25	6	70	6	110†	110†	70	70	110†	.....
Westconnaug Reservoir .....	70	6	0	110†	6	110†	6	70	70	70	70	25	.....
Barden Reservoir .....	25	25	25	20	0	70	0	6	25	110†	70	110†	.....
Cork Brook .....	25	6	6	25	6	0	25	25	25	110†	**	110†	.....
Rush Brook .....	70	25	6	70	6	110†	0	6	70	110†	110†	110†	.....
Huntinghouse Brook .....	70	6	0	6	6	25	25	6	110†	**	**	**	.....
Harrisdale Brook .....	25	110†	25	110†	70	110†	6	0	70	25	25	70	.....
Blanchard Brook .....	110†	0	6	25	0	6	25	70	70	**	**	**	.....
Moswansicut Pond .....	25	0	25	110†	6	25	6	70	110†	25	70	110†	.....
Regulating Reservoir .....	25	70	6	70	0	110†	6	5	25	25	70	110†	.....
Quonapaug Brook .....	70	6	25	25	0	25	25	70	70	110†	**	110†	.....
Hemlock Brook .....	70	25	70	0	0	70	6	0	25	70	110†	70	.....
Betty Pond Stream.....	25	6	0	25	0	5	6	6	25	110†	**	**	.....
Spruce Brook .....	110†	25	25	25	0	0	0	25	25	110†	**	**	.....
Brandy Brook .....	25	13	6	110†	6	6	25	25	6	110†	110†	70	.....
Moswansicut—South .....	110†	110†	70	70	70	110†	70	110†	110†	110†	**	**	.....
Windsor Brook .....	93	7.3	43	43	3.6	9.1	0	25	70	**	**	**	.....
Paine Pond .....	25	5	0	25	6	6	6	70	70	110†	70	**	.....
Unnamed Brook—A .....	**	25	6	70	6	25	110†	110†	**	**	**	**	.....
Unnamed Brook—B .....	**	6	0	25	0	110†	70	6	**	**	**	**	.....

†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, 1963**

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	3	0	1	0	0	0	0
Phenix Avenue, Cranston .....	0	0	0	0	0	0	0	0	0	9	0	0	1
Westminster Street, Olneyville .....	0	0	0	0	0	0	0	0	0	0	0	0	0
Budlong Road, Cranston.....	7	2	0	0	0	1	1	0	0	1	0	0	1
Reservoir Avenue, Cranston.....	0	0	0	1	0	0	1	0	1	0	0	0	0
T. F. Green Airport, Warwick.....	0	0	0	0	0	2	0	2	0	0	0	2	1
Biltmore Hotel .....	0	1	0	0	0	2	0	0	0	0	0	0	0
Crown Hotel .....	0	0	0	0	1	2	1	0	0	0	0	0	0
State Office Building .....	0	0	0	0	0	0	0	0	0	0	0	1	0
*Longview Reservoir .....	0	1	0	1	0	1	1	1	3	1	1	0	1
**10 Westminster Street.....	0	0	0	1	0	2	1	0	0	0	0	0	0
<b>Bacteria per Ml. 24 Hours on Agar at 35° C.</b>													
Neutaconkanut Reservoir .....	0	0	0	0	0	0	0	0	8	0	3	0	1
Phenix Avenue, Cranston .....	0	0	0	5	7	0	0	7	2	0	4	0	2
Westminster Street, Olneyville .....	0	0	0	0	0	0	0	0	9	3	1	3	1
Budlong Road, Cranston.....	0	0	0	0	1	0	0	2	2	0	0	0	0
Reservoir Avenue, Cranston.....	1	0	0	0	1	1	0	0	1	0	4	0	1
T. F. Green Airport, Warwick.....	0	1	0	0	0	0	0	7	2	1	0	0	1
Biltmore Hotel .....	4	0	0	0	0	1	0	7	0	0	0	0	1
Crown Hotel .....	0	1	2	0	0	0	1	0	0	0	1	1	1
State Office Building .....	0	0	0	0	0	1	0	8	0	0	3	0	1
*Longview Reservoir .....	0	1	1	0	0	2	0	1	3	0	9	1	2
**10 Westminster Street.....	0	0	0	1	0	0	1	0	0	0	2	0	0
<b>Coliform Bacteria Index per Ml.</b>													
Neutaconkanut Reservoir .....	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenix Avenue, Cranston .....	.000	.000	.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000
Westminster Street, Olneyville .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000
Budlong Road, Cranston.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000
Reservoir Avenue, Cranston.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.005	.000	.000	.000
T. F. Green Airport, Warwick.....	.000	.000	.000	.000	.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	.001	.000	.000	.000	.000	.000
State Office Building .....	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000
*Longview Reservoir .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002	.001	.000	.000
**10 Westminster Street.....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

\*Sample obtained at Our Lady of Fatima Hospital.

\*\*Sampling location changed to Police and Fire Headquarters, LaSalle Square, effective December 1.

**TABLE 19**  
**WATER PURIFICATION WORKS**  
**Mineral Analysis of Water — Year Ended September 30, 1963**

Parts per Million	RAW WATER*					TAP WATER				
	1962	1963			Avg.	1962	1963			Avg.
	Oct.- Dec.	Jan.- Mar.	Apr.- June	July- Sept.		Oct.- Dec.	Jan.- Mar.	Apr.- June	July- Sept.	
Aluminum.....	0.00	0.01	0.02	0.01	0.01	0.02	0.05	0.05	0.06	0.05
Arsenic.....	.....	.....	0.00	0.00	0.00	.....	.....	0.00	0.00	0.00
Calcium.....	2.73	3.00	2.76	2.85	2.84	8.45	9.59	9.30	9.62	9.24
Chloride.....	4.0	4.2	4.1	4.3	4.2	4.3	4.6	4.5	4.8	4.6
Copper.....	0.03	0.01	0.02	0.05	0.03	0.01	0.00	0.01	0.02	0.01
Fluoride.....	0.14	0.13	0.13	0.13	0.13	1.00	0.99	1.00	1.00	1.00
Hardness.....	10	10	10	10	10	27	27	27	28	27
Iron.....	0.12	0.05	0.03	0.11	0.08	0.01	0.02	0.01	0.01	0.01
Lead.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Magnesium.....	0.45	0.40	0.50	0.40	0.44	0.35	0.30	0.40	0.40	0.36
Manganese.....	0.04	0.01	0.00	0.06	0.03	0.00	0.00	0.00	0.00	0.00
Phenolic Compounds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Selenium.....	0.00	.....	0.00	.....	0.00	0.00	.....	0.00	.....	0.00
Silica.....	4.5	5.0	5.0	4.0	4.6	4.5	4.0	4.5	4.0	4.3
Sulphate.....	7.1	7.3	6.9	7.1	7.1	12.5	14.1	13.6	14.0	13.6
Total Solids.....	31	34	34	33	33	53	54	52	53	53
Loss on Ignition.....	12	13	13	14	13	16	15	16	19	16
Total Alkalinity.....	4.9	4.3	4.3	4.8	4.6	14.2	12.5	12.6	13.6	13.2
Phenolphthalein Alkalinity	0.0	0.0	0.0	0.0	0.0	7.3	6.3	6.4	6.8	6.7
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, 1963**

1962-1963	RAW WATER*					TAP WATER						
	Ammonia Free	Alb.	Nitrites trates	Ni- Chlo- rides	Dissolved Oxygen % Sat.	Loss on Igni- tion	Ammonia Free	Alb.	Nitrites trates	Ni- Chlo- rides	Dissolved Oxygen % Sat.	Loss on Igni- tion
October.....	0.032	0.044	0.000	0.03	4.0	34	0.016	0.028	0.000	0.04	4.4	56
November.....	0.024	0.076	0.000	0.04	4.0	38	0.016	0.052	0.000	0.04	4.3	54
December.....	0.020	0.061	0.000	0.04	4.0	27	0.016	0.028	0.000	0.04	4.5	49
January.....	0.024	.....	0.000	0.02	4.0	37	0.020	.....	0.000	0.02	4.5	54
February.....	.....	.....	0.000	0.02	4.2	32	.....	.....	0.000	0.02	4.6	57
March.....	.....	.....	0.000	0.02	4.4	34	.....	.....	0.000	0.02	4.8	51
April.....	.....	.....	0.000	0.01	4.3	33	.....	.....	0.000	0.01	4.7	53
May.....	0.016	0.068	0.000	0.03	4.1	30	0.003	0.052	0.000	0.05	4.5	52
June.....	0.008	0.044	0.000	0.03	4.0	38	0.000	0.036	0.000	0.03	4.4	50
July.....	0.000	0.056	0.000	0.12	4.0	36	0.000	0.040	0.000	0.12	4.5	53
August.....	0.016	0.028	0.000	0.08	4.4	34	0.000	0.028	0.000	0.08	4.8	51
September.....	0.016	0.048	0.000	0.01	4.4	29	0.000	0.016	0.000	0.02	5.0	56
Averages.....	0.017	0.053	0.000	0.04	4.2	33	0.008	0.035	0.000	0.04	4.6	53

\*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, 1963

SOURCE OF WATER TESTED	Frequency of Test or Examination	Number of Tests or Analyses Made During the Fiscal Year						
		Chemical	Bacteriological	Microscopical	Sanitary Chemical	Mineral	Miscellaneous	Total
<b>I Brooks and Streams on Watershed</b>								
Fourteen Brooks, Two Streams and One Pond.....	Monthly.....	1,358	1,684	.....	68	.....	.....	3,110
<b>II Smaller Storage Reservoirs on Watershed</b>								
Regulating Reservoir.....	Monthly.....	84	99	.....	.....	.....	.....	183
Westconaug Reservoir.....	Monthly.....	84	101	.....	.....	.....	.....	185
Barden Reservoir.....	Monthly.....	84	100	.....	.....	.....	.....	184
Moswansicut Pond.....	Monthly.....	84	103	.....	.....	.....	.....	187
Ponaganset Reservoir.....	Monthly.....	84	84	.....	.....	.....	.....	168
<b>III Scituate Reservoir</b>								
Surface Water.....	.....	208	318	17	156	.....	.....	699
Subsurface Water (See Purif. Wks.—Raw Water).....	Bi-Weekly.....	.....	.....	.....	.....	.....	.....	.....
<b>IV Pawtuxet River—Below Gainer Dam</b>								
Gainer Dam Meter Chamber.....	Bi-Weekly.....	182	.....	.....	156	.....	.....	338
Fiskeville, R. I. ....	Bi-Weekly.....	182	.....	.....	156	.....	.....	338
Twelve other locations on Pawtuxet River.....	Bi-Weekly.....	2,340	1,076	.....	2,184	.....	.....	5,600
<b>V Water Purification Works</b>								
Raw Water (from Bottom of Scituate Reservoir).....	Daily.....	3,005	3,803	.....	1,452	.....	363	8,623
Raw Water (from Bottom of Scituate Reservoir).....	Bi-Weekly.....	.....	.....	17	26*	.....	.....	43
Raw Water (from Bottom of Scituate Reservoir).....	Monthly.....	.....	.....	.....	60**	.....	.....	60
***Raw Water (from Bottom of Scituate Reservoir).....	Every 13 Weeks.....	.....	.....	.....	.....	34	.....	34
Aerated Influent.....	Daily.....	726	.....	.....	.....	.....	.....	726
Mixer.....	Daily.....	1,863	.....	.....	.....	.....	.....	1,863
Settled.....	Daily.....	2,480	1,222	17	26*	.....	363	4,065
Settled.....	Bi-Weekly.....	.....	.....	.....	43**	.....	.....	43
Settled.....	Monthly.....	1,089	.....	.....	.....	.....	.....	1,089
Filtered.....	Daily.....	.....	.....	.....	43	.....	.....	43
Filtered.....	Monthly.....	.....	.....	.....	.....	.....	.....	.....
Unchlorinated Effluent.....	Daily.....	3,206	1,209	.....	1,452	.....	.....	5,867
Unchlorinated Effluent.....	Bi-Weekly.....	.....	.....	17	26*	.....	.....	43
Unchlorinated Effluent.....	Monthly.....	.....	.....	.....	19**	.....	.....	19
Chlorinated Effluent.....	Daily.....	1,500	1,753	.....	1,250	.....	.....	4,503
Raw Water (from Bottom of Scituate Reservoir).....	Daily at 3:00 P.M.....	980	1,182	.....	980	.....	.....	3,142
Unchlorinated Effluent.....	Daily at 3:00 P.M.....	980	984	.....	980	.....	.....	2,944

TABLE 21 (Continued)

WATER PURIFICATION WORKS

Laboratory Examinations Made During the Fiscal Year Ended September 30, 1963

SOURCE OF WATER TESTED	Frequency of Test or Examination	Number of Tests or Analyses Made During the Fiscal Year						Total
		Chemical	Bacteriological	Microscopical	Sanitary Chemical	Mineral	Miscellaneous	
<b>VI Neutaconant Distribution Reservoir</b>								
Sample from nearby Tap.....	Daily.....	1,500	1,751	17	1,000		4,254	
Sample from nearby Tap.....	Bi-Weekly.....						17	
<b>VII Longview Distribution Reservoir</b>								
Sample from nearby Tap.....	Daily.....	1,500	1,754	17	1,000		4,254	
Sample from nearby Tap.....	Bi-Weekly.....						17	
<b>VIII Distribution System</b>								
Providence City Hall Tap Water.....	Daily.....	2,408	2,109	17	1,505	301	6,323	
Providence City Hall Tap Water.....	Bi-Weekly.....						17	
Providence City Hall Tap Water.....	Monthly.....				55		53	
****Providence City Hall Tap Water.....	Every 13 Weeks.....				30		30	
****Sectional Tests.....	Monthly.....	756	450		380		1,586	
Consumers' Complaints (53 during the year).....	Monthly.....	407	182		182		761	
Disinfection of Newly Laid Mains.....	Monthly.....		1,082		115		1,198	
†Sectional Tests.....	Daily.....	11,712	13,674		7,308		33,194	
<b>IX Miscellaneous Tests</b>								
Coagulation Tests to Determine Chemical Dosages.....		84				42	126	
Analysis of Ferric Chloride used for Treatment.....		60				20	80	
Analysis of Quicklime used for Treatment.....		18				36	54	
Analysis of Sod. Sulfonate used for Treatment.....		7					7	
Water, Filter Sand and Other Materials.....		1,461	3,717		451		5,629	
<b>Totals</b> .....		<b>40,432</b>	<b>38,478</b>	<b>119</b>	<b>21,631</b>	<b>64</b>	<b>101,749</b>	

\*For Oxygen Consumed only.

\*\*Exclusive of Oxygen Consumed.

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

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

†Samples from eight fixed locations.

**TABLE 22**  
**WATER DISTRIBUTION SYSTEM**  
**NEUTACONKANUT HIGH SERVICE PUMPING STATION**  
**Operating Statistics for Year Ended September 30, 1963**

1962-1963	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 Days Minutes		Operated Hours and Days Minutes		Operated Hours and Days Minutes		KWH	Cost	†Operated Hours and Days Minutes		Gasoline Used — Gals.	Oil Used — Qts.
October.....	1	24-00	30	709-45	0	0-00	77,500	\$ 1,238.24	5	4-15	140	0
November.....	0	0-00	30	711-00	0	0-00	86,500	1,258.17	3	3-00	121	0
December.....	0	0-00	31	740-00	0	0-00	77,000	1,162.18	3	3-00	72	0
January.....	1	0-30	31	728-45	0	0-00	76,000	1,150.09	5	5-00	169	0
February.....	5	45-30	28	668-00	0	0-00	97,500	1,368.74	4	4-00	159	120
March.....	1	2-30	31	741-00	0	0-00	69,000	1,148.74	3	3-00	90	0
April.....	7	83-15	29	689-00	0	0-00	78,000	1,244.53	5	5-00	160	0
May.....	6	55-00	31	735-00	0	0-00	88,000	1,353.73	4	4-00	155	0
June.....	1	5-00	28	614-00	6	101-00	82,000	1,209.47	4	4-00	172	0
July.....	0	00-00	28	484-00	14	241-30	90,500	1,393.26	6	8-00	133	0
August.....	3	21-00	31	722-00	1	16-00	90,500	1,381.16	4	4-00	140	0
September.....	1	3-00	30	710-00	0	0-00	76,000	1,150.47	3	3-00	100	0
Totals.....	26	239-45	358	8,252-30	21	358-30	988,500	\$15,058.78	49	50-15	1,611	120

\*Narragansett Electric Co. Power Rate G.

†Engine Test Run.

**TABLE 22 (Continued)**  
**WATER DISTRIBUTION SYSTEM**  
**NEUTACONKANUT HIGH SERVICE PUMPING STATION**  
**Operating Statistics for Year Ended September 30, 1963**

1962-1963	ELECTRICALLY-DRIVEN PUMPS			GASOLINE ENGINE-DRIVEN PUMP	Total Water Pumped	
	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'	Mil. Gals.	Avg. per Day
	Water Pumped — Mil. Gals.	Water Pumped — Mil. Gals.	Water Pumped — Mil. Gals.	Water Pumped — Mil. Gals.	For Month	
October.....	4.27	197.28	0	1.92	203.47	6.56
November.....	0	198.70	0	1.26	199.96	6.67
December.....	0	205.63	0	1.25	206.88	6.67
January.....	0.87	200.85	0	2.07	203.79	6.57
February.....	7.93	181.64	0	1.63	191.20	6.83
March.....	0.48	204.59	0	1.22	206.29	6.65
April.....	16.86	187.28	0	2.05	206.19	6.87
May.....	9.36	201.18	0	1.70	212.24	6.85
June.....	0.94	170.54	40.19	1.68	213.35	7.11
July.....	0	132.98	95.73	3.46	232.17	7.49
August.....	3.63	198.62	6.51	1.68	210.44	6.79
September.....	0.58	198.02	0	1.29	199.89	6.66
Totals.....	44.92	2,277.31	142.43	21.21	2,485.87	6.81

**TABLE 23**  
**WATER DISTRIBUTION SYSTEM**  
**BATH STREET HIGH SERVICE PUMPING STATION**  
**Operating Statistics for Year Ended September 30, 1963**

1962-1963	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 Days Minutes		Operated Hours and Days Minutes		KWH	Cost	†Operated Gasoline Hours and Days Minutes		Oil Used Gals.	Oil Used Qts.	†Operated Gasoline Hours and Days Minutes		Oil Used Gals.	Oil Used Qts.
October.....	16	142-00	18	121-00	14,560	\$ 391.46	1	1-00	8	0	1	1-00	8	0
November.....	11	80-30	15	98-30	12,040	352.38	0	0-00	5	0	1	1-00	5	0
December.....	13	63-00	13	75-00	8,540	267.24	0	0-00	0	0	0	0-00	0	0
January.....	16	112-15	13	119-00	11,900	349.99	0	0-00	4	0	1	1-00	4	0
February.....	13	83-15	11	59-30	9,940	319.09	0	0-00	7	0	1	1-00	7	0
March.....	15	92-30	16	108-30	11,200	324.02	0	0-00	0	0	0	0-00	0	0
April.....	15	95-30	16	103-40	11,480	344.38	2	2-30	4	0	1	1-00	4	0
May.....	19	164-00	21	152-45	16,800	429.94	1	1-00	13	10	1	1-00	13	10
June.....	22	280-15	22	258-30	27,020	561.45	1	1-00	11	0	1	1-00	11	0
July.....	26	275-30	23	243-30	27,020	558.57	1	1-00	5	0	1	1-00	5	0
August.....	24	240-15	23	230-00	31,640	610.59	0	0-00	0	0	0	0	0	0
September....	19	166-30	18	168-00	20,720	486.21	3	8-45	12	0	2	2-15	12	0
Totals.....	209	1,795-30	209	1,737-55	202,860	\$4,995.32	9	15-15	69	10	10	10-15	69	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, 1963**

1962-1963	ELECTRICALLY-DRIVEN PUMPS		GASOLINE ENGINE-DRIVEN PUMPS		Total Water Pumped	
	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	Mil. Gals.	
	Water Pumped Mil. Gals.	Water Pumped Mil. Gals.	Water Pumped Mil. Gals.	Water Pumped Mil. Gals.	For Month	Avg. per Day
October.....	19.66	16.61	0.13	0.13	36.53	1.18
November.....	11.29	13.87	0	0.14	25.30	0.84
December.....	8.85	10.35	0	0	19.20	0.62
January.....	15.15	15.83	0	0.14	31.12	1.00
February.....	11.63	8.23	0	0.14	20.00	0.71
March.....	12.99	15.12	0	0	28.11	0.91
April.....	13.01	13.94	0.33	0.13	27.41	0.91
May.....	22.02	20.46	0.13	0.13	42.74	1.38
June.....	36.43	33.70	0.12	0.12	70.37	2.35
July.....	35.66	31.26	0.13	0.13	67.18	2.17
August.....	31.57	30.24	0	0	61.81	1.99
September.....	22.29	22.42	1.13	0.30	46.14	1.54
Totals.....	240.55	232.03	1.97	1.36	475.91	1.30

**TABLE 24**  
**WATER DISTRIBUTION SYSTEM**  
**Aqueduct Distribution Reservoir\***  
**Operating Statistics for Year Ended September 30, 1963**

1962-1963	OPERATING CHARACTERISTICS DURING MONTH													
	7 A.M. Statistics on First Day of Month		Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
	Level	Storage	Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
October.....	**226.80	**36.26	229.84	226.80	228.78	41.47	36.26	39.66	2.41	0.42	1.26	4.13	0.72	2.15
November.....	229.20	40.37	229.90	225.58	228.76	41.57	34.16	39.62	4.17	0.39	1.61	4.59	0.67	2.59
December.....	227.68	37.77	229.22	225.49	227.68	40.41	34.01	37.77	2.28	0.32	1.20	3.91	0.55	2.06
January.....	227.54	37.53	229.19	224.68	227.92	40.36	32.62	38.18	3.30	0.20	1.38	5.66	0.35	2.37
February.....	227.90	38.15	229.12	225.61	227.90	40.24	34.22	38.15	2.18	0.65	1.26	3.74	1.11	2.17
March.....	228.03	38.37	229.28	226.36	228.19	40.51	35.50	38.64	2.14	0.53	1.21	3.69	0.91	2.08
April.....	229.66	41.16	229.70	226.67	228.75	41.23	36.03	39.60	2.65	0.88	1.47	4.54	0.65	2.52
May.....	228.35	38.92	229.73	226.20	229.10	41.28	35.23	40.20	2.95	0.72	1.71	5.09	1.23	2.93
June.....	229.22	40.41	230.10	226.64	229.32	41.91	35.98	40.58	2.63	0.77	1.84	4.51	1.32	3.15
July.....	229.25	40.46	230.11	226.61	229.36	41.92	35.93	40.65	3.33	0.67	1.81	4.77	1.14	3.10
August.....	229.01	40.05	229.98	226.75	229.43	41.71	36.17	40.77	3.12	0.66	1.98	5.35	1.13	3.41
September.....	229.88	41.54	230.17	226.23	229.17	42.02	35.28	40.32	3.31	0.78	1.95	5.68	1.34	3.35
For Year.....	.....	.....	230.17	224.68	228.70	42.02	32.62	39.51	4.17	0.20	1.56	5.68	0.35	2.66

\*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.

\*\*Figures are for October 17, the day Aqueduct Reservoir was placed in service.

TABLE 25

WATER DISTRIBUTION SYSTEM

Neutaconkanut Distribution Reservoir\*

Operating Statistics for Year Ended September 30, 1963

1962-1963	OPERATING CHARACTERISTICS DURING MONTH																
	7 A.M. Statistics on First Day of Month			Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.				
	Water Level	Storage	Level	Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.		
October.....	226.47	41.16	226.92	223.43	226.51	41.97	35.82	41.23	41.97	35.82	41.23	3.32	0.62	1.91	5.84	1.10	3.31
November.....	226.85	41.84	228.03	223.31	226.80	43.31	35.61	41.75	43.31	35.61	41.75	3.19	0.29	1.50	5.60	0.49	2.54
December.....	226.02	40.37	226.63	223.81	226.11	41.45	36.49	40.53	41.45	36.49	40.53	2.75	0.26	1.46	4.83	0.46	2.57
January.....	226.28	40.83	226.68	223.40	226.12	41.54	35.76	40.55	41.54	35.76	40.55	2.51	0.69	1.63	4.41	1.21	2.93
February.....	226.34	40.93	226.46	224.05	226.14	41.14	36.91	40.58	41.14	36.91	40.58	2.27	0.86	1.53	3.99	1.41	2.66
March.....	**226.44	41.11	226.48	224.14	226.20	41.18	37.07	40.69	41.18	37.07	40.69	2.13	0.68	0.94	3.75	1.20	2.58
April.....	***226.58	41.36	226.73	224.42	226.21	41.63	37.56	40.71	41.63	37.56	40.71	1.95	0.49	1.46	3.43	0.86	2.39
May.....	226.28	40.88	226.65	223.36	226.23	41.48	35.69	40.74	41.48	35.69	40.74	2.98	0.22	1.42	5.23	0.38	2.49
June.....	226.22	40.72	226.70	221.05	226.08	41.57	31.63	40.48	41.57	31.63	40.48	4.20	0.56	1.91	7.39	0.99	3.36
July.....	226.37	40.98	226.51	221.82	226.17	41.23	32.98	40.64	41.23	32.98	40.64	4.11	0.29	2.09	7.24	0.50	3.66
August.....	226.03	40.39	226.75	222.67	226.23	41.66	34.48	40.74	41.66	34.48	40.74	3.39	0.35	1.95	5.96	0.61	3.42
September.....	226.48	41.18	226.73	223.21	226.25	41.63	35.43	40.77	41.63	35.43	40.77	2.64	0.16	1.59	4.99	0.28	2.80
For Year.....	.....	.....	228.03	221.05	226.25	43.31	31.63	40.78	43.31	31.63	40.78	4.20	0.16	1.62	7.39	0.28	2.89

\*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.

\*\*Reservoir removed from service on March 21 @ elevation 226.27, drained, and repairs made to float valve and appurtenances.

\*\*\*No operation on first day of the month. Reservoir filled and restored to service on April 15 @ elevation 226.58.

TABLE 26

WATER DISTRIBUTION SYSTEM

Longview Distribution Reservoir\*

Operating Statistics for Year Ended September 30, 1963

1962-1963	OPERATING CHARACTERISTICS DURING MONTH													
	7 A.M. Statistics on First Day of Month		Water Level		Storage—Mil. Gals.		Daily Water Level Fluctuation—Ft.		Daily Storage Fluctuation—M. G.		Avg.			
	Water Level	Storage	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.				
October.....	304.53	11.72	305.30	300.76	304.69	12.08	9.97	11.79	4.00	0.33	2.01	1.86	0.38	0.93
November.....	304.79	11.84	305.15	302.65	304.74	12.01	10.85	11.82	2.29	1.30	1.90	1.06	0.60	0.88
December.....	304.77	11.83	305.30	302.15	304.76	12.08	10.62	11.83	2.63	0.98	1.83	1.22	0.45	0.85
January.....	304.80	11.85	305.33**	297.10	304.63	12.09	8.28	11.77	7.56	1.40	2.24	3.50	0.65	1.05
February.....	304.72	11.81	305.22	302.05	304.77	12.04	10.57	11.83	2.69	1.45	1.99	1.25	0.67	0.92
March.....	304.46	11.69	305.30	302.30	304.76	12.08	10.69	11.83	2.61	1.08	1.99	1.21	0.50	0.92
April.....	305.23	12.04	305.35	302.08	304.76	12.10	10.59	11.83	2.93	1.26	2.21	1.35	0.58	1.02
May.....	304.39	11.65	305.41	301.70	304.82	12.13	10.41	11.86	3.23	0.92	2.17	1.52	0.43	1.01
June.....	304.61	11.76	305.30	298.56	304.70	12.08	8.95	11.80	5.18	0.15	2.15	2.40	0.07	1.13
July.....	305.00	11.94	305.82	301.26	304.90	12.32	10.20	11.89	3.78	1.11	2.20	1.75	0.52	1.02
August.....	304.81	11.85	305.41	301.95	304.94	12.13	10.53	11.91	3.13	1.46	2.14	1.45	0.67	0.99
September.....	304.62	11.76	305.57	302.46	304.85	12.20	10.76	11.87	2.92	1.33	2.06	1.35	0.61	0.96
For Year.....	.....	.....	305.82	297.10	304.78	12.32	8.28	11.84	7.56	0.15	2.07	3.50	0.07	0.97

\*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.

\*\*Minimum elevation caused by break in 24-inch main on Smith St.

**TABLE 27**  
**Water Pipe Laid, Removed and Added**  
**Year Ended September 30, 1963**

PIPE LAID IN FEET						
City or Town	6"	8"	12"	16"	30"	Totals
Providence.....	6,391.27	2,917.02	5,304.69	4,937.52	699.69	20,250.10
Cranston.....	5,701.11	14,362.65	1,902.55	0	0	21,966.31
Johnston.....	1,509.25	5,488.77	0	0	0	6,998.02
North Providence.....	2,188.60	3,958.90	0	0	0	6,147.50
Totals.....	15,790.23	26,727.34	7,207.24	4,937.52	699.60	55,361.93

PIPE REMOVED IN FEET						
City or Town	6"	8"	12"	16"	30"	Totals
Providence.....	26,800.37	5,776.12	1,714.66	1,236.86	339.00	35,867.01
Cranston.....	620.44	0	0	0	0	620.44
Johnston.....	0	0	0	0	0	0
North Providence.....	0	17.10	0	0	0	17.10
Totals.....	27,420.81	5,793.22	1,714.66	1,236.86	339.00	36,504.55

NET LENGTH ADDED TO DISTRIBUTION SYSTEM						
City or Town	6"	8"	12"	16"	30"	Totals
Providence.....	-20,409.10	- 2,859.10	+3,590.03	+3,700.66	+360.60	-15,616.91
Cranston.....	+ 5,080.67	+14,362.65	+1,902.55	0	0	+21,345.87
Johnston.....	+ 1,509.25	+ 5,488.77	0	0	0	+ 6,998.02
North Providence.....	+ 2,188.60	+ 3,941.80	0	0	0	+ 6,130.40
Totals.....	-11,630.58	+20,934.12	+5,492.58	+3,700.66	+360.60	+18,857.38

TABLE 28

Public Water Mains in Use on September 30, 1963

	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.....	1,487,699.84	281.76	620,660.93	117.55	117,085.16	22.18	4154,972.44	29.35	2,380,418.37	450.84	82.06	0.02
8-inch.....	334,483.88	63.35	313,303.52	59.34	147,789.36	27.99	109,863.76	20.81	905,440.52	171.48	1,233.44	0.23
10-inch.....	13,017.62	2.47	0	0	0	0	0	0	13,017.62	2.47	0	0
12-inch.....	241,977.28	45.83	102,032.15	19.32	9,421.81	1.78	32,633.90	6.18	386,065.14	73.12	6,539.13	1.24
16-inch.....	145,313.37	27.52	3,512.31	0.67	6,393.63	1.21	0	0	155,219.31	29.40	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.....	55,881.88	10.58	5,405.43	1.02	31,347.98	5.94	2,368.71	0.45	95,004.00	17.99	4,299.44	0.81
30-inch.....	43,992.47	8.33	31,894.62	6.04	0	0	3,753.06	0.71	79,640.15	15.08	0	0
36-inch.....	4,555.68	0.86	5,511.13	1.04	0	0	0	0	10,066.31	1.91	0	0
42-inch.....	2,893.25	0.55	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	0.32	394.00	0.07	0	0	17,022.97	3.22	0	0
60-inch.....	5,559.00	1.05	12,910.89	2.45	4,340.00	0.82	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>2,370,068.43</b>	<b>448.88</b>	<b>1,127,997.44</b>	<b>213.64</b>	<b>316,771.94</b>	<b>59.99</b>	<b>303,591.87</b>	<b>57.50</b>	<b>4,118,429.68</b>	<b>780.01</b>	<b>67,880.71</b>	<b>12.86</b>

\*Special High Pressure Fire Service Included.  
 †Includes 691.45 feet of 6" main in Pawtucket.  
 ‡Includes 44.47 feet of 12" main in Pawtucket.  
 §Includes 146.00 feet of 12" main in Smithfield.  
 ¶Includes 179.30 feet of 6" main in Pawtucket.

TABLE 29

Gates in Use on September 30, 1963

Stop Gates			Gates on Public Fire Hydrants			Gates on Unwatering Hydrants			Gates on Blow-offs			Total Number of Gates
6"	8"	10"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total
4,520	937	19	1,081	1,779	2,810	2	14	16	1	2	1	4
PROVIDENCE												
6"	8"	10"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total
1,710	753	0	969	8	977	3	5	8	0	2	3	5
CRANSTON												
6"	8"	10"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total
314	306	1	257	13	270	3	0	3	0	0	2	2
JOHNSTON												
6"	8"	10"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total
417	224	0	290	0	290	0	3	3	0	0	0	0
NORTH PROVIDENCE												
6"	8"	10"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total
6,861	2,220	20	2,547	1,800	4,347	8	22	30	1	4	6	11
TOTALS												
6"	8"	10"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total
6,861	2,220	20	2,547	1,800	4,347	8	22	30	1	4	6	11

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

\*Totals include 5-12 inch and 5-16 inch Rotary Plug Valves in Providence, 5-16 inch Rotary Plug Valves in Johnston, and 10-16 inch, 2-20 inch, 2-30 inch, 2-36 inch and 4-48 inch Butterfly Valves in Providence, 1-36 inch, 1-42 inch, 1-48 inch, and 1-60 inch Butterfly Valve in Cranston.

**TABLE 30**

**Service Pipes Installed and Removed for Year Ended September 30, 1963**

City or Town	INSTALLED				REMOVED			
	General		Fire Supply		General		Fire Supply	
	Copper ¾"-2"	Cast Iron 4"-12"	Cast Iron 4"-12"	Total	Lead or Copper ½"-2"	Cast Iron 2"-8"	Cast Iron 4"-8"	Total
Providence.....	174	16	15	205	656	16	26	698
Cranston.....	402	4	4	410	24	0	1	25
Johnston.....	134	0	0	134	12	0	0	12
North Providence.....	158	0	0	158	3	1	0	4
<b>Totals.....</b>	<b>868</b>	<b>20</b>	<b>19</b>	<b>907</b>	<b>695</b>	<b>17</b>	<b>27</b>	<b>739</b>

**TABLE 31**

**Number and Size of Active Services as of September 30, 1963**

	½"	⅝"	¾"	1"	1¼"	1½"	2"	3"	4"	6"	8"	10"	12"	16"	24"	30"	Totals
Providence.....	240	25,649	7,186	1,468	544	282	479	6	977	859	66	4	6	2	0	0	37,768
Cranston.....	5	7,093	7,443	1,107	45	255	252	0	76	70	24	0	4	0	1	1	16,376
Johnston.....	0	772	2,093	467	10	93	43	0	7	8	2	0	0	0	0	0	3,495
North Providence.....	0	1,091	2,035	520	6	149	57	0	17	8	4	0	1	0	0	0	3,888
<b>Totals.....</b>	<b>245</b>	<b>34,605</b>	<b>18,757</b>	<b>3,562</b>	<b>605</b>	<b>779</b>	<b>831</b>	<b>6</b>	<b>1,077</b>	<b>945</b>	<b>96</b>	<b>4</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>61,527</b>

**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 Day			Maximum Hour		
				Total M.G.	Percent of Plant Capacity	Percent of Average Day	Rate in M.G.D.	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

**TABLE 35**  
**CONSUMPTION OF WATER -- MILLION GALLONS**

Year Ended September 30, 1963

1962-1963	LOW SERVICE*			HIGH SERVICE†			TOTAL SERVICE*†		
	Max. Day	Min. Day	Avg. Day	Max. Day	Min. Day	Avg. Day	Max. Day	Min. Day	Avg. Day
October.....	43.63	27.11	37.92	8.98	6.16	7.74	51.79	33.27	45.66
November.....	43.03	24.61	36.93	8.11	6.58	7.51	51.06	31.19	44.44
December.....	42.79	27.68	36.09	7.92	6.21	7.29	50.70	33.88	43.38
January.....	43.03	27.00	36.98	11.46	6.64	7.58	53.56	33.69	44.26
February.....	41.61	29.51	37.26	8.12	6.11	7.55	49.32	35.71	44.81
March.....	41.84	29.12	37.25	8.28	6.62	7.55	49.84	35.96	44.80
April.....	43.52	25.65	37.97	9.13	6.53	7.80	52.65	32.33	45.77
May.....	48.51	29.05	39.74	9.89	6.91	8.22	58.39	35.96	47.96
June.....	72.20	30.91	46.36	15.02	6.83	9.45	87.22	37.74	55.81
July.....	64.62	29.11	46.21	13.25	6.65	9.66	77.58	36.24	55.87
August.....	56.48	29.92	45.62	11.19	6.53	8.79	67.30	36.44	54.40
September.....	52.20	25.75	39.38	9.40	6.83	8.20	61.37	32.57	47.58
<b>For Year</b>	72.20(a)	24.61(b)	39.80	15.02(c)	6.11(d)	8.11	87.22(e)	31.19(f)	47.91
	(a) June 27;	(b) Nov. 11		(c) June 27;	(d) Feb. 24		(e) June 27;	(f) Nov. 11	

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

†Includes water supplied to East Smithfield Water Co.

\*\*In addition to this amount, 41.39 M.G. were used to fill Neutaconkanut Reservoir following completion of repairs to float valve and appurtenances in the gate house.

TABLE 36

WATER SOLD TO STATE INSTITUTIONS, AND CITY OF WARWICK

Year Ended September 30, 1963

	STATE INSTITUTIONS				CITY OF WARWICK				Average Gallons per Day				
	S.S. 50,767 Sockanosset Rd. Cranston	S.S. 24,215A East St. Cranston	12" x 5.50" Venturi Meter	8" Tri-Prot. Meter	S.S. 47,269 Pettaconsett Cranston	S.S. 47,475 Pawtuxet Bridge Cranston	S.S. 61,515 Oaklawn Avenue Cranston	S.S. 61,780 Dresden Street Cranston		6" Tri-Protectus Meter	6" Tri-Protectus Meter	Total Gallons per Month	Average Gallons per Day
1962-1963													
October.....	46,691,000	0	46,691,000	1,506,161	89,654,000	1,433,250	5,051,325	5,930,325	102,068,900	3,292,545			
November.....	40,030,000	0	40,030,000	1,334,333	76,949,000	619,800	4,388,250	4,416,675	86,373,725	2,879,124			
December.....	36,089,000	1,500	36,090,500	1,164,210	69,541,000	428,400	4,027,050	4,681,350	78,677,800	2,537,994			
January.....	43,228,000	1,650	43,229,650	1,394,505	88,799,000	Closed 12/14;	4,999,725	5,649,375	99,448,100	3,208,003			
February.....	34,377,776	75	34,377,851	1,227,780	74,486,000		4,425,600	4,830,225	83,741,825	2,990,779			
March.....	36,388,000	300	36,388,300	1,173,816	77,269,000	Opened 4/2	4,350,325	4,439,775	86,059,600	2,776,116			
April.....	41,714,000	0	41,714,000	1,390,467	91,300,000	1,657,335	5,994,375	8,617,650	107,569,360	3,585,645			
May.....	38,573,000	0	38,573,000	1,244,290	93,406,000	1,841,662	7,028,475	10,720,425	112,996,562	3,645,050			
June.....	38,913,000	0	38,913,000	1,297,100	107,130,887	1,780,283	10,221,225	20,658,450	139,790,845	4,659,695			
July.....	39,054,000	0	39,054,000	1,259,806	109,574,288	3,782,002	10,944,750	24,091,050	148,392,090	4,786,842			
August.....	47,032,000	0	47,032,000	1,517,161	128,466,404	4,592,408	12,866,625	23,133,150	169,058,587	5,453,503			
September.....	40,428,000	8,250	40,436,250	1,347,875	105,795,863	3,917,070	6,201,075	12,121,950	128,035,958	4,267,865			
For Year.....	482,517,776	11,775	482,529,551	1,321,999	1,112,371,442	20,052,210	80,499,300	129,290,400	1,342,213,352	3,677,297			

TABLE 37

WATER SOLD TO EAST SMITHFIELD WATER COMPANY AND  
KENT COUNTY WATER AUTHORITY

Year Ended September 30, 1963

1962-1963	EAST SMITHFIELD WATER COMPANY				KENT COUNTY WATER AUTHORITY			
	S.S. 51,198 Waterman Street No. Prov. — 12" Tri-Crest Meter — Gallons per Month	S.S. 52,403 Dean Avenue Smithfield — 8" Tri-Crest Meter — Gallons per Month	Total Gallons per Month	Average Gallons per Day	S.S. 58,985 Oaklawn Avenue Cranston — 12" Tri-Crest Meter — Gallons per Month	S.S. 60,757 Purification Works Scituate — 12" Venturi Meter — Gallons per Month	Total Gallons per Month	Average Gallons per Day
October.....	10,065,000	3,024,000	13,089,000	422,226	4,869,000	15,928,000	20,797,000	670,871
November.....	9,321,000	2,046,750	11,367,750	378,925	4,199,250	16,688,000	20,887,250	696,242
December.....	8,739,750	2,073,000	10,812,750	348,798	4,620,750	20,528,000	25,148,750	811,250
January.....	10,947,000	2,706,750	13,653,750	440,444	6,266,250	15,482,000	21,748,250	701,556
February.....	9,524,250	2,583,750	12,108,000	432,429	5,148,000	14,139,000	19,287,000	688,821
March.....	8,865,000	2,930,250	11,795,250	380,492	5,547,750	16,750,000	22,297,750	719,282
April.....	9,291,000	2,517,000	11,808,000	393,600	5,397,750	12,886,000	18,283,750	609,458
May.....	8,372,250	2,592,750	10,965,000	353,710	5,713,500	20,954,000	26,667,500	860,242
June.....	9,411,750	2,955,750	12,367,500	412,250	6,915,750	20,890,000	27,805,750	926,858
July.....	8,158,500	2,443,500	10,602,000	342,000	6,520,500	22,655,000	29,175,500	941,145
August.....	10,381,500	3,117,000	13,498,500	435,435	7,995,000	20,778,000	28,773,000	928,161
September.....	7,169,250	4,167,000	11,336,250	377,875	5,826,750	16,993,000	22,819,750	760,658
For Year.....	110,246,250	33,157,500	143,403,750	392,887	69,020,250	214,671,000	283,691,250	777,236

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	2.78	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	2.82	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	3.65
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	7.55	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	8.90	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	9.98	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	9.15	8.70	9.07	8.62
1898.....	8.76	8.29	8.63	8.56	9.09	8.88	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	21.55
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	23.33	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

**TABLE 39**

**FUEL OIL CONSUMPTION**

**For Year Ended September 30, 1963**

1962-1963	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. 2	Gallons Used No. 2	Gallons Used No. 2	Gallons Used No. 2
October.....	2,525	186	458	519	103	0	1,216
November.....	5,193	309	41	1,616	322	125	2,413
December.....	7,306	517	26	2,165	703	275	3,686
January.....	5,454	428	27	2,686	722	190	4,053
February.....	5,354	468	0	2,178	668	360	3,674
March.....	5,540	284	0	2,178	450	204	3,116
April.....	2,937	82	171	1,147	232	0	1,632
May.....	1,716	152	589	598	25	0	1,364
June.....	59	66	1,146	224	0	0	1,436
July.....	400	23	997	177	0	0	1,197
August.....	355	68	978	131	0	0	1,177
September.....	1,347	39	690	517	0	0	1,246
<b>Totals.....</b>	<b>38,186</b>	<b>2,572</b>	<b>5,123</b>	<b>14,136</b>	<b>3,225</b>	<b>1,154</b>	<b>26,210</b>
			<b>53,121</b>				<b>91,307</b>

## TABLE 40

### FINANCIAL STATEMENT OF THE PROVIDENCE WATER SUPPLY BOARD

For the Year Ended September 30, 1963

#### REVENUE

Water Rents .....	\$2,947,872.00
Hydrant Rental .....	98,215.20
Electric Power .....	8,034.60
Setting Meters .....	5,083.50
Repairing Meters .....	2,530.46
Rents from Non-Operating Property.....	666.66
Repairs to Water Services.....	2,270.88
Repairs to Distribution Mains.....	6,230.02
Repairs to Hydrants .....	2,987.85
Repairs to Gates and Valves.....	1,142.52
Installation of New Fire Supplies.....	3,732.00
Installation of New Water Services.....	87,023.00
Installation of New Water Mains.....	114,464.53
Revolving Fund—Water Meters .....	8,953.16
Accrued Interest—Sale of Water Bonds.....	5,118.75
Sale of Scrap Iron, Brass, Lead, Etc.....	12,443.34
Sale of Pulpwood, Logs, and Miscellaneous Timber Products.....	3,228.78
Sale of Material .....	638.53
Sale of Abandoned Mains.....	2,997.09
Sundries .....	995.43
<b>Total Revenue .....</b>	<b>\$3,314,628.30</b>

#### DISBURSEMENTS

##### OPERATING EXPENSE:

Salaries .....	\$872,128.75
Services Other Than Personal.....	124,502.02
Materials and Supplies .....	263,288.90
Special Items .....	19,602.60
Capital Outlay .....	75,458.01
Other Structures and Improvements (Water Main Extensions).....	199,892.95
Taxes .....	397,812.94
Employees' Retirement System .....	75,296.00
Social Security F.O.A.S.I. ....	27,348.41
<b>Total Operating Expense .....</b>	<b>*\$2,055,330.58</b>
Interest on Bonds .....	355,000.00
Depreciation and Extension Fund.....	450,000.00
Payable to Sinking Fund.....	** 454,297.72
<b>Total Disbursements .....</b>	<b>\$3,314,628.30</b>

Gross Water Rents .....	\$3,033,060.56
Minus Refunds (Current Year) .....	85,128.42
Minus Refunds (Prior Year) .....	60.14
<b>Net Water Rents.....</b>	<b>\$2,947,872.00</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**  
**For the Year Ended September 30, 1963**

**ADMINISTRATIVE**

Salaries:

001 Officials .....	\$31,762.18	
Clerical—Chief Engineer's Office.....	4,385.07	
Clerical—Accounting .....	44,195.12	
Engineering .....	74,182.42	
Labor—General .....	10,940.56	
008 Sick Leave Payrolls.....	2,934.05	
009 Vacation Payrolls .....	7,524.46	
Total .....		\$175,223.86

Services Other Than Personal:

109 Fees Not Otherwise Classified.....	\$ 16.00	
111 Telephone and Telegraph.....	2,177.48	
112 Postage, Freight and Express.....	96.10	
115 Transportation of Persons—Conventions.....	58.25	
116 Transportation of Persons—Other.....	231.44	
117 Travel Subsistence—Conventions .....	164.40	
118 Travel Subsistence—Other .....	206.66	
121 Printing, Binding and Reproduction Services.....	2,570.98	
122 Advertising .....	24.44	
131 Light and Power.....	1,745.96	
141 Repairs—Office Machinery .....	329.68	
142 Repairs—Automobiles .....	542.80	
146 Repairs—Plant Equipment .....	13.00	
150 Repairs—Structures and Improvements.....	1,191.84	
151 Maintenance and Servicing.....	236.83	
181 Laundry and Cleaning.....	108.00	
183 Dues and Subscriptions.....	218.50	
199 Miscellaneous Services .....	9,940.16	
Total .....	\$19,872.60	
Outstanding Commitments .....	137.25	
Total—Services Other Than Personal.....		\$ 20,009.75

Materials and Supplies:

201 Stationery and Office Supplies.....	\$ 1,566.15	
211 Motor Fuel .....	998.59	
213 Tires and Tubes .....	202.59	
214 Repair Parts and Supplies—Trucks and Autos.....	82.99	
221 Repair Parts and Supplies—Office Machinery.....	116.00	
229 Repair Parts and Supplies—Other Equipment.....	23.75	
231 Medical, Chemical and Laboratory Supplies.....	1.81	
241 Fuel .....	511.81	
244 Housekeeping Supplies and Minor Equipment.....	132.29	
259 Other Agricultural, Horticultural and Landscaping Supplies.....	5.65	
266 Lumber and Hardware.....	13.89	
268 Plumbing and Electrical Supplies.....	42.16	
299 Miscellaneous Materials and Supplies.....	42.00	
Total .....	\$ 3,739.78	
Outstanding Commitments .....	234.73	
Total—Materials and Supplies.....		\$ 3,974.51

Special Items:

322 Bond Sale Expense.....	\$ 6,583.20	
350 Blue Cross and Physicians Service.....	2,475.70	
Total .....		\$ 9,058.90

**Capital Outlay:**

501 Office Furniture, Machinery and Equipment.....	\$ 1,005.30	
502 Books, Maps and Charts.....	69.50	
591 Equipment Not Otherwise Classified.....	2,750.00	
<b>Total</b> .....	<b>\$ 3,824.80</b>	
Outstanding Commitments .....	8,250.00	
<b>Total—Capital Outlay</b> .....		<b>\$ 12,074.80</b>
<b>Total—Administrative</b> .....		<b>\$ 220,341.82</b>

**SOURCE OF SUPPLY**

**Hydro Electric Station:**

**Salaries:**

001 Labor—Operation .....	\$ 9,737.28	
Repairs—Machinery and Equipment.....	132.60	
Care of Grounds.....	147.26	
<b>Total</b> .....		<b>\$ 10,017.14</b>

**Services Other Than Personal:**

102 Expert Consultant and Other Service Fees.....	\$ 15.00	
109 Fees Not Otherwise Classified.....	490.00	
111 Telephone and Telegraph.....	161.91	
146 Repairs—Plant Equipment .....	2,173.41	
150 Repairs—Structures and Improvements.....	2,997.00	
151 Maintenance and Servicing.....	215.80	
<b>Total</b> .....		<b>\$ 6,053.12</b>

**Materials and Supplies:**

201 Stationery and Office Supplies.....	\$ 443.39	
212 Lubricants .....	60.90	
222 Repair Parts and Supplies—Plant Equipment.....	25.98	
241 Fuel .....	286.72	
262 Cement, Plaster and Related Products.....	23.50	
268 Plumbing and Electrical Supplies.....	24.60	
272 Valves and Fittings.....	303.41	
273 Special Castings .....	6.75	
<b>Total</b> .....		<b>\$ 1,175.25</b>

**Water Purification Plant:**

**Salaries:**

001 Supervision .....	\$12,484.71	
Labor—Operation .....	46,676.88	
Technical .....	21,172.31	
Clerical .....	4,517.60	
Repairs—Structures and Improvements.....	219.98	
Repairs—Machinery and Equipment .....	821.74	
Repairs—Care of Grounds and Buildings.....	3,571.41	
<b>Total</b> .....		<b>\$ 89,464.63</b>

**Services Other Than Personal:**

102 Expert Consultant and Other Service Fees.....	\$ 15.00	
109 Fees Not Otherwise Classified.....	2,164.80	
111 Telephone and Telegraph.....	1,061.43	
112 Postage, Freight and Express.....	61.99	
115 Transportation of Persons—Conventions .....	46.62	
117 Travel Subsistence—Conventions .....	35.75	
121 Printing and Binding .....	508.42	
122 Advertising .....	55.09	
131 Heat, Light and Power (Gas).....	97.46	
141 Repairs—Office Machinery .....	62.76	
142 Repairs—Trucks and Autos .....	119.47	
146 Repairs—Plant Equipment .....	2,229.02	
149 Repairs—Other Equipment .....	14.70	

150	Repairs—Structures and Improvements .....	293.50	
151	Maintenance and Servicing .....	1,016.96	
181	Laundry and Cleaning .....	1,228.34	
183	Dues and Subscriptions .....	16.25	
199	Miscellaneous Services .....	221.65	
	<b>Total .....</b>		<b>\$ 9,249.21</b>

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 454.71	
202	Small Tools and Shop Supplies.....	396.24	
204	Wearing Apparel and Personal Supplies.....	77.97	
212	Lubricants .....	28.65	
213	Tires and Tubes.....	45.60	
214	Repair Parts and Supplies—Trucks and Autos.....	97.85	
222	Repair Parts and Supplies—Plant Equipment.....	941.73	
229	Repair Parts and Supplies—Other Equipment.....	63.00	
231	Ferric Sulphate .....	47,169.98	
231	Lime .....	18,278.18	
231	Chlorine .....	4,590.00	
231	Sodium Silicofluoride .....	18,713.60	
231	Miscellaneous Laboratory Supplies.....	1,234.43	
241	Fuel .....	3,318.05	
244	Housekeeping Supplies .....	288.55	
252	Seeds, Fertilizer, Trees and Shrubs.....	771.93	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	188.50	
262	Cement, Plaster and Related Products.....	25.00	
265	Fabricated Metal Products.....	60.00	
266	Lumber and Hardware .....	333.89	
267	Paint and Painters' Supplies.....	449.05	
268	Plumbing and Electrical Supplies.....	197.93	
271	Pipe .....	244.66	
272	Valves and Fittings .....	426.16	
	<b>Total .....</b>		<b>\$ 98,395.66</b>

Special Items:

302	Liability Insurance .....	\$ 124.00	
	<b>Total .....</b>		<b>\$ 124.00</b>

Capital Outlay:

502	Books, Maps and Charts.....	\$ 22.70	
541	Medical, Surgical and Laboratory Equipment.....	323.40	
561	Shop and Plant Equipment.....	214.62	
	<b>Total .....</b>		<b>\$ 560.72</b>

Scituate Reservoir:

Salaries:

001	Labor—Operation .....	\$ 4,672.15	
	Repairs—Care of Grounds.....	4,697.34	
	Repairs—Structures and Improvements.....	24.17	
	<b>Total .....</b>		<b>\$ 9,393.66</b>

Services Other Than Personal:

109	Fees Not Otherwise Classified.....	\$ 1.50	
111	Telephone and Telegraph.....	112.47	
142	Repairs—Trucks and Autos.....	212.45	
151	Maintenance and Servicing .....	102.00	
	<b>Total .....</b>		<b>\$ 428.42</b>

Materials and Supplies:

213	Tires and Tubes.....	\$ 153.50	
214	Repair Parts and Supplies—Trucks and Autos.....	87.71	
252	Seeds, Fertilizer, Trees and Shrubs.....	1,175.50	
267	Paint and Painters' Supplies.....	40.58	
	<b>Total .....</b>		<b>\$ 1,457.29</b>

Capital Outlay:

511	Automobiles .....	\$ 1,359.00	
	Total .....		\$ 1,359.00

Other Reservoirs:

Salaries:

001	Labor—Operation .....	\$ 4,611.05	
	Repairs—Care of Grounds.....	937.86	
	Repairs—Structures and Improvements.....	28.96	
	Total .....		\$ 5,577.87

Services Other Than Personal:

109	Fees Not Otherwise Classified.....	\$ 1.50	
142	Repairs—Trucks and Autos.....	111.04	
	Total .....		\$ 112.54

Materials and Supplies:

213	Tires and Tubes .....	\$ 178.26	
214	Repair Parts and Supplies—Trucks and Autos.....	33.29	
	Total .....		\$ 211.55

Capital Outlay:

511	Automobiles .....	\$ 1,359.00	
	Total .....		\$ 1,359.00

Forestry and Maintenance:

Salaries:

001	Supervision .....	\$ 6,050.10	
	Labor—Operation .....	2,398.02	
	Repairs—Care of Grounds.....	12,416.86	
	Repairs—Structures and Improvements.....	10.38	
	Repairs—Machinery and Equipment.....	28.00	
	Total .....		\$ 20,903.36

Services Other Than Personal:

102	Expert Consultant and Other Service Fees.....	\$ 10.00	
109	Fees Not Otherwise Classified.....	1.50	
111	Telephone and Telegraph .....	162.29	
115	Transportation of Persons—Conventions.....	14.90	
117	Travel Subsistence—Conventions .....	40.48	
142	Repairs—Trucks and Autos .....	480.29	
143	Repairs—Construction and Other Automotive Equipment.....	18.00	
146	Repairs—Plant Equipment .....	50.50	
149	Repairs—Other Equipment .....	60.24	
150	Repairs—Structures and Improvements.....	88.53	
151	Maintenance and Servicing.....	83.50	
162	Rental—Construction Equipment .....	88.00	
169	Rentals Not Otherwise Classified.....	7.00	
183	Dues and Subscriptions.....	9.00	
199	Miscellaneous Services .....	30.00	
	Total .....		\$ 1,144.23

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 73.76	
202	Small Tools and Shop Supplies.....	506.22	
204	Wearing Apparel and Personal Supplies.....	194.04	
212	Lubricants .....	99.56	
213	Tires and Tubes.....	273.84	
214	Repair Parts and Supplies—Trucks and Autos.....	612.52	
229	Repair Parts and Supplies—Other Equipment.....	110.70	
241	Fuel .....	1,285.76	

244	Housekeeping Supplies and Minor Equipment.....	32.65	
252	Seeds, Fertilizer, Trees and Shrubs.....	1,147.84	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	1,548.78	
265	Lumber and Hardware.....	159.66	
267	Paint and Painters' Supplies.....	97.83	
268	Plumbing and Electrical Supplies.....	3.53	
299	Miscellaneous Materials and Supplies.....	19.99	
	<b>Total</b> .....		\$ 6,166.08
<b>Capital Outlay:</b>			
502	Books, Maps and Charts.....	\$ 126.00	
512	Trucks and Tractors.....	2,285.00	
571	Agricultural and Landscaping Equipment.....	2,560.84	
	<b>Total</b> .....		\$ 4,971.84
<b>General:</b>			
<b>Salaries:</b>			
001	Clerical .....	\$ 1,646.99	
	Labor—Operation .....	8,967.57	
	Repairs—Machinery and Equipment.....	482.28	
	Repairs—Care of Grounds.....	14,325.55	
	Repairs—Gate Valves.....	216.50	
	Repairs—Care of Grounds—Rockland Cemetery.....	1,475.77	
	Special Police Detail Payroll.....	125.00	
008	Sick Leave Payrolls.....	4,189.46	
009	Vacation Payrolls.....	6,568.08	
025	Injured Employees' Payrolls.....	28.00	
	<b>Total</b> .....		\$ 38,027.30
<b>Services Other Than Personal:</b>			
106	Examining Titles .....	\$ 260.00	
109	Fees Not Otherwise Classified.....	32.00	
121	Printing and Binding .....	511.12	
122	Advertising .....	378.88	
142	Repairs—Trucks and Autos.....	918.83	
143	Repairs—Construction and Other Automotive Equipment.....	9.58	
151	Maintenance and Servicing.....	2,136.00	
159	Repairs—Other Structures.....	18.00	
162	Rental of Equipment.....	82.50	
199	Miscellaneous Services .....		
	<b>Total</b> .....		\$ 4,554.52
<b>Materials and Supplies:</b>			
201	Stationery and Office Supplies.....	\$ 230.46	
202	Small Tools and Shop Supplies.....	98.39	
211	Motor Fuel .....	2,203.00	
212	Lubricants .....	56.40	
214	Repair Parts and Supplies—Trucks and Autos.....	148.25	
244	Housekeeping Supplies and Minor Equipment.....	275.15	
252	Seeds, Fertilizer, Trees and Shrubs—Rockland Cemetery.....	683.70	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	22.66	
265	Fabricated Metal Products.....	263.62	
266	Lumber and Hardware .....	62.04	
267	Paint and Painters' Supplies.....	47.97	
299	Miscellaneous Materials and Supplies.....	341.80	
	<b>Total</b> .....		\$ 4,432.44
<b>Special Items:</b>			
350	Blue Cross and Physicians Service.....	\$ 2,093.50	
361	Expenses for Various Ceremonies.....	284.95	
	<b>Total</b> .....		\$ 2,378.45
	Outstanding Commitments—Services Other Than Personal.....		219.77
	Outstanding Commitments—Materials and Supplies.....		401.85
	Outstanding Commitments—Capital Outlay .....		30,928.90
	<b>Total—Source of Supply</b> .....		\$ 349,068.40

## TRANSMISSION AND DISTRIBUTION

### Pumping Station:

#### Salaries:

001	Labor—Operation .....	\$20,308.09	
	Total .....		\$ 20,308.09

#### Services Other Than Personal:

109	Fees Not Otherwise Classified.....	\$ 99.20	
111	Telephone and Telegraph.....	640.48	
131	Light and Power.....	20,773.75	
146	Repairs—Plant Equipment .....	206.54	
151	Maintenance and Servicing.....	419.63	
159	Repairs—Other Structures .....	75.00	
181	Laundry and Cleaning.....	48.00	
199	Miscellaneous Services .....	131.00	
	Total .....		\$ 22,393.60

#### Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 128.65	
211	Motor Fuel .....	430.96	
212	Lubricants .....	34.62	
214	Repair Parts and Supplies—Automotive or Construction Equip- ment .....	74.84	
222	Repair Parts and Supplies—Plant Equipment.....	386.97	
241	Fuel .....	491.48	
252	Seeds, Fertilizer, Trees and Shrubs.....	428.60	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	4.69	
265	Fabricated Metal Products.....	17.22	
266	Lumber and Hardware.....	64.71	
268	Plumbing and Electrical Supplies.....	27.30	
271	Pipe .....	51.72	
272	Valves and Fittings.....	257.49	
	Total .....		\$ 2,399.25

### Pipe Lines:

#### Salaries:

001	Supervision .....	\$ 8,796.50	
	Clerical .....	6,539.35	
	Labor—Operation .....	122,340.59	
	Repairs—Trucks and Autos.....	7,853.90	
	Repairs—Care of Grounds and Buildings.....	7,773.82	
	Repairs—Transmission Mains .....	2,115.87	
	Repairs—Distribution Mains .....	15,227.31	
	Repairs—Gates and Valves.....	18,724.55	
	Repairs—Hydrants .....	12,098.59	
	Repairs—Services .....	12,087.08	
	New Work—Distribution Mains.....	2,768.48	
	New Work—Gates and Valves.....	10,749.94	
	New Work—Hydrants .....	23,047.99	
	New Work—Services .....	43,035.94	
	New Work—Meters (Emergency).....	1,769.15	
	Retirement Work—Distribution Mains.....	979.23	
	Retirement Work—Gates and Valves.....	409.32	
	Retirement Work—Hydrants .....	559.63	
	Retirement Work—Services .....	2,851.95	
	Total .....		\$299,729.19

#### Services Other Than Personal:

102	Expert Consultant and Other Service Fees.....	\$ 117.00	
109	Fees Not Otherwise Classified.....	52.70	
111	Telephone and Telegraph.....	435.62	
112	Postage, Freight and Express.....	34.66	
121	Printing and Binding.....	42.73	
131	Light and Power.....	398.55	
141	Repairs—Office Machinery .....	27.02	

142	Repairs—Trucks and Autos.....	2,101.99	
143	Repairs—Construction and Other Automotive Equipment.....	1,744.58	
146	Repairs—Plant Equipment .....	49.50	
150	Repairs—Buildings .....	286.07	
151	Maintenance and Servicing.....	573.32	
153	Repairs—Street Openings .....	15,298.08	
162	Rental—Automotive and Construction Equipment.....	541.76	
163	Rental—Other Equipment .....	821.20	
165	Rental of Land.....	273.00	
181	Laundry and Cleaning.....	118.91	
199	Miscellaneous Services.....	875.44	
	<b>Total .....</b>		<b>\$ 23,761.53</b>

**Materials and Supplies:**

201	Stationery and Office Supplies.....	\$ 600.68	
202	Small Tools and Shop Supplies.....	2,656.96	
204	Wearing Apparel and Personal Supplies.....	246.80	
211	Motor Fuel .....	5,644.13	
212	Lubricants .....	440.31	
213	Tires and Tubes.....	785.29	
214	Repair Parts and Supplies—Trucks and Autos.....	4,155.24	
229	Repair Parts and Supplies—Other Equipment.....	217.00	
231	Medical, Chemical and Laboratory Supplies.....	353.79	
232	Pharmaceuticals .....	9.75	
241	Fuel—Kerosene Oil .....	298.61	
244	Housekeeping Supplies and Minor Equipment.....	341.56	
252	Seeds, Fertilizer, Trees and Shrubs.....	561.12	
259	Other Agricultural, Horticultural and Landscaping Supplies.....	21.83	
261	Gravel, Sand and Stone.....	415.46	
262	Cement, Plaster and Related Products.....	661.99	
264	Fabricated Cement Products.....	117.30	
265	Fabricated Metal Products.....	49.00	
266	Lumber and Hardware.....	896.49	
267	Paint and Painters' Supplies.....	127.05	
268	Plumbing and Electrical Supplies.....	5,354.88	
269	Construction and Maintenance Materials and Supplies Not Other- wise Classified .....	5.00	
271	Pipe—Cast Iron .....	1,679.69	
271	Pipe—Service .....	6,614.61	
271	Pipe—Asbestos Cement .....	1,843.77	
271	Pipe—Other .....	60.15	
272	Hydrants, Valves and Fittings.....	72,764.49	
272	Gates and Valves.....	16,829.04	
273	Special Castings .....	63.20	
279	Water System Materials and Supplies Not Otherwise Classified.....	2.90	
299	Miscellaneous Materials and Supplies.....	195.00	
	<b>Total .....</b>		<b>\$124,003.09</b>

**Special Items:**

331	Payment of Claims and Damages.....	\$ 357.00	
	<b>Total .....</b>		<b>\$ 357.00</b>

**Capital Outlay:**

511	Automobiles .....	\$ 1,345.00	
512	Trucks and Tractors.....	12,547.00	
521	Construction and Engineering Equipment.....	1,385.00	
	<b>Total .....</b>		<b>\$ 15,277.00</b>

**Other Structures and Improvements:**

721	New Main Extensions.....	\$199,892.95	
	<b>Total .....</b>		<b>\$199,892.95</b>

**Distribution Reservoirs:**

**Services Other Than Personal:**

111	Telephone and Telegraph.....	\$ 120.00	
131	Light and Power.....	26.35	
146	Repairs—Plant Equipment .....	334.10	
	<b>Total .....</b>		<b>\$ 480.45</b>

**Materials and Supplies:**

201	Stationery and Office Supplies.....	\$	71.95	
214	Repair Parts and Supplies—Automotive or Construction Equip- ment .....		54.00	
231	Medical, Chemical and Laboratory Supplies.....		18.00	
252	Seeds, Fertilizer, Trees and Shrubs.....		892.23	
259	Other Agricultural, Horticultural and Landscaping Supplies.....		17.60	
265	Fabricated Metal Products.....		183.17	
266	Lumber and Hardware.....		34.55	
272	Valves and Fittings.....		95.00	
299	Miscellaneous Materials and Supplies.....		142.52	
	<b>Total .....</b>			\$ 1,509.02

**General:**

**Salaries:**

001	Labor—Operation .....	\$	260.81	
	Repairs—Structures and Improvements.....		582.40	
	Repairs—Trucks and Autos.....		1,967.77	
008	Sick Leave Payrolls.....		7,830.06	
009	Vacation Payrolls .....		13,365.00	
025	Injured Employees' Payrolls.....		2,012.04	
	<b>Total .....</b>			\$ 26,017.58

**Services Other Than Personal:**

112	Postage, Freight and Express.....	\$	343.40	
162	Rental of Automotive Equipment.....		90.00	
181	Laundry and Cleaning.....		108.00	
197	Shops Revolving Fund.....		106.49	
199	Miscellaneous Services .....		36.00	
	<b>Total .....</b>			\$ 683.89

**Materials and Supplies:**

241	Fuel .....	\$	754.50	
244	Housekeeping Supplies and Minor Equipment.....		85.05	
	<b>Total .....</b>			\$ 839.55

**Special Items:**

350	Blue Cross and Physicians Service.....	\$	4,381.90	
361	Expenses for Various Ceremonies.....		330.00	
	<b>Total .....</b>			\$ 4,711.90
	Outstanding Commitments—Services Other Than Personal.....			203.92
	Outstanding Commitments—Materials and Supplies.....			2,110.36

**Total—Transmission and Distribution.....** \$ 744,708.37

**METERING**

**Salaries:**

001	Supervision .....	\$	14,480.26	
	Clerical .....		49,938.08	
	Labor—Operation .....		40,962.79	
	Repairing Meters .....		10,645.13	
	Removing and Setting Meters.....		18,252.52	
	Testing Meters .....		4,408.23	
	Inspection—Services .....		4,018.92	
	General—Operation .....		16,689.41	
008	Sick Leave Payrolls.....		9,586.82	
009	Vacation Payrolls .....		8,483.91	
	<b>Total .....</b>			\$177,466.07

Services Other Than Personal:

102	Expert Consultant and Other Service Fees.....	\$	15.00	
109	Fees Not Otherwise Classified.....		31.50	
111	Telephone and Telegraph.....		1,960.43	
112	Postage, Freight and Express.....		1,180.90	
116	Transportation of Persons—Carfares.....		976.15	
121	Printing and Binding.....		42.00	
131	Light and Power.....		1,700.00	
141	Repairs—Office Machinery, Furniture and Furnishings.....		1,312.83	
142	Repairs—Trucks and Autos.....		736.81	
146	Repairs—Plant Equipment.....		24.03	
150	Repairs—Structures and Improvements.....		35.00	
151	Maintenance and Servicing.....		493.96	
181	Laundry and Cleaning.....		108.00	
199	Miscellaneous Services.....		26,550.46	
	<b>Total</b> .....			\$ 35,177.07

Materials and Supplies:

201	Stationery and Office Supplies.....	\$	3,240.24	
202	Small Tools and Shop Supplies.....		438.08	
203	Educational and Recreational Supplies.....		19.60	
204	Wearing Apparel and Personal Supplies.....		340.62	
211	Motor Fuel.....		1,610.41	
212	Lubricants.....		131.71	
213	Tires and Tubes.....		285.27	
214	Repair Parts and Supplies—Trucks and Autos.....		502.77	
221	Repair Parts and Supplies—Office Machinery.....		97.50	
222	Repair Parts and Supplies—Machinery and Equipment.....		29.00	
231	Medical, Chemical and Laboratory Supplies.....		80.63	
241	Fuel.....		604.90	
244	Housekeeping Supplies and Minor Equipment.....		299.98	
252	Seeds, Fertilizer, Trees and Shrubs.....		37.00	
259	Other Agricultural, Horticultural and Landscaping Supplies.....		58.84	
266	Lumber and Hardware.....		266.37	
268	Plumbing and Electrical Supplies.....		367.19	
272	Valves and Fittings.....		306.44	
274	Meter Parts.....		4,409.04	
299	Miscellaneous Materials and Supplies.....		221.63	
	<b>Total</b> .....			\$ 13,347.22

Special Items:

350	Blue Cross and Physicians Service.....	\$	2,972.35	
	<b>Total</b> .....			\$ 2,972.35

Capital Outlay:

501	Office Furniture, Machinery and Equipment.....	\$	540.75	
512	Trucks and Tractors.....		8,385.00	
	<b>Total</b> .....			\$ 8,926.75
	Outstanding Commitments—Materials and Supplies.....			2,835.18
	<b>Total—Metering</b> .....			\$ 240,754.64
	Taxes.....			397,912.94
	Employees' Retirement System.....			75,296.00
	Social Security F.O.A.S.I.....			27,348.41
	<b>TOTAL OPERATING EXPENSE</b> .....			\$2,055,330.58

**TABLE 42**  
**STATEMENT OF REVENUE — ESTIMATED AND ACTUAL**  
**For the Year Ended September 30, 1963**

Account	Estimated Revenue	Actual Revenue
Water Rents .....	\$2,760,000.00	\$2,947,872.00
Hydrant Rental .....	93,000.00	98,215.20
Electricity .....	26,000.00	8,034.60
Stores Account (Meters) .....	6,500.00	8,953.16
Repairing and Setting Meters.....	6,000.00	7,613.96
Fire Supplies and Miscellaneous Repairs.....	5,700.00	16,363.27
New Service Installations.....	72,000.00	87,023.00
New Main Extensions.....	123,000.00	114,464.53
Rentals .....	500.00	666.66
Other Miscellaneous Receipts.....	11,500.00	25,421.92
<b>Total .....</b>	<b>\$3,104,200.00</b>	<b>\$3,314,628.30</b>

**TABLE 43**  
**SUMMARY OF ANNUAL WATER WORKS REVENUES 1930-1963**

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	313,752.87	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

**TABLE 44**  
**STATEMENT OF WATER WORKS DEPRECIATION AND EXTENSION FUND**

	Investment	Cash	Due from Other Funds	Total
Balance September 30, 1962.....	\$300,000.00	\$181,471.24	\$350,000.00	\$831,471.24
Increase During Year Ended September 30, 1963.....	297,815.00	462,345.50	.....	.....
Disbursements During Year Ended September 30, 1963	100,000.00	637,715.00	350,000.00	.....
Accounts Receivable Year Ended September 30, 1963.....	.....	.....	450,000.00	.....
Balance September 30, 1963.....	\$497,815.00	\$ 6,101.74	\$450,000.00	\$953,916.74

**TABLE 45**  
**STATEMENT OF WATER SUPPLY BOARD BONDS OUTSTANDING AND**  
**SINKING FUND REQUIREMENTS ON A 3% BASIS**  
**As of September 30, 1963**

Bonds Payable from Sinking Fund	Rate of Interest %	Year of Issue	Year of Maturity	Issued	Bonds Outstanding	Sinking Fund Requirements On a 3% Basis
Water Supply .....	4¼	1924	1964	2,000,000.00	\$2,000,000.00	\$1,954,315.60
Water Supply .....	4	1924	1964	1,500,000.00	1,500,000.00	1,417,103.20
Water Supply .....	4	1925	1965	2,500,000.00	2,500,000.00	2,310,245.09
Water Supply .....	4	1928	1968	1,500,000.00	1,500,000.00	1,229,663.22
Total Water Supply Debt and Sinking Fund Requirements.....					\$7,500,000.00	\$6,911,327.11
Sinking Fund Assets Allocated to Water Supply Debt per City Controller's Report on Sinking Fund Sep- tember 30, 1963 (Includes \$454,297.72 *Water Operating Balance for Year Ended September 30, 1963 plus Prior Year Adjustments of \$580.94 or a total of \$454,878.66).....						\$7,612,340.19
Amount of Surplus of Requirements on 3% Basis.....						\$ 701,013.08

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

**TABLE 46**  
**STATEMENT OF SERIAL BONDS OUTSTANDING**  
**September 30, 1963**

Description	Rate of Interest %	Year of Issue	Year of Maturity	Issued	Bonds Outstanding
Additions, Alterations and Improvements to the Water Purification Works.....	3¼	1962	1992	\$1,100,000.00	\$1,100,000.00
New 40-Million Gallon Distribution Reservoir.....	3¼	1962	1992	2,050,000.00	2,050,000.00
Total Serial Bonds.....				\$3,150,000.00	\$3,150,000.00

**TABLE 47**  
**A SUMMARY OF INVENTORIES OF PERSONAL PROPERTY**  
**At September 30, 1963**

REMOVABLE PROPERTY INVENTORY.....		\$150,157.16
SOURCE OF SUPPLY:		
Hydro-Electric Station .....	\$ 7,538.72	
Purification Works .....	37,911.82	
Laboratory .....	2,405.42	
General .....	4,496.69	
TRANSMISSION AND DISTRIBUTION:		
Pipe Lines .....		
Pumping Stations .....	\$119,193.80	
Garage .....	290.98	
METERING .....	7,094.74	126,579.52
SUPPLIES .....		46,398.68
Total Personal Property Inventory.....		5,102.88
		\$380,590.89

**TABLE 48**  
**STATEMENT OF STORES REVOLVING FUND**  
**For the Year Ended September 30, 1963**

Cash Balance September 30, 1962.....		\$10,000.00
Outstanding Commitments September 30, 1962.....		12,632.70
Receipts—October 1, 1962 to September 30, 1963.....		73,238.27
Total Available .....		\$95,870.97
Disbursements September 30, 1963.....		
Outstanding Commitments September 30, 1963.....	\$44,007.57	
Transferred as Income to General Fund.....	32,910.24	
Total Disbursements .....	8,953.16	
Cash Balance September 30, 1963.....		85,870.97
		\$10,000.00

**TABLE 49**  
**STATEMENT OF THE MISCELLANEOUS WATER MAIN EXTENSIONS ACCOUNT**  
**For the Year Ended September 30, 1963**

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.....		15,000.00
Transferred from Depreciation and Extension Fund—Sept. 13, 1963.....		60,000.00
Total Available .....		\$310,000.00
Disbursements September 30, 1963.....		
Outstanding Commitments September 30, 1963.....	\$289,614.89	
Total Disbursements .....	Nil	
Cash Balance September 30, 1963.....		289,614.89
		\$ 20,385.11

**TABLE 50****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, 1963.....	\$131,884.19	
Outstanding Commitments September 30, 1963.....	Nil	
Total Disbursements .....		<u>131,884.19</u>
Cash Balance September 30, 1963.....		<u>\$ 33,115.81</u>

**TABLE 51****SPECIAL VALVE INSERTION ACCOUNT — WEBSTER AVENUE**

Transferred from the Depreciation and Extension Fund—March 14, 1962.....		\$75,000.00
Disbursements September 30, 1963.....	\$66,446.28	
Outstanding Commitments September 30, 1963.....	Nil	
Total Disbursements .....		<u>66,446.28</u>
Cash Balance September 30, 1963.....		<u>\$ 8,553.72</u>

**TABLE 52****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 Bond Issue (Chapter 102, P. L. of R. I. 1959—Reforestation Garage) Approved May 27, 1959—Acc't. 3-92 .....		300,000.00
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
Total Available .....		<u>\$2,074,003.66</u>
Disbursements—September 30, 1963—Acc't. 3-91.....	\$1,062,662.03	
Outstanding Commitments—September 30, 1963—Acc't. 3-91.....	38,277.00	
Disbursements—September 30, 1963—Acc't. 3-92.....	272,549.67	
Outstanding Commitments—September 30, 1963—Acc't. 3-92.....	4,195.00	
Disbursements—September 30, 1963—Acc't. 3-93.....	670,000.00	
Outstanding Commitments—September 30, 1963—Acc't. 3-93.....	Nil	
Total Disbursements .....		<u>2,047,683.70</u>
Unexpended Balance of Authorized Bond Issue.....		<u>\$ 26,319.96</u>

**TABLE 53**

**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
<b>Total Available</b> .....		<b>\$2,107,640.38</b>
Disbursements—September 30, 1963.....	\$2,079,067.00	
Outstanding Commitments—September 30, 1963.....	7,323.40	
<b>Total Disbursements</b> .....		<b>2,086,390.40</b>
Unexpended Balance of Authorized Bond Issue.....		\$ 21,249.98

**TABLE 54**

**LAND PURCHASE AT BARDEN RESERVOIR**

Transferred from Depreciation and Extension Fund—February 23, 1961.....		\$17,000.00
Disbursements—(Purchase of John Nemezcuk Property).....	\$16,000.00	
Transferred to Depreciation and Extension Fund—January 24, 1963.....	1,000.00	
<b>Total Disbursements</b> .....		<b>17,000.00</b>
Cash Balance September 30, 1963 (Account Closed).....		Nil

**TABLE 55**

**STATEMENT — PITOMETER SURVEY ACCOUNT**

Transferred from Depreciation and Extension Fund March 14, 1961.....		\$15,000.00
Disbursements—September 30, 1962.....	\$14,992.14	
Transferred to Depreciation and Extension Fund—January 24, 1963.....	7.86	
<b>Total Disbursements</b> .....		<b>15,000.00</b>
Cash Balance September 30, 1963 (Account Closed).....		Nil

**TABLE 56**

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

Transferred from Depreciation and Extension Fund—June 19, 1963.....		\$30,000.00
Disbursements—September 30, 1963.....	\$23,183.49	
Outstanding Commitments—September 30, 1963.....	384.00	
<b>Total Disbursements</b> .....		<b>23,567.49</b>
Cash Balance September 30, 1963.....		\$ 6,432.51

**TABLE 57**

**TAXES PAID TO VARIOUS CITIES AND TOWNS  
(October 1, 1962 to September 30, 1963)**

Location of Property	Land Area (Acres)	ASSESSED VALUATIONS			TAX	
		Land	Buildings and Improvements	Total	Rate per \$100	Amount Paid
City of Warwick.....	0.06	\$ 160.00	0	\$ 160.00	\$2.86	\$ 4.58
City of Cranston.....	109.87	28,220.00	\$ 942,340.00	970,560.00	3.40	32,999.04
Town of Foster.....	1,994.28	164,400.00	3,000.00	167,400.00	3.25	5,440.50
Town of Glocester.....	73.30	14,700.00	0	14,700.00	3.42	502.74
Town of Johnston.....	103.13	.....	.....	364,100.00	2.90	10,558.90
Town of North Providence.....	8.58	30,900.00	185,100.00	216,000.00	3.20	6,912.00
Town of Scituate.....	13,175.76	890,000.00	7,410,000.00*	8,300,000.00*	.....	341,337.50**
<b>Total Real Estate.....</b>	<b>15,464.98</b>	<b>.....</b>	<b>.....</b>	<b>\$10,032,920.00</b>	<b>.....</b>	<b>\$397,755.26†</b>

\*Includes \$10,000.00 Tangible Personal.

\*\*Three equal payments of \$85,075.00 @ \$4.10 per \$100 and one payment of \$86,112.50 @ \$4.15 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.

**TABLE 58**  
**SUMMARY OF STATISTICS**  
**PROVIDENCE WATER SUPPLY BOARD**  
**FOR THE YEAR ENDED SEPTEMBER 30, 1963**

PROVIDENCE* (City or Town)	PROVIDENCE (County)	RHODE ISLAND (State)
<b>GENERAL STATISTICS</b>		
Estimated population of Providence (1963)		211,797
Estimated population supplied in suburbs (1963)		176,444
Total population supplied		387,241
Date of construction		1870-76; 1915-28; 1935; 1938-40; 1954
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		83.1% by gravity; 16.9% by pumping

**STATISTICS OF CONSUMPTION OF WATER**

1. Estimated population supplied	387,241
2. Total raw water influent for the year, gallons	18,530,516,000
3. Average daily raw water influent, gallons	50,769,000
4. Raw water consumption per capita, gallons daily	131.1
5. Total consumption for the year, gallons	**17,488,789,000
6. Total registration on customers' meters, gallons	16,885,774,750
7. Percentage of consumption accounted for on customers' meters	93.41%
8. Average daily consumption, gallons	47,914,000
9. Per capita consumption, gallons daily	123.7
10. Gallons per day to each tap	779
11. Cost of supplying water, per million gallons, based on operating and maintenance expense	\$90.00
12. Cost of supplying water, per million gallons, based on operating and maintenance expense plus fixed charges	\$136.03

**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	†17,665,255,000
6. Average quantity filtered per day, gallons	48,398,000
7. Total filtered water delivered to the distribution system during the year, gallons	17,532,490,000

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

\*\*Does not include 41,391,000 gallons used in filling Neutaconkanut Reservoir following completion of repairs to float valve.

†Includes 41,391,000 gallons used for operations at Neutaconkanut Reservoir.

**TABLE 58—Continued**  
**SUMMARY OF STATISTICS**  
**PROVIDENCE WATER SUPPLY BOARD**  
**FOR THE YEAR ENDED SEPTEMBER 30, 1963**

**STATISTICS RELATING TO DISTRIBUTING SYSTEM MAINS‡**

1. Kind of pipe	Asbestos-Cement, Cast Iron, Steel and Concrete
2. Sizes	From 6 to 66 inches
3. Installed	53,290.87 feet
4. Removed	34,372.99 feet
5. Net increase	18,917.88 feet
6. Total now in use	767.15 miles
7. Number of leaks per mile	0.07
8. Length of pipes less than 6 inches in diameter	0
9. Number of hydrants installed	461
10. Number removed	417
11. Net increase	44
12. Number of hydrants now in use	4,543
13. Number of stop gates installed	*193
14. Number removed	*150
15. Net increase	*43
16. Number of stop gates now in use	*10,641
17. Number of stop gates smaller than 6 inches	0
18. Range of pressure on mains	14 to 95 pounds

**HIGH PRESSURE FIRE SERVICE**

Kind of pipe	Cast Iron
Sizes	6, 8, 12, 16 and 24 inches
Installed	2,071.06 feet
Removed	2,131.56 feet
Net decrease	60.50 feet
Total now in use	12.86 miles
Number of hydrants installed	23
Number removed	29
Net decrease	6
Number of hydrants now in use	155
Number of blow-offs	0
Range of pressure on mains	94 to 130 pounds

**SERVICES**

19. Kind of pipe	Lead, Copper and Cast Iron
20. Size	½ inch to 30 inches
21. Number of service taps installed	907
22. Number removed	739
23. Net increase	168
24. Number of services now in use	61,527
25. Number of meters installed	1,821
26. Number removed or condemned	1,443
27. Net increase	378
28. Number of meters now in use	61,039
29. Percentage of services metered	99.9

‡Not including high pressure fire service.  
\*Includes high pressure fire service.