

THE CITY OF PROVIDENCE

WATER SUPPLY BOARD

JOHN A. DOHERTY, CHAIRMAN

EARL H. ASHLEY

UGO RICCIO

JOHN J. TIERNEY

~~XXXXXXXXXXXXXXXXXXXX~~ EX-OFFICIO

David R. McGovern,

552 ACADEMY AVENUE

PROVIDENCE 8, R. I.

PHILIP J. HOLTON, JR.

CHIEF ENGINEER

WILLIAM I. McDONALD

DEPUTY CHIEF ENGINEER

JOHN T. WALSH

LEGAL ADVISOR

JOHN J. DEARY

SECRETARY

February 10, 1961

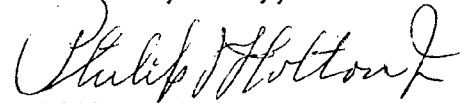
Mr. D. Everett Whelan
City Clerk
City Hall
Providence 3, R. I.

Dear Mr. Whelan:

At the meeting of the Water Supply Board held today, the Annual Report for the year ending September 30, 1960 was approved.

It is requested that this report be placed on the docket for the meeting of the City Council on Thursday, February 16.

Yours very truly,



Philip J. Holton, Jr.
Chief Engineer

kam

THE CITY OF PROVIDENCE

WATER SUPPLY BOARD

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~~MICHAEL S. COOPER, EX-OFFICIO~~

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February 10, 1961


Mr. D. Everett Whelan
City Clerk
City Hall
Providence, Rhode Island

Dear Mr. Whelan:

I am enclosing copy of the Annual Report of the Water Supply Board for the fiscal year ended September 30, 1960, which has been signed by John A. Doherty, Chairman of the Board.

Thirty copies are being forwarded to your office for presentation to the members of the City Council at the next meeting on February 16.

Yours very truly,


Philip J. Holton, Jr.
Chief Engineer

kam

Enclosure

163

CITY DOCUMENT



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

For the Year Ended September 30, 1960

CITY DOCUMENT

ANNUAL REPORT
OF THE
WATER SUPPLY BOARD
OF THE
CITY OF PROVIDENCE
RHODE ISLAND

For the Year Ended September 30, 1960

IN CITY COUNCIL

FEB 16 1961

READ:

WHEREUPON IT IS ORDERED THAT
THE SAME BE RECEIVED.



W. Everett Libby
CLERK

REPORT

ADMINISTRATIVE OFFICE
WATER SUPPLY BOARD
CITY OF PROVIDENCE
OCTOBER 1, 1960

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 twentieth annual report of the Water Supply Board for the year ended September 30, 1960.

On January 4, 1960 Ugo Riccio was reappointed a member of the Board for the ensuing term ending on the first Monday in January 1964.

At the re-organization meeting held on January 11, 1960, John A. Doherty was reelected 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

MICHAEL N. CARDARELLI, *Ex-Officio*

John A. Doherty
Chairman

REPORT OF THE CHIEF ENGINEER

Providence, R. I.
October 1, 1960

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, 1960.

Competitive bids for the construction of the 40 million gallon underground concrete Aqueduct Reservoir for low service distribution storage were received by the Board of Contract and Supply on January 5, with a total of 13 contractors submitting proposals for this project. The total bid prices ranged from a low of \$1,667,110.65 to a high of \$2,440,179.50, with the M. A. Gammino Construction Company of Providence, the lowest bidder, receiving the contract award. Work began on this contract on February 16 and progressed rather slowly in the early stages due to the requirements for extensive sub drainage construction, but towards the end of the fiscal year the work began to progress more satisfactorily with approximately 23 per cent completion on September 30. This facility which is expected to be placed in service near the end of the 1961 calendar year, will increase the present distribution storage by 79 per cent for a total of 90.52 million gallons, which is slightly in excess of two days of average consumption. The design features of this project together with the site location, will permit the future construction of an additional 40 million gallon storage unit to further enable the distribution system to supply peak demands and fire protection loads without serious pressure deficiencies. The project was designed by Charles A. Maguire and Associates, Consulting Engineers of Providence and is being financed on a bond

issue approved by the General Assembly of the State of Rhode Island and the voters of the City of Providence.

Bids were received by the Board of Contract and Supply on May 10, 1960 for the construction of the second major project of Additions, Alterations and Improvements to the Water Purification Works in Scituate. This project is part of the Master Plan that will provide an orderly basis for all future improvements and developments at the Water Purification Works. A total of six bid proposals were received, ranging in total bid prices from a low of \$1,804,928.00 to a high of \$2,075,920.00. A contract award was made to the Gilbane Building Company of Providence in the amount of \$1,826,337.00 and work began on this undertaking on June 30, 1960.

The first phase covers the construction of a Central Operations and Control Building that will contain three ferric sulphate feeders with dissolving tanks capable of treating 135 million gallons daily at a dosage of 1.75 grains per gallon. Each machine will handle 700 pounds of chemical each hour. Two machines will be required to meet peak demands and the third will be an emergency unit in case of a breakdown or repairs.

In this same building will be located three combination lime feeders and slakers, each machine being designed to handle the same volume of material as the ferric feeders. Here again, two machines will operate to meet peak demands and the third will be a standby unit in case of breakdown or repairs.

Located on this same floor will be two sodium silicofluoride feeders with each unit capable of meeting the maximum plant demand at the top permissible dosage of 1.20 parts per million. The second unit will provide 100% standby service in case of emergencies.

Two gas feed chlorinators will be located in a separate room next to the fluoride feeders. One of the two units will be capable of handling a dosage of 1.75 parts per million for the maximum plant output.

A new Electric Power Center is to be installed adjacent to the Central Control Board that will provide sufficient electrical capacity for the next thirty years. The center is designed to meet the increased pumping demand in the Kent County Water Authority system as well as the load requirements for the development of the western section of the City of Cranston.

On the second floor of the Central Operations and Control Building will be a complete pneumatic material handling system that will consist of vacuum pumps, motors, dust collectors, etc., and will transfer ferric sulphate and quicklime from the primary storage silos to the secondary hoppers located directly over the chemical feeders on the first floor. Secondary storage of chemicals will total 45 tons each of ferric sulphate and quicklime. Forty tons of sodium silicofluoride will be stored on the second floor in 400 pound fiber drums. The material will be transferred from the drums to the storage hoppers over each machine through the present pneumatic system. Chlorine gas will be stored in one ton cylinders directly over the gas feed chlorinators. Four one-ton cylinders will be carried on the weighing scale at one time with storage space for six additional containers. A special exhaust will be installed in this room to remove any escaping chlorine fumes.

The Main Entrance Building will face the south coagulation basin and there will be a new entrance drive from the North Scituate-Hope Road. Parking facilities will be provided at the foot of the south basin dam. This building will contain a main lobby that will provide access to any portion of the plant buildings. Directly above the lobby will be a small auditorium in which visiting groups of technical students, nurses and other professional groups will gather for descriptive talks and instructions relative to new and improved treatment and purification methods.

The construction of a new Forestry and Maintenance Garage is included in the contract and is an important part of the Master Plan. It will provide the department with the necessary facilities to meet the demands of our expanded forestry program.

Since 1951 all watershed property of the City of Providence has been under the supervisory management of a professional forester. As watershed manager, he assumes responsibility for all 11,000 acres of timberland, all outside physical plant, aqueducts and distribution reservoirs, along with the supervision of forestry and maintenance crews.

Also included in the project is the installation of new chemical solution piping, new service water pumps, piping and elevated storage tank, new boilers and accessories for the heating system, and a dehumidification system for the filter pipe gallery.

The architectural phases of building alterations and additions were designed by Mr. Oresto Di Saia, Providence Architect, with the engineering personnel of the Water Supply Board participating jointly in the design and layout of mechanical features, increased electrical power transmission and distribution facilities, and power wiring.

This project, like the 40 million gallon underground concrete Aqueduct Reservoir, is being financed under bond issues approved by the General Assembly of the State of Rhode Island and the voters of the City of Providence. At the end of the fiscal year on September 30, 1960 the job had progressed to approximately 17 per cent of completion and with satisfactory progress maintained the work should be completed by September 30, 1961.

The insertion of a 48-inch gate valve in a concrete feeder main under full service pressure, the first such attempt in Water Works history, was successfully completed in the Providence Distribution System during the year. This insertion, at one of the major connections in the Providence System at Sterling and Webster Avenues in Providence, is part of a continuing replacement program of defective valves, and the inserting method was resorted to because of its location in the system, where these important feeder mains could not be removed from service for the time required to replace the defective valve in the ordinary way without most seriously affecting the entire distribution system and creating the hazard of insufficient flows for fire protection. The project was completed as a result of over two years

of research and study in which the A. P. Smith Valve Manufacturing Company and the Lock Joint Pipe Company, both of East Orange, New Jersey participated jointly in plant tests and trial cuttings to select the proper tools and methods for the project. It was necessary in the preliminary operations to expose the imbedded steel cylinder in the pipe wall for the purpose of determining any eccentricity at the point of connection, and the valve ends were specially made to match the contour of the surface of the cylinder with rubber gasket seals and steel plate followers provided to accomplish water tight seals. The Fanning and Doorley Construction Company of Providence was engaged to furnish the necessary heavy equipment and materials required for the handling of the valve, which weighed approximately 15 tons, and to construct supporting concrete piers and base slab for the installation. The work began on April 4 and was completed on May 20. The actual work of insertion, exclusive of preparatory and finishing up operations, required just one week's time. The work proceeded quite satisfactorily without special incident or disturbance to the system and was completed at a total cost to the department of \$36,413.18.

Operation and inspection of the larger sized sectionalizing valves throughout the distribution system was again carried on throughout the winter months of the past year. In connection with this control program, it was necessary to replace a total of 10 defective gate valves ranging from 16 to 24 inches in size at a cost just slightly less than \$20,000.00. This operation, and the resulting costs of valve replacements, becomes an increasingly greater operating expense each year.

In continuation of the program of replacement of worn and obsolete control valves for the Water Purification Works, bids were received by the Board of Contract and Supply in September for ten 24-inch electric motor operated, rubber lined butterfly valves for filter wash water service. A contract was awarded to the local B.I.F. Industries of Providence for this equipment in the amount of \$20,320.00, with delivery and installation scheduled for the beginning of the coming calendar year. During the past fiscal year, six valves previously purchased from the

Henry Pratt Company of Chicago, were installed on filters numbered 2, 3, and 4, making a total of eight new units in this service. It is apparent now, that the balance of the program of replacement must be accelerated to overcome the increasing problem of operating difficulties being experienced with the worn and older type of gate valve. In order to avoid the possibility of a serious breakdown in the filter plant operation, it is hoped now that the entire replacement program for the twenty-eight filter wash water valves can be completed by the end of the 1961 calendar year. Installation costs, including valves, electrical equipment, piping and wiring changes and involved labor charges represents an approximate figure of \$3,000.00 per unit or an estimated cost of \$84,000.00 for the complete program.

On June 15, the booster pumping station in the Garden Hills Plat in Cranston was first placed in operation. This station as described in previous reports, was built by and at the expense of the plat developer and transferred in full title to the City of Providence under an agreement signed by Mayor Reynolds authorized by City Council Resolution No. 353 approved May 3, 1957. The station equipment comprises two 400 gpm electrically driven pumps, one 400 gpm auxiliary gasoline engine driven pump and an underground 7500 gallon hydropneumatic tank. The station is automatically operated under pressure controls with telemetering signals transmitted to the Neutaconkanut Pumping Station in Johnston. This installation was designed and built to serve the adjacent plat area comprising approximately 200 home sites on land above elevation 140 mean high water, and is capable of boosting pressures in the area served by 100 feet of elevation or approximately 43 pounds per square inch.

The installation of new extensions to the distribution system and the replacement and relocation of existing mains required the installation of 28,238 feet of various size and kind of pipe. A major part of this footage was installed by contractors under competitive bidding. Three contracts involving 21,358 feet of main extensions and replacements were awarded during the year; one to the Bragger Construction Company for 7,445 feet and two to the Fanning and Doorley Construction Company for 13,913 feet.

In November 1959 a contract was negotiated for the installation of a Low Service Reinforcement Main and Appurtenances in Broad Street, Cranston from Park Avenue southerly to Sheldon Street as recommended by the National Board of Fire Underwriters to improve the fire protection in the Pawtuxet area of the City of Cranston. This installation, completed on May 4, 1960 at a cost of \$30,449.79 involved 3,468 feet of 12-inch asbestos-cement pipe including 12-inch riders at Rosewood Avenue, Strathmore Road, Circuit Drive and Sheldon Street which were connected to the existing 8-inch main in Broad Street, a 6-inch lateral to Ruby Street and an 8-inch lateral to Vivian Avenue. The work was done by the M. A. Gammino Construction Company who were in the process of rebuilding Broad Street.

In connection with the construction of the Huntington Expressway in Providence and Cranston by the State of Rhode Island, the M. A. Gammino Construction Company installed 1,019 feet of main and appurtenances which included 919 feet of 30-inch cast iron main with four 30-inch by 30-inch tapping sleeves and valves, by-passing the proposed Mashapaug Bridge at Reservoir Avenue. Because the soil and ground water conditions in the area of the bridge were quite unfavorable, and the alignment of the 30-inch mains was necessarily irregular to avoid conflict with the bridge foundations and other underground utilities, heavily reinforced concrete slabs formed with sheet steel piling were placed under the pipe bends at each end of the bridge. Reinforced vertical piers, tied to the base slab were installed to resist any horizontal thrust movement of the pipes. During the installation of the piling for the bridge foundation, the base slab and the adjacent 30-inch mains at the easterly end of the bridge settled approximately six-inches and it was necessary to remove and relay about 100 feet of the approaching 30-inch mains in Reservoir Avenue northeasterly of the bridge construction.

The construction of the North-South Freeway from Public Street to Hayward Park in Providence by the M. A. Gammino Construction Company required numerous changes in the dis-

tribution system involving the installation of new connecting mains and the abandonment of portions of our existing mains and their appurtenances. The cost of this construction was borne by the State of Rhode Island and Federal Government, the department providing planning and layout assistance, field supervision, and inspection. At the end of the year 3,087 feet of cast iron pipe and appurtenances was installed, including 1,481 feet of 6-inch, 1,347 feet of 12-inch and 259 feet of 20-inch. A 20-inch inserting valve was installed in Lockwood Street to assure continuous water service to the Rhode Island Hospital during construction. Mains removed or abandoned totalled 1,424 feet including 1,259 feet of 6-inch, 4 feet of 10-inch and 161 feet of 20-inch.

The Campanella and Cardi Construction Company installed 644 feet of 16-inch cast iron main in West River Street in connection with the development of the West River Development Project in Providence.

Other extensions involving the installation of 384 feet of pipe were installed by the Department's forces.

One hundred and seven main extensions were laid in various streets with approximately 6,930 feet remaining to be laid at the end of the year.

On March 29, 1960 a contract was awarded to the Fanning and Doorley Construction Company for the installation of 57 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 April 12, 1960 and was completed on May 23, 1960, the final payment amounting to \$19,172.86.

Capital improvements, excluding the projects under the Gilbane and Gammino contracts, totalled \$659,799.37 during the year, of which \$641,368.05 was for improvements to the distribution system, including main extensions, new services, gate valves and hydrants. The balance of \$18,431.32 included \$100.00

for land and \$18,331.32 for wash water control valves at the Water Purification Works. With the exception of the 48-inch insertion valve installed in the Neutaconkanut Conduit, all capital improvements were financed from revenue for the 1960 year.

Applications for water service totalled 982, or 26 less than in the previous year. Of this number 110 required extensions to the distribution system. A total of 978 new services were installed, 939 general supplies and 39 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 October 1, 1946. During the fiscal year ended September 30, 1960, the net sewer rental collection totalled \$138,661.00.

Automotive and construction equipment owned and in use by the department totalled 27 various trucks, 19 passenger cars including 2 jeeps, 9 compressors, various pumps and other miscellaneous equipment. The records of the department indicate that trucks were operated a total of 37,377 truck hours at a cost of 68.3 cents per hour including depreciation, compressors 4,347 hours at 85.6 cents per hour, and passenger cars were driven a total of 194,292 miles at a cost of 6.5 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, 1960 a total of 56.04 inches was recorded, which is 7.54 inches greater than the 45-year (1916-1960) average of 48.50 inches. The rainfall for the year was 116% of the long term average and 85% of the maximum of 66.28 inches, established during the year ended September 30, 1958.

There were three equally long periods of seven days of successive rainfall and one period of eight days, with the most productive of these periods occurring during the seven days October 22 to 28, 1959 when a total of 3.82 inches was recorded; with a maximum of 1.89 inches on October 24, and a minimum of 0.002 inch on October 28. Although of shorter duration, the three-day period September 11 to 13, 1960 produced 4.93 inches; with a maximum of 3.21 inches on September 12, and a minimum of 0.04 inch on September 13. The longest period when no rainfall was recorded occurred from July 4 to 12, 1960.

The total rainfall of 56.04 inches was the sixth highest yearly rainfall experienced during the 45-year period, the highest being for the year ended September 30, 1958 when a total of 66.28 inches was recorded. During the months of October, November and December 1959, and February, May, July and September 1960, the monthly rainfall exceeded the 45-year (1916-1960) averages for these respective months; the maximum monthly rainfall occurring in October when 8.37 inches were measured, which was 4.82 inches above the 45-year average for that month. The minimum monthly rainfall occurred in June 1960, when a total of 1.15 inches was recorded, or 2.49 inches below the long term average for that month. The maximum day's rainfall for the year occurred on September 12, 1960 when a total of 3.21

inches was recorded, with the station at North Scituate measuring 3.42 inches.

The runoff for the year totalled 27.75 inches, which is 2.66 inches greater than the 45-year (1916-1960) average of 25.09 inches. During the months of October, November and December 1959, and January, February, April and September, 1960 the monthly runoff exceeded the 45-year averages for those respective months; the maximum monthly runoff occurring in February when 5.09 inches was recorded. This was a new maximum for February, exceeding the previous high by 0.14 inch and the 45-year average for that month by 2.30 inches. During the months of March, May, June, July and August the monthly runoff was less than the 45-year averages; the minimum monthly runoff occurring in August when minus 0.002 inch was recorded.

Statistical rainfall and runoff data for the year ended September 30, 1960, 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, 1959 the water in Scituate Reservoir was at elevation 279.01, or 5.00 feet below the spillway level; the total storage then amounted to 31,711,000,000 gallons, or 85.7% of capacity. At the end of the year, October 1, 1960, the reservoir was at elevation 279.00, or 5.01 feet below the spillway level, with a storage of 31,700,000,000 gallons, or 85.7% of capacity. From October 1, 1959 the elevation dropped quite steadily to 277.77 on October 23, or 6.24 feet below the spillway level. The total storage then amounted to 30,470,000,000 gallons, or 82.3% of capacity, the smallest amount in storage during the entire year. A rapid rise to elevation 278.41 from October 23 to 28 was followed by a gradual decrease to elevation 277.85 on November 24. Another rapid increase followed, resulting in a rise to elevation 283.51 on January 6, 1960. A fairly rapid decrease to elevation 281.55 on February 6 was followed by a rapid increase to

spillway elevation 284.01 on February 28 and to 284.22 on February 29. After decreasing to 282.42 on March 27 the elevation rose rapidly to again reach spillway elevation on April 5 and continued upward to the maximum elevation for the year of 285.00 on April 10. At this point the total storage amounted to 38,120,000,000 gallons, or 103.0% of capacity. Following fluctuations between April 10 and June 6 the elevation decreased in a steady manner from 284.62 on June 6 to 278.01 on September 11, and then rose to elevation 279.00 on October 1, 1960.

On October 1, 1959 the combined storage on the watershed, including Regulating, Westconnaug, Barden, Moswansicut, Ponaganset and Scituate Reservoirs amounted to 35,725,000,000 gallons, or 86.6% of combined total capacity; and at the end of the year, October 1, 1960 the combined storage was 35,927,000,000 gallons, or 87.1% of capacity. The maximum combined storage was on April 9, when 42,546,000,000 gallons, which is 103.1% of capacity, were impounded. The minimum combined storage was on September 10, when 34,731,000,000 gallons, or 84.2% of capacity, were impounded.

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

The total draft from the Scituate Watershed for the year was 44,542,970,000 gallons, or an average of 121,700,000 gallons per day. The draft for water supply purposes was 17,672,360,000 gallons, or an average of 48,290,000 gallons per day. The discharge into the north branch of the Pawtuxet River totalled 26,870,610,000 gallons, equal to 73,420,000 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 44,744,970,000 gallons, or an average of 122,250,000 gallons per day, which was 550,000 gallons per day more than the total daily draft, and 11,470,000 gallons per day more than the average daily yield for the 45-year period 1916 through 1960.

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

SCITUATE WATERSHED
FORESTRY AND MAINTENANCE OPERATIONS
1960

THE MAINTENANCE PROGRAM

Maintenance operations at the Source of Supply were concentrated on brush control, the firelane system, fence-line maintenance and the grassed surface areas. Aesthetic improvements were made to forested areas in the immediate vicinity of Gainer Dam and at various roadside areas on Tunk Hill Road and Plainfield Pike. About one mile of shoreline was cleared of all hardwood growth to the edge of marginal coniferous plantings.

The year 1960 saw the introduction of several new pieces of equipment for use on the watershed. The scope of the summer mowing schedule was enlarged following the purchase of a Worthington Tractor with a hydraulic sickle-bar attachment. The Worthington, with its low center of gravity, proved to be ideal for the mowing of slopes on Gainer Dam, Gainer Dike, and the Distribution Reservoirs. Use of this tractor has improved the turf surface, reduced costs, and enhanced the aesthetic appearance of the grassed surface areas.

Repeated attempts to keep hardwood brush under control by mechanical means have proved to be too costly and time consuming. With the approval by Laboratory personnel of the use of Special Formulation Ammate X on the watershed, a herbicidal brush control program has been initiated. A portable mist sprayer was obtained to spray areas inaccessible by vehicle. Accessible areas were sprayed with a mounted hydraulic sprayer. During the growing season, approximately 9 miles of shoreline, aqueduct right-of-way, powerline right-of-way, firelane, and fenceline were sprayed.

*THE FORESTRY PROGRAM
TIMBER PRODUCTION*

Thinnings and improvement cuttings netted 651.45 tons of pulpwood and 5,700 board feet of small sawlogs. Even though the cost of removing wood material becomes greater each year,

the return a woods operator can receive for products removed in thinnings and similar operations remains stable. This becomes an increasing problem in the management of the woodlands. The forests at the Source of Supply are still several decades away from the time when a sustained yield of quality timber can be harvested.

CULTURAL OPERATIONS

Many acres of low-quality hardwoods have been underplanted with coniferous species. Although most coniferous species can initially survive under cover of hardwoods, after ten years of age the planted trees begin to deteriorate and die because of suppression or mechanical injury. An effort is being made to release the more advanced underplanted stands. Several methods used include: (1) the axe frill with Ammate X placed in the frill, (2) harvesting merchantable hardwood in readily accessible locations, and (3) girdling with a gasoline-driven Little Beaver Tree Girdler. The use of the Little Beaver is perhaps most desirable where white pine occurs in the understory. Mortality of the hardwood is delayed for a period of one to three years permitting the pine to become adjusted to the change, preventing sun scald, and delaying injury from the white-pine weevil (*Pissodes strobi*).

ARTIFICIAL REFORESTATION

In the spring of 1960, 15,654 trees were planted on 21.75 acres. Most planting is now limited to small roadside areas for aesthetic purposes, burn areas, and plantations where underplanting can be satisfactorily accomplished. Efforts will be made in the future to obtain natural reproduction of desirable species through proper management of harvest cuttings.

PROTECTION OF THE WATERSHED

Fires: Although there were numerous small nuisance fires on the 92.8 square-mile watershed, only three occurred on City-owned land at the Source of Supply. Total area burned amounted to three acres.

Forest Insects: Young timber continued to be plagued by such insects as the white-pine weevil, bark beetles, tip or shoot

moths, and cone weevils. Pales weevil (*Hylobius pales*) caused considerable mortality to seedlings planted this spring. The Pales weevil is attracted to areas where coniferous trees have been cut or burned. Several such areas attractive to the weevil were planted to young coniferous trees. Weevils girdled the tender stems of the seedlings causing extensive damage even though the attack was diagnosed early and control measures were taken.

Concern is growing over the yellowing and premature browning of the foliage of white spruce and hemlock at the Source of Supply. In one instance extensive mortality has occurred in approximately two acres of 20-year old white spruce. A mite (*Oligonychus ununguis*) has been identified as the primary cause of foliar damage to hemlock. It is suspected that this same mite is also responsible for the injury to white spruce.

Forest Diseases: *Fomes annosus*, a root rot of conifers, continues to gain in its virulent attack of the coniferous plantations at the Source of Supply. The disease has been detected in most of the older red-pine plantations, and it probably has been justifiably blamed for the general deterioration and lack of vigor exhibited by older planted pine on the watershed. Although no specific control measures have been found, forest researchers and managers are devoting more attention to investigation of the pathogen.

GAINER DAM—HYDRO-ELECTRIC PLANT

The Hydro-Electric Station at Gainer Dam has been in satisfactory operation throughout the year. The plant was operated on 274 days for a total of 3,926 hours. Power generated from the discharge of 26,597,250,000 gallons of water through the 1875 KVA Hydro-Electric Turbo Generator to the Pawtuxet River amounted to 5,378,000 kilowatt hours, or an average of 4,946 gallons per kilowatt hour. Of the power generated, 5,013,900 kilowatt hours, or 93.2%, was sold to the Narragansett Electric Company, and 272,386 kilowatt hours were used at the Water Purification Works. The rate of discharge through the station, concentrated during the hours of down-stream mill operations, averaged 162.59 million gallons per day.

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

WATER PURIFICATION WORKS

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

Water was drawn from Scituate Reservoir between elevations 213 and 220 and totalled 17,672,360,000 gallons, or an average of 48,290,000 gallons per day; the maximum for any one day being 85,090,000 gallons on June 28, 1960 and the minimum 30,840,000 gallons on November 28, 1959.

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 approximately three and one-half 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 Omega 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 four pounds of water to each pound of fine grain lime and five pounds of water to each pound of pebble lime.

Ferri-Floc used totalled 1,677,640 pounds, or an average of 4,584 pounds daily; with a maximum for any one day of 8,996 pounds on June 28, 1960 and a minimum of 2,095 pounds on November 28, 1959. The dosage averaged 0.66 grains per gallon, the maximum for any one day being 0.99 grains per gallon and the minimum 0.47 grains per gallon.

Quicklime used during the year totalled 1,689,181 pounds or an average of 4,615 pounds daily; with a maximum for any one day of 8,316 pounds on June 28, 1960 and a minimum of 2,585 pounds on November 28, 1959. The lime dosage averaged 0.67 grains per gallon, the maximum for any one day being 0.77 grains per gallon and the minimum 0.55 grains per gallon.

Filters were operated a total of 71,328.21 hours during the year, at an average of 194.81 filter hours per day; the average length of filter runs being 83.33 hours which is 7.09 hours, or 9.3 per cent more than the average of 76.24 hours for the previous year. The maximum daily average of filter runs was 144.00 hours on February 23 and May 3, 1960 as compared to a maximum of 155.25 hours during the previous year; and the minimum was 36.87 hours on October 24, 1959 as compared to a minimum of 30.00 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 17 to 29 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 28%. Filters 11, 12, 13 and 14 which have 0.46 millimeter sand were washed at rates varying from 13 to 27 inches rise per minute and an average sand expansion of 38%. A total of 202 tests were made during the year to determine the sand expansion and rate of rise. The total wash water used was 113,144,000 gallons, an average of 309,000 gallons per day, or 128,427 gallons per wash. The 113,144,000 gallons of wash water used was 6.6% less than the 121,116,000 gallons for the previous year.

The total water filtered for the year amounted to 15,971,290,000 gallons, an average of 43,637,000 gallons daily; the maximum day being 77,209,000 gallons on June 28, 1960 and the minimum 27,154,000 gallons on December 25, 1959. The average rate of filtration per filter was 5,370,000 gallons per day and the average amount of water filtered per filter per run was 18,650,000 gallons, or 12.3% more than the 16,610,000 gallons for the previous year.

The total plant effluent, or pure water delivered to the Scituate Aqueduct and the Kent County Water Authority, totalled 15,858,146,000 gallons, an average of 43,328,000 gallons per day, with a maximum of 76,781,000 gallons on June 28, 1960 and a minimum of 26,568,000 gallons on December 25, 1959.

With the exception of a few short-period shutdowns to make inspections and adjustments to the fluoridizer and the chlorinators, fluoridation and chlorination of the plant effluent were 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 throughout the distribution system of 1.2 parts per million from October 1, 1959 to May 31, 1960 and 1.0 part per million from June 1, 1960 to September 30, 1960.

Plant effluent delivered to the Scituate Aqueduct and treated with sodium silicofluoride amounted to 15,544,914,000 gallons, an average of 42,472,000 gallons per day. Sodium silicofluoride used during the year totalled 225,902 pounds, or an average of 617 pounds per day; with a maximum for any one day of 997 pounds on June 28, 1960 and a minimum of 380 pounds on December 25, 1959. The actual dosage of fluoride ion averaged 1.03 parts per million, the maximum and minimum dosages being 1.18 and 0.89 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 15,580,426,000 gallons, an average of 42,569,000 gallons per day. Water delivered to Kent County is chlorinated separately by their facilities.

Chlorine used during the year totalled 47,251 pounds, or an average of 129 pounds per day; with a maximum for any one day of 236 pounds on August 29, 1960 and a minimum of 78 pounds on December 25, 1959. The chlorine dosage averaged 0.36 parts per million, the maximum and minimum dosages being 0.44 and 0.32 parts per million. Chlorine residual of the water at a point adjacent to the main aqueduct averaged 0.012 parts per million, and of the tap water at the Providence City Hall 0.003 parts per million.

The following statistics show that the chemical cost of treatment for the year ended September 30, 1960 was \$4.86 per million gallons.

This is 7.3% more than the figure of \$4.53 last year. The price per ton of Ferri-Floc remained the same as last year, \$55.05. The price per ton of quicklime decreased from a high of \$21.60 last year to \$20.92 this year, a reduction of \$0.68 per ton, or 3.1%. The price per ton of sodium silicofluoride increased from a low of \$109.40 last year to a high of \$139.39 this year, an increase of \$29.99 per ton, or 27.4%. The price per ton of chlorine decreased from \$175.00 last year to \$155.00 this year, a decrease of \$20.00 per ton, or 11.4%.

	Year Ended Sept. 30 1957	Year Ended Sept. 30 1958	Year Ended Sept. 30 1959	Year Ended Sept. 30 1960
Chlorine	0.33 P.P.M.	0.32 P.P.M.	0.33 P.P.M.	0.36 P.P.M.
Ferri-Floc	0.59 G.P.G.	0.65 G.P.G.	0.63 G.P.G.	0.66 G.P.G.
Quicklime	0.62 G.P.G.	0.66 G.P.G.	0.66 G.P.G.	0.67 G.P.G.
Sodium Silicofluoride	1.00*	1.04*	1.04*	1.03*
Length of Filter Runs	72.21 Hrs.	79.92 Hrs.	76.24 Hrs.	83.33 Hrs.
Tap Water Color .	5 P.P.M.	5 P.P.M.	6 P.P.M.	6 P.P.M.
Tap Water Iron ..	0.01 P.P.M.	0.02 P.P.M.	0.00 P.P.M.	0.01 P.P.M.
Cost of Chemicals per M.G. of Water Treated.....	\$4.54	\$4.86	\$4.53	\$4.86

*Dosage expressed as P.P.M. of Fluoride.

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, 1959 to September 30, 1960 at \$55.05 per ton. Specifications for Ferri-Floc read as follows: "The material furnished shall be ferric sulphate. It shall contain not less than sixty-nine per cent (69%) of water soluble ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$). The content of ferrous iron shall not exceed one and one-half per cent (1.5%) as (Fe). It shall be free of foreign material or material deemed undesirable in water purification processes. The material shall be in granular or lump form. Not more than forty-five percent (45%) shall pass a 20 mesh per inch screen, and no particle shall be larger than will pass a one-inch mesh screen. Deliveries to be made in cars suitably lined to protect the material from moisture and foreign matter." The specifications contain a provision that allows us to penalize the manufacturer at the end of the contract year in event that the total amount of material received falls below an average of sixty-nine per cent (69%) of water soluble ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$).

Ferri-Floc has been delivered in bulk carload lots to the railroad siding at Washington, R. I., about five and one-half miles from the Water Purification Works. Deliveries to the plant have been made by our force with the use of a Pneumatic Transfer Truck, which removes the Ferri-Floc 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; which, in addition to the 40-tons storage provided in the feeding hopper on the fifth floor of the Purification Works Head House, assures a maximum of approximately 96 average days' supply. The stored Ferri-Floc in the silo is conveyed pneumatically through a 4-inch underground conveyor pipe approximately 600 feet to the concrete feeding hopper within the Purification Works building by means of a motor-driven air blower and control equipment, housed in a single story brick building adjacent to the silo.

Analysis of the Ferri-Floc received has shown an average ferrous iron content of 0.25% which is 1.25% 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 eighteen deliveries received was 74.26% or 5.26% more than the minimum of 69% demanded by specification requirements. The average amount of material passing a 20 mesh per inch screen was 39.1% 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 30, 1959.....	0.30	71.31	40.7
November 4, 1959.....	0.73	69.17	34.3
November 13, 1959.....	0.30	71.28	42.0
February 1, 1960.....	0.23	74.39	42.5
February 10, 1960.....	0.28	74.25	45.0
February 15, 1960.....	0.23	74.97	30.4
April 6, 1960.....	0.21	74.68	39.1
April 11, 1960.....	0.23	75.00	48.5
April 18, 1960.....	0.20	75.07	36.7
May 23, 1960.....	0.25	73.07	38.7
June 3, 1960.....	0.19	74.82	37.0
June 6, 1960.....	0.22	75.22	37.6
July 25, 1960.....	0.18	75.18	36.4
August 3, 1960.....	0.21	76.00	46.2
August 8, 1960.....	0.18	77.36	32.2
September 14, 1960.....	0.16	75.68	29.6
September 19, 1960.....	0.19	74.11	37.0
September 21, 1960.....	0.18	75.14	50.2

The table shows that all eighteen deliveries met specification requirements on the ferrous iron and ferric sulphate contents, but three failed to meet screen test requirements. The manufacturer was notified to this effect and requested to conform to his obligations.

Quicklime was obtained under contract with the Standard Lime & Cement Company, Baltimore, Maryland, from October 1, 1959 to May 29, 1960 at a price of \$20.92 per ton. Specifications for the quicklime purchased from this company read as follows: "The material furnished shall be rotary kiln pebble quicklime, of which 100% shall pass a $\frac{3}{4}$ -inch screen and not

less than 80% shall be retained on a 10 mesh per inch screen. Insoluble matter shall be less than 2% and magnesium oxide shall be less than 3%. It shall have an available calcium oxide (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 & Cement Company showed an average available calcium oxide (CaO) content of 92.7%, which is 2.7% greater than specification requirements. The per cent of material passing a $\frac{3}{4}$ -inch screen was 100% on every delivery and the per cent retained on a 10 mesh per inch screen averaged 93.6%. 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
November 13, 1959.....	91.8	91.0
November 23, 1959.....	89.2	91.9
November 30, 1959.....	93.4	99.6
December 28, 1959.....	91.9	95.1
January 4, 1960.....	93.9	94.0
January 13, 1960.....	94.5	96.7
February 17, 1960.....	93.1	87.2
February 23, 1960.....	92.5	93.5
February 29, 1960.....	95.0	86.2
April 27, 1960.....	93.8	95.0
May 2, 1960.....	90.2	99.3

The table shows that one of the eleven deliveries failed to meet specification requirements with respect to the calcium oxide content. However, the deviation amounted to only 0.8%.

Shipments of quicklime received from May 30 to September 30, 1960 were obtained under contract with the New England Lime Company, Adams, Massachusetts at a price of \$20.92 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 85% 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 (CaO) content of 93.5% which is 3.5% 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 99.0%. 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
May 30, 1960.....	93.7	99.0
June 8, 1960.....	91.9	98.5
June 15, 1960.....	93.5	99.6
July 11, 1960.....	94.9	98.8
July 15, 1960.....	93.0	98.5
July 20, 1960.....	91.3	99.0
August 15, 1960.....	94.6	99.3
August 19, 1960.....	94.6	99.3
August 24, 1960.....	93.8	99.3

The table shows that all nine deliveries met specification requirements.

The 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. There is a separate storage silo, 4-inch underground conveyor pipe, feeding hopper, motor-driven air blower and control equipment for the pneumatic handling of the quicklime, which is an exact duplicate of the pneumatic handling system for Ferri-Floc. The quicklime storage silo has a capacity for 180 tons of the material; which, in addition to the 40-ton storage provided in the feeding hopper on the fifth floor of the Purification Works Head House, assures a maximum of approximately 95 average days' supply.

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, 1959 to September 30, 1960 at \$0.0775 per pound. This material was delivered to the Purification Plant by our force in lots of 14 cylinders, each containing 150 pounds of chlorine.

Sodium silicofluoride was purchased under contract with the Henry Sundheimer Company, New York, at a contract price of \$139.39 per ton. The specifications covering this contract were the American Water Works Association Tentative Standard Specifications for Sodium Silicofluoride, AWWA B702-54T, approved as tentative May 27, 1954 and modified by us to exclude material not of domestic manufacture. Among other requirements these specifications call for a minimum of 98 per cent sodium silicofluoride, which corresponds to approximately 59.4 per cent fluoride ion. The following table shows the date of delivery, together with the per cent of sodium silicofluoride. The average sodium silicofluoride content was 98.3%.

Date Received	Percent Sodium Silicofluoride
October 15, 1959.....	99.4
December 3, 1959.....	99.0
January 25, 1960.....	97.6
March 23, 1960.....	97.6
May 2, 1960.....	96.5
June 13, 1960.....	98.5
August 19, 1960.....	99.3

The table shows that three of the seven deliveries had a sodium silicofluoride content less than the permissible minimum of 98 per cent. However, the deviation on two of the shipments was very slight, amounting to only 0.4%. The manufacturer was notified of the deviations from specification requirements and requested to conform to his obligations.

A special pneumatic conveying system operates to transfer the chemical from the drums to the storage collector supplying the fluoridizer hopper. The fluoridizer is an Omega gravimetric type feeder equipped with a non-flooding gate to prevent any possible overtreatment. The feeder is operated automatically by an electric signalling device proportional to the rate of flow of water to the Scituate Aqueduct.

Number 6 fuel oil used for heating the plant from October 1959 to May 1960 totalled 61,922 gallons, an average of 5,160 gallons per month. Number 2 fuel oil was used during the entire year for heating water and amounted to 7,055 gallons, an average of 588 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, and selected locations in the distribution system.

The total number of samples obtained from all sources during the year amounted to 12,275 which, based on a forty-hour work week means that one sample or another was obtained every 10.2 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 96,280 which, based on a forty-hour work week, means that the water was receiving one test or another every 78 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. Each delivery of sodium silicofluoride was 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 sterilization of extensions to the distribution system were tested for chlorine residual, B. Coli, 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
300,000	180
400,000	200
1,000,000	300
2,000,000	390
5,000,000	500

The population served by the City of Providence water supply is approximately 383,134. From the above table, it may be seen that the minimum number of bacteriological samples that should be obtained from the distribution system per month for this population is 197. The actual number of bacteriological samples obtained in the distribution system for the year amounted to a total of 3,223, or an average of 269 per month, a figure 37% 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 participation in the annual state and nationwide Civil Defense exercise and testing of the water for radioactivity.

The laboratory continued to make studies of the fluoride content of coatings on the inner surfaces of old hydrants removed from service. These, and other studies, consisting of analyses of samples of water from dead end cast iron mains are in progress to determine how much fluoride is absorbed from the water by cast iron, and how much can be re-dissolved in water under any unpredictable conditions. Earlier studies have already established that no conditions known to exist in a water main will extract significant amounts of fluoride 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 machinery and the filter controls has aided greatly in keeping the cost of treatment low despite increased costs of chemicals, the filter runs long, and the quality of water at a high degree of purity.

Tables 11 to 21, inclusive, 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 satisfactory service throughout the year. On Sunday, September 19, it was necessary to temporarily remove from service, the 66-inch steel pipe section between the Siphon Chamber and Budlong Road in Cranston, for the purpose of making repairs to the bituminous enamel lining at a 42-inch welded saddle connection for the new Aqueduct Reservoir. The steel pipe aqueduct was shut down at 6:00 A.M. and restored to service at 2:00 P.M. Pressure observations taken at the Sandy Lane Recording Station in the City of Warwick, which is primarily supplied by the steel pipe aqueduct, were observed to be from 7 to 10 pounds below normal, but no serious low pressure complaints were received in either the Warwick or the Providence distribution systems during the period of shutdown. This is the first time that the Scituate Aqueduct has been shut down since 1931 and only the second shutdown since it was first placed in service in 1927. The usual operations of maintenance of property along the Aqueduct, including cutting and burning of brush, repairs to grassed embankments, maintenance and cleaning of culverts and waterways, repairs to fencing and other miscellaneous and appurtenant operations were performed 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 2,917,505,000 gallons, or an average of 7,971,325 gallons per day.

Neutaconkanut station pumped 1,079,705,000 gallons through the east Venturi and 810,640,000 gallons through the west Venturi meter for a total of 1,890,345,000 gallons, or 5,164,877 gallons per day, and Bath Street Station pumped 1,027,160,000 gallons, or 2,806,448 gallons per day.

The total power required for pumping at both stations amounted to 1,136,220 kilowatt-hours. Neutaconkanut Station required 699,000 kilowatt-hours, and Bath Street Station 437,220 kilowatt-hours. The cost of power at both stations was \$19,826.27, or \$6.80 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 61 hours, pumping 21,830,000 gallons during the year. Weekly 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 41 hours and 35 minutes, pumping 5,310,000 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 38.58 million gallon Neutaconkanut Low Service Distribution Reservoir on Neutaconkanut Hill, Johnston, and the 11.94 million gallon Longview High Service Distribution Reservoir on Mineral Spring Avenue and Smithfield Road in North Providence have been in continuous and satisfactory operation during the year.

Routine maintenance activities 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 and 25 of the Appendix.

WATER DISTRIBUTION SYSTEM

The water distribution system has been maintained in satisfactory and continuous operation throughout the year. Exten-

sions of mains, the installation of various types of valves, hydrants and services, and necessary repairs and replacement of the system's appurtenances were made when and where required. The construction of new highways and the reconstruction and repairs to existing highways during the year accounted for the major part of the repairs to and the replacement of the appurtenances.

The amount of pipe laid during the year, all sizes, totalled 28,237.97 feet including 23,118.62 feet of asbestos cement pipe and 5,119.35 feet of cement lined cast iron pipe.

A total of 6,580.58 feet of pipe was removed or abandoned, resulting in a net increase to the distribution system of 21,657.39 feet. In the City of Providence the net increase amounted to 3,464.07 feet, in the City of Cranston 8,922.96 feet, in the town of Johnston 3,828.82 and in the Town of North Providence 5,441.54 feet.

At the end of the year the total length of mains in the distribution system aggregated 764.05 miles, including 12.83 miles in the special high service fire system in the City of Providence. Asbestos cement pipe in the system totalled 780,215.38 feet, consisting of 449,430.23 feet of 6-inch, 297,358.78 feet of 8-inch, 21,395.77 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 54,628.28 feet consisting of 2,380.54 feet of 16-inch, 32,694.08 feet of 24-inch and 19,553.66 feet of 30-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 1,929,664.33 feet of 6-inch, 533,839.84 feet of 8-inch, 14,345.65 feet of 10-inch, 357,424.18 feet of 12-inch, 140,077.68 feet of 16-inch, 16,360.34 feet of 20-inch, 66,559.24 feet of 24-inch, 59,763.49 feet of 30-inch, 9,235.80 feet of 36-inch and 25,449.62 feet of 42-inch, totalling 3,152,720.17 feet of cast iron pipe.

Details of pipe laid, removed and in use at the end of the year are shown in Tables 26 and 27 of the Appendix.

Stop gates installed during the year, including replacements, totalled 141. In Providence 30 six-inch, 10 eight-inch, 6 twelve-inch, 4 sixteen-inch, 3 twenty-inch including 1 inserting valve, 2 thirty-inch and 1 forty-eight inserting valve; in Cranston 16 six-inch, 19 eight-inch, 3 twelve-inch, 3 twenty-four inch and 2 thirty-inch; in Johnston 2 six-inch, 8 eight-inch, and 5 twenty-inch; in North Providence 15 six-inch, 8 eight-inch and 4 twelve-inch stop gates were installed. Stop gates removed or abandoned during the year, including replacements, totalled forty-seven; 17 six-inch, 4 eight-inch and 4 sixteen-inch in Providence; in Cranston 9 six-inch, 1 eight-inch and 3 twenty-four inch; in Johnston 5 twenty-inch, and in North Providence 4 twelve-inch. Stop gates replaced totalled 30; in Providence 10 six-inch, 2 eight-inch and 4 sixteen-inch; in Cranston 2 six-inch and 3 twenty-four inch; in Johnston 5 twenty-inch, and in North Providence 4 twelve-inch. At the end of the year there was a total of 10,386 stop gates in the system ranging from 6-inch to 48-inch including 4 twelve-inch and 15 sixteen-inch rotary plug valves, and 1 sixteen-inch, 2 twenty-inch and 2 forty-eight inch butterfly valves.

Hydrant gates installed during the year totalled 135; in Providence 69 six-inch and 3 eight-inch; in Cranston 55 six-inch and 1 eight-inch; in Johnston 3 six-inch, and in North Providence 4 six-inch. There were no hydrant gates removed or abandoned during the year. Hydrant gates in use at the end of the year totalled 3,938.

Gates on un-watering hydrants and blowoffs remained the same as in the previous year.

The total number of gates in the system, not including service gates, all sizes, in use at the end of the year totalled 14,365.

Details of gates in use on September 30, 1960 are shown in Table 28 of the Appendix.

Private pipes connected to the distribution system at the end of the year totalled 247. In the City of Providence there was a total of 134, in Cranston 70, in Johnston 21 and in North Providence a total of 22.

A total of 978 services, general and fire supplies, were installed during the year; 270 in Providence, 371 in Cranston, 137 in Johnston and 200 in North Providence. A total of 178 services were removed or abandoned; 126 in Providence, 32 in Cranston, 4 in Johnston and 16 in North Providence. Seventy services were repaired during the year. The number of active services in the system at the end of the year totalled 60,519 including both general and fire supplies, consisting of 60,450 metered services and 69 unmetered services. Active metered services at the end of the year constituted 99.9% of the total active services in the system.

Statistics relative to services will be found in Tables 29 and 30 of the Appendix.

Public fire hydrants in use at the end of the year totalled 4,491 which included 2,713 post type and 1,778 flush type hydrants. Post hydrant installations totalled 246 including 133 which replaced flush type hydrants, 39 replacing post type hydrants, and 74 new installations including 17 in Providence, 53 in Cranston, 1 in Johnston and 3 in North Providence. Repairs to 12 post hydrants were made during the year.

Statistics relative to public fire hydrants will be found in Tables 31 and 32 of the Appendix.

Leaks in the distribution and transmission mains totalled 73 during the year, 41 occurring at joints and 32 as a result of ruptured mains. Leaks at joints averaged 1 for every 18.64 miles of main, while total leaks averaged 1 for every 10.47 miles of main.

The number of meters repaired and tested in our Meter Repair Shop was 8,601 while those receiving attention in the field numbered 190, making a total of 8,791 or 451 less than during the previous year. The cost of meter repairs in the shop averaged \$2.69 per meter as against \$2.16 last year. This increase was the result of revising the tolerances used in testing procedures to conform to the requirements of the American Water Works Association. Meters requiring servicing in the field involved an average expenditure of \$2.66 per meter during the current year as compared with \$1.83 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, 1960 amounted to 15,859,026,000 gallons, or an average of 43,330,672 gallons per day. This average was 1,056,762 gallons per day more than the average for the previous year. The increase occurred during the months of October 1959 through April 1960, and June and July 1960, ranging from 140,000 gallons per day in January to 6,700,000 gallons per day in June. During the months of May, August and September 1960 the average daily consumption was less than the average for the corresponding months of the previous year, ranging from 1,710,000 gallons daily in September to 1,960,000 gallons daily in May.

The maximum daily consumption occurred on June 28, 1960 when 77,449,000 gallons were consumed, which is 7,251,000 gallons less than the record maximum of 84,700,000 gallons on June 17, 1957.

The maximum month's consumption was in June 1960 when 1,552,565,000 gallons were used, and the minimum month was February 1960 when 1,165,463,000 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, 1960 totalled \$2,858,926.29, an increase of \$228,567.39 over the previous year. Revenue from the sale of water alone was \$2,528,805.97, an increase over the previous year of \$272,940.74. The remaining income of \$330,120.32 was received from other sources, including hydrant rentals, sale of power, installation of services, miscellaneous items, and surpluses in the Meter Revolving Fund and Main Extension Account. The receipts for these items show a decrease of \$44,373.35.

During the year total payments for water main extensions amounted to \$76,082.34, a decrease over the previous year of \$39,496.97. Income from service connection charges amounted to \$84,897.00, an increase over the previous year of \$8,643.00. At the end of the year, unpaid water bills totalled \$213,948.74 as compared with \$211,427.87 at the beginning of the year, or 8.16% of the total net billing. Miscellaneous Accounts Receivable amounted to \$9,051.26 at the end of the year as compared with \$8,116.24 at the beginning of the year.

Operating expenses, including Taxes, Employees' Retirement System and Social Security payments, totalled \$1,771,355.57, an increase over the previous year of \$21,655.38.

Interest on the Bonded Debt, Payment to the Sinking Fund, plus the appropriation to the Water Depreciation and Extension Fund, totalled \$1,087,570.72. The aggregate of all expenditures of the Board during the year was \$2,541,355.57, which, deducted from the gross revenue of \$2,858,926.29, leaves a net balance of \$317,570.72. According to law this reverts to the Sinking Fund for the retirement of water bonds. As none of the bonds mature until 1962, at which time the next \$6,500,000.00 principal will be payable, there was no reduction in the gross bonded indebtedness during the year. The net bonded debt at the end of the present year was \$1,959,083.99, and at the end of the previous year \$2,558,516.20, a reduction of \$599,432.21.

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 39 to 53 of the Appendix.

A summary of statistics of the Providence Water Supply Board for the year ended September 30, 1960 may be found in Table 54 of the Appendix.

Respectfully submitted,

PHILIP J. HOLTON, JR.
Chief Engineer

APPENDIX

LIST OF TABLES

TABLE

1. SCITUATE WATERSHED—Monthly Rainfall in Inches for Year Ended Sept. 30, 1960.
2. SCITUATE WATERSHED—Monthly and Yearly Rainfall in Inches for 45 Years, 1916-1960.
3. SCITUATE WATERSHED—Monthly and Yearly Runoff in Inches for 45 Years, 1916-1960.
4. SCITUATE WATERSHED—Monthly and Yearly Percent of Rainfall Collected for 45 Years, 1916-1960.
5. SCITUATE WATERSHED—Statistics of Storage for Year Ended September 30, 1960.
6. SCITUATE WATERSHED—Statistics of Draft and Yield for Year Ended Sept. 30, 1960.
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—B. Coli.
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—Neutaconkanut Distribution Reservoir Statistics.

TABLE

25. WATER DISTRIBUTION SYSTEM—Longview Distribution Reservoir Statistics.
26. WATER DISTRIBUTION SYSTEM—Water Mains Laid, Removed, etc.
27. WATER DISTRIBUTION SYSTEM—Public Water Mains in Use at end of Year.
28. WATER DISTRIBUTION SYSTEM—Gates in Use at End of Year.
29. WATER DISTRIBUTION SYSTEM—Services Installed, Removed, Repaired, etc.
30. WATER DISTRIBUTION SYSTEM—Services in Use on September 30, 1960.
31. WATER DISTRIBUTION SYSTEM—Fire Hydrants Installed, Removed, etc.
32. WATER DISTRIBUTION SYSTEM—Number of Fire Hydrants in System.
33. WATER METERS—Number, Make and Size of Meters in System.
34. CAPACITY AND CONSUMPTION—1941-1960.
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 1877-1960.
39. FINANCIAL STATEMENT OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1960.
40. OPERATING EXPENSES OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1960.
41. STATEMENT OF REVENUE—Estimated and Actual for Year Ended Sept. 30, 1960.
42. ANNUAL WATER WORKS REVENUES—Summary, 1930-1960.
43. WATER WORKS DEPRECIATION AND EXTENSION FUND.
44. BONDED INDEBTEDNESS AND SINKING FUND REQUIREMENTS.
45. PERSONAL PROPERTY INVENTORIES as of Sept. 30, 1960.
46. STORES REVOLVING FUND.
47. TRANSMISSION AND DISTRIBUTION REVOLVING FUND—Reconstruction of Oaklawn Avenue.
48. MISCELLANEOUS WATER MAIN EXTENSIONS ACCOUNTS.
49. ACCOUNT FOR INSERTING NEW VALVES.
50. NEUTACONKANUT PUMPING STATION ALTERATIONS ACCOUNT.
51. ADDITIONS, ALTERATIONS AND IMPROVEMENTS AT THE WATER PURIFICATION WORKS.
52. NEW 40-MILLION GALLON WATER DISTRIBUTION RESERVOIR.
53. WATER WORKS PROPERTY—Valuations and Taxes.
54. SUMMARY OF WATER WORKS STATISTICS—For Year Ended Sept. 30, 1960.

TABLE 1
MONTHLY RAINFALL IN INCHES ON SCITUATE WATERSHED

STATIONS ON WATERSHED		YEAR ENDED SEPTEMBER 30, 1960													
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Monthly Avg.
Rocky Hill. . .		9.01	5.40	5.60	4.30	5.97	3.19	3.30	4.58	1.34	6.13	2.55	8.29	59.66	4.97
Hopkins Mills. .		8.45	5.79	5.46	4.20	5.34	3.93	3.20	4.66	1.08	4.68	2.81	7.81	57.41	4.78
North Scituate.		8.56	5.89	5.79	3.28	6.07	3.09	2.89	4.69	0.90	4.39	2.59	8.07	56.21	4.68
Westcott		7.83	4.36	5.40	3.80	5.70	2.75	2.98	3.74	1.31	3.72	2.89	7.37	51.85	4.32
Gainer Dam. . .		8.01	5.32	5.73	2.39	5.17	3.39	2.93	4.80	1.13	5.36	1.92	8.98	55.13	4.59
AVERAGE. .		8.37	5.35	5.60	3.59	5.65	3.27	3.06	4.49	1.15	4.86	2.55	8.10	*56.04	4.67

*Total of monthly averages.

TABLE 2
MONTHLY AND YEARLY RAINFALL IN INCHES ON SCITUATE WATERSHED

YEARS ENDED SEPTEMBER 30															Jan.-Dec.	
Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year	Total	
1915-1916	2.75(e)	2.88	5.86	1.88	5.88	2.46	3.60	4.83	5.71	7.38	1.33	1.24	45.80	1916	42.56	
1916-1917	2.61	2.34	3.30	3.96	2.18	4.91	2.70	4.15	4.54	5.51	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	5.15	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	1.81	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	4.49	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	3.28	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	3.56	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	3.20	4.89	3.92	7.56	3.47	2.27	2.05	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	3.03	3.33	3.00	1.97	34.77	1930	35.58	
1930-1931	3.36	4.03	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	14.75	49.16	1932	58.60	
1932-1933	6.63	7.13	2.09	2.02	3.81	6.53	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	3.23	4.44	3.53	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	3.42	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	6.75	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	3.40	3.08	5.97	4.04	5.76	4.92	5.90	4.00	0.70	40.09	1940	47.18	
1940-1941	2.00	6.81	2.28	3.12	3.37	2.97	1.36	3.16	3.88	5.38	4.32	1.94	44.69	1941	37.88	
1941-1942	1.75	3.35	3.78	4.95	3.30	8.35	0.89	2.80	1.99	3.41	2.15	1.50	41.98	1942	51.98	
1942-1943	4.26	5.52	6.39	3.56	1.95	3.68	3.90	3.87	3.75	1.74	2.01	11.03	44.36	1943	36.84	
1943-1944	6.38	3.43	1.22	1.79	2.50	5.05	4.11	1.35	5.17	2.74	3.06	2.84	48.92	1944	48.82	
1944-1945	2.71	9.03	7.58	3.82	3.81	1.42	2.37	4.92	5.31	2.49	11.48	3.69	56.13	1945	52.25	
1945-1946	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	1946	47.68	
1946-1947	3.26	6.42	3.91	7.14	2.57	2.47	3.97	9.06	4.20	3.73	3.14	1.59	53.55	1947	55.70	
1947-1948	1.50	7.43	2.70	3.68	4.62	3.99	3.68	3.51	0.10	1.24	6.14	3.49	45.79	1948	38.58	
1948-1949	4.86	5.27	4.57	4.95	4.88	5.91	3.97	5.70	2.93	1.62	5.04	2.03	39.63	1949	45.11	
1949-1950	2.27	3.47	2.79	3.68	4.62	3.99	3.68	3.51	2.71	3.36	3.08	2.41	50.08	1950	45.11	
1950-1951	2.23	7.21	4.57	4.95	4.81	4.13	4.41	3.97	3.16	1.20	7.33	2.21	55.41	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	7.34	3.24	1.67	4.27	2.94	2.74	52.91	1953	61.10	
1953-1954	5.57	6.22	5.56	2.91	3.16	4.36	5.37	4.91	1.35	2.43	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	4.38	56.00	1955	57.74	
1955-1956	11.48	5.23	0.72	5.39	4.59	7.91	3.84	2.42	4.33	2.43	1.58	3.08	53.15	1956	49.06	
1956-1957	2.50	4.92	5.46	2.90	2.46	3.33	5.01	1.55	0.72	0.96	1.58	1.58	33.43	1957	36.13	
1957-1958	3.07	5.50	7.47	8.46	4.50	5.46	7.55	3.84	2.69	7.04	4.58	6.12	66.28	1958	58.88	
1958-1959	3.83	3.03	1.78	2.56	4.12	7.13	4.41	1.15	5.55	6.74	2.27	0.57	43.14	1959	53.82	
1959-1960	8.37	5.35	5.60	3.59	5.65	3.27	3.06	4.49	1.15	4.86	2.35	8.10	56.04	1960	47.42	
Average.....	3.55	4.71	4.05	4.14	3.77	4.47	4.24	3.53	3.64	3.88	4.50	4.02	48.50*	Avg.	48.48	
Maximum.....	11.48	9.64	9.83	8.81	6.10	9.33	7.56	9.36	8.62	11.49	12.75	11.75	66.28	Max.	61.10	
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	
*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
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
1916-1917.....	0.81	0.58	0.97	1.91	1.30	4.29	3.05	2.79	2.18	0.79	0.71	0.83	19.71	1917
1917-1918.....	1.79	1.59	1.38	1.83	4.04	3.17	3.40	2.24	4.24	0.47	0.82	1.81	23.78	1918
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
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
1920-1921.....	0.37	1.73	3.22	2.79	1.69	4.19	3.68	2.85	0.93	2.56	0.93	0.31	25.27	1921
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
1922-1923.....	1.66	1.26	1.37	4.16	2.46	6.10	4.05	2.68	2.39	0.64	0.40	0.25	26.19	1923
1923-1924.....	1.27	2.01	4.57	4.52	1.88	3.43	5.70	3.38	1.13	0.70	0.56	0.68	29.25	1924
1924-1925.....	0.49	0.45	0.97	0.91	3.65	3.41	2.46	1.46	0.52	0.38	0.39	0.32	15.61	1925
1925-1926.....	0.61	1.48	3.25	2.23	3.11	4.58	3.00	1.70	0.62	0.40	0.42	0.17	21.37	1926
1926-1927.....	0.76	2.15	2.09	3.34	2.64	3.63	1.71	2.03	1.44	0.32	1.59	0.64	21.76	1927
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
1928-1929.....	1.21	1.16	1.99	4.02	2.68	3.56	6.09	3.56	0.48	0.06	0.07	0.09	27.76	1929
1929-1930.....	0.07	0.53	1.18	1.96	2.38	2.74	3.21	3.10	0.59	0.09	0.85	0.11	12.02	1930
1930-1931.....	0.12	0.63	0.83	1.58	2.11	5.95	3.21	1.35	2.97	0.69	0.35	3.27	19.25	1931
1931-1932.....	0.07	0.15	0.91	3.35	2.16	4.10	3.08	1.93	1.57	0.17	0.25	1.52	35.57	1932
1932-1933.....	3.48	6.29	2.66	2.24	2.70	6.28	6.88	1.93	1.78	0.08	0.14	1.40	26.08	1933
1933-1934.....	0.95	0.82	1.82	3.78	1.18	5.48	6.08	2.88	1.47	0.78	0.14	0.26	26.56	1934
1934-1935.....	1.33	1.91	3.21	4.78	2.83	4.22	4.05	1.71	1.78	0.62	0.14	0.32	26.40	1935
1935-1936.....	0.13	1.09	0.75	3.94	1.93	11.51	4.45	1.59	0.44	0.03	0.02	0.82	26.40	1936
1936-1937.....	0.46	0.43	6.06	4.59	2.77	3.34	3.79	2.52	0.75	0.02	0.60	0.37	25.90	1937
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
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
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
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
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
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
1943-1944.....	0.60	0.95	0.42	0.73	1.23	3.24	3.53	1.08	0.43	0.02	0.31	1.73	13.37	1944
1944-1945.....	0.50	3.16	3.55	2.91	2.98	5.61	2.15	1.98	1.26	0.15	0.12	0.15	24.70	1945
1945-1946.....	0.06	1.88	4.59	3.93	2.98	3.70	1.43	2.80	1.65	0.53	0.12	0.36	25.63	1946
1946-1947.....	0.49	0.30	1.19	2.16	1.52	4.01	3.51	2.86	1.05	0.53	0.12	0.31	17.89	1947
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
1948-1949.....	0.35	2.24	2.00	3.57	3.22	2.92	3.20	1.78	1.00	0.26	0.02	0.09	19.11	1949
1949-1950.....	0.05	0.57	1.26	2.03	2.42	4.16	3.01	2.70	1.21	0.11	0.22	0.02	16.79	1950
1950-1951.....	0.04	1.85	2.59	3.24	4.35	4.36	4.30	2.70	0.98	0.14	0.07	0.20	25.38	1951
1951-1952.....	0.34	4.32	4.30	4.24	3.59	5.02	2.97	2.46	0.98	0.35	0.05	0.13	28.21	1952
1952-1953.....	0.20	0.37	1.15	4.01	4.53	7.24	6.36	3.20	0.20	0.07	0.05	0.20	27.17	1953
1953-1954.....	0.38	1.86	4.32	4.01	4.35	3.56	4.01	3.71	0.33	0.01	0.93	0.36	27.83	1954
1954-1955.....	1.33	3.85	5.90	2.12	2.66	3.61	2.76	1.62	0.89	0.02	4.04	1.19	31.73	1955
1955-1956.....	7.22	3.56	1.50	3.27	4.09	4.57	6.57	1.98	0.96	0.37	0.22	0.05	35.92	1956
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
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
1958-1959.....	2.05	1.83	1.65	1.65	2.58	5.86	4.52	1.45	1.23	2.09	0.07	0.23	24.95	1959
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
Average.....	0.85	1.88	2.52	2.85	2.79	4.71	3.90	2.43	1.20	0.68	0.56	0.72	25.09*	Avg.
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.
Minimum.....	-0.20	0.15	0.42	0.73	1.18	2.42	1.43	0.58	-0.18	-0.41	-0.38	-0.41	12.02	Min.

(e) Estimated; *Total of monthly averages.

† New maximum for February.

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
1915-1916.....	27.3(e)	43.0(e)	51.7(e)	133.0	63.9	162.2	128.9	76.4	59.9	37.1	82.0	33.9	68.1
1916-1917.....	19.5	24.8	29.4	48.2	59.6	87.4	113.0	67.2	48.0	51.3	11.6	23.7	51.9
1917-1918.....	26.7	31.2	42.7	51.4	58.6	87.4	74.6	71.8	27.6	9.2	19.8	20.6	47.5
1918-1919.....	95.3	51.5	63.2	77.9	66.4	82.8	102.6	64.4	34.8	24.7	13.7	54.8	57.4
1919-1920.....	63.3	44.6	105.0	39.3	21.7	195.9	81.2	94.4	52.3	31.1	20.5	11.2	64.3
1920-1921.....	27.6	29.6	53.3	80.6	35.2	112.6	67.5	76.4	22.1	37.6	31.3	82.0	52.3
1921-1922.....	19.0	20.6	105.5	59.2	67.4	75.2	198.0	67.0	27.7	41.9	39.5	56.8	60.8
1922-1923.....	56.8	89.4	44.0	61.4	135.2	163.5	68.6	181.1	25.3	23.0	17.0	11.6	66.3
1923-1924.....	72.4	35.4	89.6	100.7	64.4	122.5	93.1	92.3	70.5	11.6	9.6	12.9	57.6
1924-1925.....	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
1925-1926.....	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
1926-1927.....	15.1	37.7	58.9	112.1	79.8	191.8	66.8	59.5	42.8	8.0	18.6	24.5	46.8
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
1928-1929.....	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
1929-1930.....	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
1930-1931.....	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
1931-1932.....	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
1932-1933.....	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
1933-1934.....	27.9	55.4	48.9	97.7	26.0	136.0	116.0	77.4	30.7	3.6	3.6	19.0	53.8
1934-1935.....	40.9	43.0	90.4	66.0	91.6	218.6	85.1	75.3	34.8	13.1	-9.8	7.2	59.3
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
1936-1937.....	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
1937-1938.....	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
1938-1939.....	46.2	48.0	99.4	68.5	81.4	89.4	108.2	114.9	10.5	-20.0	3.4	2.6	56.1
1939-1940.....	10.9	25.4	45.3	72.0	25.3	120.3	114.8	55.0	67.3	19.0	7.0	-1.5	52.1
1940-1941.....	-3.5	23.9	72.4	49.0	87.4	81.5	121.3	32.7	27.0	9.2	2.5	-205.0	35.9
1941-1942.....	-8.6	15.5	22.8	37.8	77.0	95.5	106.6	37.8	15.2	16.0	6.0	-8.8	38.3
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
1943-1944.....	9.4	27.7	34.4	40.8	49.2	194.2	83.9	80.0	11.5	-14.9	-15.4	15.7	30.1
1944-1945.....	18.4	37.4	82.0	84.3	44.6	263.4	64.0	65.4	24.4	5.5	3.0	-5.3	50.5
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
1946-1947.....	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
1947-1948.....	7.0	45.8	35.5	21.7	122.6	168.1	94.7	50.1	74.3	15.0	4.8	-13.2	54.2
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
1949-1950.....	2.2	16.4	45.2	55.2	52.4	104.3	81.8	67.7	34.1	-9.8	4.4	-1.0	42.4
1950-1951.....	1.8	25.6	56.7	65.4	110.5	73.8	108.3	51.9	44.6	4.2	2.5	-2.9	50.7
1951-1952.....	8.2	47.9	77.8	86.9	68.6	121.5	67.3	61.7	31.0	-29.2	7.2	-4.7	50.9
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
1953-1954.....	6.8	26.9	77.7	72.8	84.2	81.6	74.7	73.6	21.3	-0.4	10.2	51.9	47.1
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
1955-1956.....	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
1956-1957.....	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
1957-1958.....	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
1958-1959.....	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
1959-1960.....	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
Average.....	23.9	39.9	62.2	68.8	74.0	105.4	92.0	68.8	33.0	17.5	12.4	17.9	51.7
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
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.													
Max.													
Min.													
Max.													

(e) Estimated.

TABLE 5

SCITUATE WATERSHED (92.8 Square Miles)

STATISTICS OF STORAGE FOR YEAR ENDED SEPTEMBER 30, 1960

1959-1960	1 REGULATING RESERVOIR		2 WESTCONNAUG RESERVOIR		3 BARDEN RESERVOIR		4 MOSWANSICUT RESERVOIR		5 PONAGANSET RESERVOIR		6 SCITUATE RESERVOIR		Total 1-6	
	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Avail. Storage M. G.	% of Total Avail.
Oct.	284.60	353	452.27	351	345.00	845	301.30	655	632.98	688	279.01	31,311	34,203	86.1
Nov.	285.62	431	452.77	375	345.30	869	301.96	721	633.93	761	278.35	30,650	33,807	85.1
Dec.	285.80	445	454.07	447	344.75	825	302.15	741	634.63	815	279.54	31,892	35,165	88.5
Jan.	285.74	441	453.39	408	345.88	915	302.03	728	634.32	791	282.60	35,102	38,385	96.6
Feb.	285.65	433	451.27	299	345.35	873	302.05	730	633.72	744	282.15	34,620	37,699	94.8
Mar.	285.69	436	453.54	417	345.43	879	302.09	734	633.95	762	284.19	36,813	40,041	100.7
Apr.	285.33	448	454.67	481	346.00	925	302.12	737	634.12	775	283.12	35,658	39,024	98.2
May	285.60	429	453.77	430	345.28	867	302.00	725	633.67	741	284.27	36,902	40,094	100.9
June	285.65	433	454.47	470	345.35	873	302.00	723	633.55	731	284.62	37,294	40,526	102.0
July	285.40	413	453.72	427	345.19	860	301.85	710	633.11	697	282.55	35,048	38,155	96.0
Aug.	285.60	429	453.12	353	345.32	871	301.86	721	633.18	703	280.89	33,279	36,596	91.6
Sept.	284.95	378	452.12	344	345.15	857	301.70	695	632.93	684	278.84	31,140	34,098	85.8
Max. For Year	285.85	450	454.67	481	346.00	925	302.25	751	634.93	839	285.00	37,720	41,024	103.2
Min.	284.55	349	451.27	299	344.36	794	301.25	650	632.80	675	277.77	30,070	33,209	83.6
For Year	285.55	450	454.67	481	346.00	925	302.25	751	634.93	839	285.00	37,720	41,024	103.2
1. Regulating Reservoir—Spillway Elev.	285.50	Total Storage	428 M.G.	Dead Storage	7 M.G.	Total Available Storage	421 M.G.							
2. Westconnaug " "	454.17	"	453	"	"	"	"	"	"	"	"	"	453	"
3. Barden " "	345.10	"	853	"	"	"	"	"	"	"	"	"	853	"
4. Moswansicut " "	301.90	"	1,781	"	"	"	"	"	"	"	"	"	715	"
5. Ponaganset " "	633.05	"	742	"	"	"	"	"	"	"	"	"	693	"
Total 1-5	284.01	Total Storage	4,257 M.G.	Dead Storage	1,122 M.G.	Total Available Storage	3,135 M.G.							
6. Scituate Reservoir—Spillway Elev.	284.01	"	37,011	"	"	"	"	"	"	"	"	"	36,611	"
Total 1-6		Total Storage	41,268 M.G.	Dead Storage	1,522 M.G.	Total Available Storage	39,746 M.G.							

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

TABLE 6
SCITUATE WATERSHED
(92.8 Square Miles)

DRAFT AND YIELD FOR YEAR ENDED SEPTEMBER 30, 1960

1959- 1960	DRAFT FROM SCITUATE RESERVOIR Million Gallons				WATERSHED YIELD Million Gallons			
	To River Below Gainer Dam			Total	For Month	Avg. per Day		
	Over Spillway	Through Gatehouse	Total			1959- 1960	45-Year Mean 1916-1960	
Oct.	0	717.44	717.44	1,557.89	2,275.33	73.40	60.62	44.22
Nov.	0	825.84	825.84	1,329.90	2,155.74	71.86	117.12	101.07
Dec.	0	2,535.90	2,535.90	1,342.95	3,878.85	125.12	229.00	131.10
Jan.	0	4,673.09	4,673.09	1,325.99	5,999.08	193.52	171.39	148.27
Feb.	2.27	4,594.06	4,596.33	1,266.33	5,862.66	202.16	282.92	159.16
Mar.	2.18	4,746.54	4,748.72	1,342.42	6,091.14	196.49	163.68	245.03
Apr.	117.68	3,957.42	4,075.10	1,320.30	5,395.40	179.85	215.51	209.66
May	113.52	1,539.65	1,653.17	1,450.45	3,103.62	100.12	3,535.62	126.42
June	37.71	1,159.84	1,197.55	1,738.87	2,936.42	97.88	565.42	64.51
July	0	652.51	652.51	1,723.86	2,376.37	76.66	19.92	35.38
Aug.	0	569.13	569.13	1,726.00	2,295.13	74.04	-0.09	29.13
Sept.	0	625.83	625.83	1,547.40	2,173.23	72.44	2,480.23	38.71
For Yr.	273.36†	26,597.25	26,870.61	17,672.36	44,542.97	121.70	122.25	110.78

†Includes Fishboard Leakage.

TABLE 7
SCITUATE WATERSHED — REFORESTATION
NUMBER AND KINDS OF TREES PLANTED IN VARIOUS YEARS

Planted During Calendar Year	Balsam Fir	Red Pine	White Pine	Douglas Fir	Austrian Pine	Scotch Pine	Jack Pine	White Spruce	Norway Spruce	Hemlock	Larch	Total Number Planted Yearly
1926	0	160,000	40,000	0	0	0	0	0	0	0	0	200,000
1927	0	60,000	150,000	0	0	0	0	0	0	0	0	210,000
1928	0	10,000	10,000	0	0	0	0	0	0	0	0	20,000
1929	0	10,000	75,000	0	0	0	0	0	0	0	0	85,000
1930	0	40,000	40,000	0	0	0	0	0	0	0	0	80,000
1931	0	40,000	50,000	0	0	0	0	9,000	0	0	0	99,000
1932	0	40,000	40,000	0	0	0	0	20,000	0	0	0	100,000
1933	0	755,000	255,000	0	0	0	4,000	505,000	204,000	3,000	0	1,898,000
1934 & 1935	0	453,700	111,000	0	14,400	136,000	0	20,000	15,000	26,000	0	640,100
1936	0	481,100	0	0	0	0	0	213,200	0	0	0	694,300
1937	0	229,000	21,693	0	0	0	0	0	0	0	0	250,693
1938	0	8,000	761,000	0	0	0	50,000	0	0	0	0	819,000
1939	0	267,387	618,828	0	45,916	0	67,750	0	0	0	0	999,881
1940	0	51,000	295,650	0	0	0	0	34,350	0	0	0	381,000
1941	0	0	308,120	0	0	0	0	0	0	0	0	308,120
1942	0	0	0	0	0	0	0	0	0	0	0	0
1943	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	1,500	12,000	0	0	0	0	0	0	0	13,500
1952	0	20,000	0	0	0	0	0	10,000	0	0	10,000	40,000
1953	2,000	10,000	0	2,000	0	0	0	6,000	0	0	0	16,000
1954	0	0	5,000	0	0	0	0	0	0	0	6,000	10,000
1955	0	0	0	0	0	0	0	0	0	0	5,000	10,000
1956	0	0	5,000	0	4,500	0	0	0	0	0	0	9,500
1957	0	0	6,000	0	0	0	0	0	0	0	0	6,000
1958	0	2,700	2,000	0	0	0	0	0	0	0	0	4,700
1959	0	0	0	0	0	0	0	0	0	0	0	0
1960	140	540	6,874	784	405	0	0	3,401	49	0	3,461	15,654
TOTALS	2,140	2,638,427	2,802,665	14,784	101,221	136,000	121,750	820,951	219,049	29,000	24,461	6,910,448

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 Narrag. Elec. 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

*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, 1960

1959-1960	Influent Aerator Hours Operated	Plant Influent Mil. Gals.		Water Filtered Mil. Gals.		Wash Water Mil. Gals.		Plant Effluent Mil. Gals.		Plant Effluent Flow Hours	Number of Filters In Operation		Avg. Rate of Filtration per M.G.D.
		Total	Avg. per Day	Total	Avg. per Day	Total	Avg. per Day	Total	Avg. per Day		Max.	Min.	Avg.
Oct.	744.0	1,557.89	50.25	1,311.304	42.300	13.343	0.430	1,297.961	41.870	745.0	14.0	5.0	9.0
Nov.	716.4	1,329.90	44.33	1,209.993	40.333	8.555	0.286	1,201.438	40.048	720.0	12.0	5.0	8.6
Dec.	735.7	1,342.93	43.32	1,240.450	40.015	11.574	0.373	1,228.885	39.642	744.0	13.0	4.0	8.5
Jan.	744.0	1,325.99	42.77	1,233.770	39.799	10.499	0.339	1,223.271	39.460	744.0	12.0	5.0	8.5
Feb.	696.0	1,266.33	43.66	1,171.594	40.400	5.981	0.206	1,165.613	40.194	696.0	12.5	4.5	8.6
Mar.	744.0	1,342.42	43.30	1,237.205	39.910	6.494	0.209	1,230.711	39.700	744.0	12.0	5.0	8.5
Apr.	719.0	1,320.30	44.01	1,217.597	40.587	6.913	0.230	1,210.684	40.356	719.0	12.0	5.0	8.6
May	744.0	1,450.45	48.35	1,313.815	42.381	9.787	0.316	1,304.028	42.565	744.0	13.0	3.0	7.8
June	720.0	1,738.87	57.96	1,564.639	52.135	12.494	0.416	1,532.145	51.738	720.0	14.0	3.0	8.6
July	744.0	1,723.86	55.61	1,551.328	50.043	9.470	0.305	1,541.858	49.737	744.0	13.0	3.0	7.1
Aug.	744.0	1,726.00	55.68	1,543.399	49.784	8.663	0.279	1,534.640	49.505	744.0	13.5	2.0	7.1
Sept.	720.0	1,547.40	51.58	1,376.276	45.876	9.371	0.312	1,366.903	45.564	720.0	13.0	1.0	6.5
Totals	8,771.1	17,672.36	.....	15,971.290	.....	112.144	.....	15,838.146	.....	8,784.0	.....	.....	.....
Average	730.9	.....	48.39	.....	43.637	.....	0.309	.....	43.328	732.0	.....	.....	8.1
													5.37

Raw water treated with Ferri-Floc before Influent Aeration.
Quicklime added to Ferri-Floc treated water in conduit opposite Fluoridation Room.
Chlorine added to water after filtration all year.
Sodium Silicofluoride added to water after filtration.
Raw water drawn from lower intake at Gainer Memorial Dam all year.

Table 9 (Continued)
WATER PURIFICATION WORKS
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1960

1959- 1960	Number of Filters Washed			Ferri-Floc Used			Quicklime Used			Chlorine Used			Sodium Silicofluoride Used			Fuel Oil Used for Heating— Gals.		
	Total	Avg. per Day	Hours Run Avg.	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.*	No. 2	No. 6	
Oct.....	94	3.0	77.13	116,591	3,761	0.52	145,418	4,691	0.65	3,761	121	0.35	19,452	627	1.08	280	4,503	
Nov.....	61	2.0	97.75	93,369	3,112	0.49	115,221	3,841	0.61	3,483	116	0.35	17,849	593	1.07	35	8,988	
Dec.....	92	3.0	73.00	93,733	3,024	0.49	110,394	3,561	0.58	3,570	115	0.36	18,148	586	1.07	490	10,443	
Jan.....	101	3.3	65.80	132,017	4,259	0.70	124,715	4,023	0.66	3,538	114	0.35	17,990	580	1.07	555	11,701	
Feb.....	56	1.9	106.63	160,983	5,551	0.89	132,333	4,563	0.73	3,423	118	0.36	17,182	592	1.07	532	9,441	
Mar.....	62	2.0	107.97	143,812	4,639	0.75	131,953	4,257	0.69	3,584	116	0.35	18,771	606	1.10	624	11,106	
Apr.....	60	2.0	104.86	138,618	4,621	0.73	128,550	4,285	0.68	3,513	117	0.35	19,256	642	1.15	706	5,284	
May.....	74	2.4	80.40	149,632	4,827	0.72	140,477	4,532	0.68	3,809	123	0.36	20,769	670	1.15	371	456	
June.....	88	2.9	70.98	181,002	6,033	0.73	168,843	5,628	0.68	4,485	150	0.35	20,121	671	0.95	836	0	
July.....	67	2.2	78.59	177,244	5,718	0.72	173,460	5,595	0.70	4,518	146	0.36	19,441	627	0.92	825	0	
Aug.....	60	1.9	88.36	154,234	4,975	0.63	166,000	5,355	0.67	5,059	163	0.40	19,581	632	0.93	976	0	
Sept.....	56	2.2	78.60	136,585	4,346	0.62	151,817	5,061	0.69	4,508	150	0.40	17,342	578	0.92	815	0	
Totals.....	881	.....	.....	1,677,640	.....	.....	1,689,181	.....	.....	47,251	.....	.....	225,902	.....	.....	7,055	61,922	
Average.....	.....	2.4	83.33	.....	4,584	0.66	.....	4,615	0.67	.....	129	0.36	.....	617	1.03	588	5,160	

Total filter hours for year, 71,328.21; average per day, 194.89.
Average quantity of water filtered per filter per run, 18.65 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, 1960

Chemicals	Pounds of Chemicals Used		Total Gallons of Water Treated	Cost of Chemicals	Pounds of Chemicals Used per 1,000,000 Gals. of Water Treated (Avg.)	Cost of Chemicals Per 1,000,000 Gals. of Water Treated
	Total	Lbs. per Day (Avg.)				
Ferri-Floc	1,677,640	4,584	17,667,210,000	\$46,177.04	94.96	\$2.61
Quicklime	1,689,181	4,615	17,670,280,000	17,668.83	95.59	1.00
Chlorine	47,251	129	15,580,426,000	3,734.39	3.03	0.24
Sod. Silicofluoride	225,902	617	15,544,914,000	15,744.24	14.53	1.01
Totals	3,639,974			\$83,324.50		\$4.86

Price of Ferri-Floc—From Oct. 1, 1959 to Sept. 30, 1960—\$55.05 per ton.
Price of Quicklime—From Oct. 1, 1959 to Sept. 30, 1960—\$20.92 per ton.
Price of Chlorine—From Oct. 1, 1959 to Nov. 8, 1959—\$0.0875 per pound; from Nov. 9, 1959 to Sept. 30, 1960—\$0.0775 per pound.
Price of Sodium Silicofluoride—From Oct. 1, 1959 to Sept. 30, 1960—\$139.39 per ton.

TABLE 11
WATER PURIFICATION WORKS
***CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1960

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Alkalinity													
Raw.....	4.3	4.1	4.0	4.1	4.0	3.9	4.0	4.0	3.8	3.8	4.4	4.5	4.1
**Effluent.....	18.4	18.0	16.1	15.7	15.0	16.0	15.3	15.4	14.9	15.9	17.1	17.7	16.3
Tap.....	15.6	15.2	14.0	13.5	12.7	13.8	13.2	13.8	14.1	14.4	15.5	15.5	14.3
Hardness													
Raw.....	10	9	10	10	10	10	10	10	10	10	9	9	10
**Effluent.....	28	27	26	27	29	29	28	28	28	28	29	29	28
Tap.....	28	27	26	27	29	29	28	28	28	28	29	29	28
Hydrogen Ion Concentration													
Raw.....	6.2	6.7	6.7	6.6	6.5	6.5	6.4	6.4	6.2	6.1	6.0	6.1	6.4
Aerated Influent.....	4.5	4.6	4.6	4.4	4.3	4.3	4.3	4.2	4.2	4.2	4.3	4.4	4.4
Treated.....	10.1	10.3	10.3	10.4	10.3	10.4	10.4	10.3	10.2	10.3	10.2	10.3	10.3
Settled.....	10.0	10.2	10.2	10.3	10.2	10.3	10.2	10.3	10.1	10.2	10.2	10.2	10.2
Filtered.....	10.0	10.2	10.2	10.3	10.2	10.3	10.2	10.2	10.1	10.2	10.1	10.1	10.2
**Effluent.....	10.0	10.2	10.2	10.3	10.2	10.3	10.2	10.1	10.1	10.2	10.1	10.1	10.2
Tap.....	9.8	10.1	10.0	10.1	10.1	10.2	10.1	10.0	10.0	10.0	10.0	10.0	10.0
Free CO₂													
Raw.....	5.1	1.6	1.5	1.5	1.8	1.5	1.7	2.0	2.8	4.5	5.7	6.4	3.0
Aerated Influent.....	5.8	4.2	4.2	5.9	8.2	7.1	6.9	7.0	7.2	7.7	7.1	7.1	6.5
Phenolphthalein Alkalinity													
Treated.....	11.6	11.5	10.8	10.5	10.2	10.9	10.7	10.9	10.8	10.8	11.1	11.5	10.9
Settled.....	10.8	10.7	10.0	9.8	9.1	10.2	9.6	9.5	9.6	9.7	10.4	10.7	10.0
Filtered.....	10.5	10.7	10.0	9.7	9.1	10.1	9.4	9.4	9.5	9.7	10.3	10.6	9.9
**Effluent.....	10.5	10.7	10.0	9.7	9.0	10.0	9.4	9.4	9.5	9.7	10.4	10.6	9.9
Tap.....	7.8	7.7	7.0	6.9	6.3	6.9	6.6	6.9	7.1	7.2	7.9	7.7	7.2
Color													
Raw.....	15	10	11	13	16	15	14	13	12	13	13	15	13
**Effluent.....	5	5	5	6	7	7	7	6	6	7	7	5	6
Tap.....	5	5	5	6	7	7	6	6	6	6	6	5	6
Turbidity													
Raw.....	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Settled.....	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
**Effluent.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Iron													
Raw.....	0.24	0.05	0.04	0.05	0.05	0.04	0.03	0.02	0.02	0.03	0.09	0.25	0.08
Settled.....	.36	.21	.41	.60	.41	.45	.31	.28	.30	.29	.30	.22	.35
**Effluent.....	.00	.00	.01	.02	.02	.01	.01	.01	.01	.00	.00	.00	.01
Tap.....	.00	.00	.01	.02	.02	.02	.01	.01	.01	.01	.01	.00	.01
Manganese													
Raw.....	0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.13	0.03
Settled.....	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.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
Fluoride													
Raw.....	0.15	0.15	0.15	0.15	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
**Effluent.....	0.13	0.13	0.14	0.13	0.14	0.15	0.14	0.15	0.13	0.14	0.14	0.15	0.14
Tap.....	1.14	1.16	1.14	1.14	1.15	1.16	1.19	1.18	1.03	1.01	0.97	1.00	1.11
Temperature (°F.)													
Air (av. of daily max.)	62	51	44	37	44	40	60	67	75	78	78	59	59
Air (av. of daily min.)	45	35	34	23	24	23	39	47	56	61	60	42	42
Raw water.....	57	52	43	36	36	35	42	49	51	51	53	47	47
Water on filters.....	56	49	41	35	35	34	44	52	55	56	56	47	47
Tap.....	61	56	49	40	40	39	48	56	59	61	61	53	53

*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, 1960

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Color													
Ponaganset Reservoir	25	25	35	20	12	15	35	25	25	15	15	15	22
Coventry Brook	200	100	40	25	30	15	50	100	80	80	70	15	67
Wilbur Brook	60	140	60	15	15	15	20	25	18	10	10	20	34
Westconnaug Res.	120	70	40	20	20	15	20	30	32	28	28	30	38
Barden Reservoir	30	30	40	15	15	15	18	30	15	**	**	30	24
Cork Brook	70	35	30	20	20	15	30	45	50	40	40	25	35
Rush Brook	35	20	30	12	12	14	20	28	25	24	24	25	22
Huntinghouse Brook	40	25	25	15	12	13	18	25	30	20	20	30	23
Harrisdale Brook	225	200	60	50	40	35	50	200	300	250	200	200	151
Blanchard Brook	20	25	12	15	15	15	15	15	20	15	15	15	16
Moswansicut Pond	40	20	20	15	15	10	15	20	25	18	18	18	20
Regulating Reservoir	175	100	70	15	12	35	100	140	250	120	120	140	106
Quonapaug Brook	80	60	20	60	15	22	50	25	35	80	80	30	46
Hemlock Brook	40	80	15	10	12	10	12	20	45	100	100	35	40
Betty Pond Stream	90	60	30	20	20	22	35	40	40	60	60	40	43
Spruce Brook	100	125	60	30	25	12	40	60	40	40	40	25	50
Brandy Brook	44	40	60	10	15	24	14	15	60	30	30	60	34
Moswansicut—South	60	32	20	15	15	14	12	25	25	35	35	20	26
Windsor Brook	40	38	40	15	12	8	8	15	25	**	**	30	23
Paine Pond	180	160	38	30	20	30	50	25	**	30	20	50	58
Unnamed Brook—A	60	20	20	10	12	12	10	20	**	**	**	44	23
Unnamed Brook—B													
Turbidity													
Ponaganset Reservoir	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Coventry Brook	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Wilbur Brook	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Westconnaug Res.	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.4	0.2	0.2	0.2
Barden Reservoir	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.1	0.2	0.2	0.2
Cork Brook	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	**	**	0.2	0.2
Rush Brook	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2
Huntinghouse Brook	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2
Harrisdale Brook	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Blanchard Brook	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.2
Moswansicut Pond	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Regulating Reservoir	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Quonapaug Brook	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Hemlock Brook	0.3	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Betty Pond Stream	0.3	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Spruce Brook	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Brandy Brook	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2
Moswansicut—South	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2
Windsor Brook	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Paine Pond	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	**	**	0.2	0.2
Unnamed Brook—A	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	**	0.2	0.2	0.3	0.2
Unnamed Brook—B	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	**	**	**	0.3	0.2
Iron													
Ponaganset Reservoir	0.05	0.02	0.10	0.00	0.02	0.03	0.00	0.10	0.35	0.35	0.10	0.28	0.17
Coventry Brook	.20	.20	.15	.10	.04	.04	.01	.40	.06	.01	.04	.00	.06
Wilbur Brook	.20	.15	.10	.00	.04	.04	.30	.18	.15	.10	.10	.22	.13
Westconnaug Res.	.30	.12	.07	.06	.01	.05	.01	.15	.30	.20	.60	.15	.17
Barden Reservoir	.02	.01	.05	.00	.01	.04	.28	.20	.00	**	**	.10	.07
Cork Brook	.28	.05	.05	.00	.01	.04	.27	.01	1.50	.01	.03	.38	.22
Rush Brook	.20	.12	.10	.04	.01	.03	.30	.10	.20	.60	3.00	.10	.40
Huntinghouse Brook													

*Parts per million.

**No sample obtained—Brook or Pond was dry.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is South-west 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, 1960

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Iron													
Harrisdale Brook ...	.20	.12	.10	.12	.01	.03	.40	.12	.40	.20	.12	.12	.16
Blanchard Brook ...	.90	.35	.15	.05	.10	.04	.20	.05	2.00	.20	2.00	.60	.55
Moswansicut Pond ...	.10	.05	.20	.05	.10	.02	.20	.10	.01	.20	.00	.10	.09
Regulating Reservoir ...	.38	.07	.08	.15	.04	.04	.30	1.00	.30	.20	.20	.12	.24
Quonapaug Brook ...	1.20	.38	.12	.05	.10	.05	.10	.60	3.00	.40	3.00	.40	.78
Hemlock Brook ...	.38	.08	.02	.06	.05	.02	.20	.20	.40	.25	.10	.15	.16
Betty Pond Stream...	.07	.07	.02	.04	.03	.02	.30	.02	.40	.20	.05	.10	.11
Spruce Brook ...	.08	.07	.02	.30	.04	.01	.20	.02	.10	.15	.10	.10	.10
Brandy Brook ...	.44	1.00	.60	.35	.05	.02	.15	.40	.40	.30	.25	2.50	.54
Moswansicut—South ...	.78	.05	.40	.40	.32	.02	.06	.40	3.00	.25	.30	.45	.54
Windsor Brook ...	.07	.15	.01	.01	.02	.02	.07	.05	.10	.20	.10	.10	.08
Paine Pond ...	.35	.15	.01	.30	.01	.03	.01	.00	.30	**	**	.18	.13
Unnamed Brook—A...	.50	.00	.01	.05	.01	.02	.04	.00	**	.20	.10	.20	.10
Unnamed Brook—B...	.05	.20	.02	.01	.01	.03	.00	.15	**	**	**	.01	.05
Manganese													
Ponaganset Reservoir	...	...	...	...	...	0.00	0.02	0.02	0.02	0.00	0.00	0.01	0.01
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 Res. ...	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Barden Reservoir ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Cork Brook ...	.06	.03	.00	.00	.00	.00	.00	.00	.00	**	**	.00	.01
Rush Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Huntinghouse Brook.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Harrisdale Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Blanchard Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Moswansicut Pond ...	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
Regulating Reservoir.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Quonapaug Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Hemlock Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Betty Pond Stream...	.00	.08	.00	.01	.00	.00	.01	.00	.00	.00	.00	.00	.01
Spruce Brook ...	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Brandy Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
Moswansicut—South ...	.00	.00	.01	.04	.00	.01	.00	.00	.00	.01	.00	.00	.01
Windsor Brook ...	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Paine Pond ...	.05	.03	.01	.02	.01	.01	.00	.00	.00	**	**	.00	.01
Unnamed Brook—A...	.09	.01	.00	.00	.00	.00	.00	.00	**	.00	.00	.00	.00
Unnamed Brook—B...	.02	.08	.00	.01	.01	.01	.01	.00	**	**	**	.01	.02
Hydrogen Ion Concentration													
Ponaganset Reservoir	...	...	...	...	...	5.7	5.1	5.0	5.1	5.2	5.1	5.8	5.3
Coventry Brook ...	5.6	5.8	6.7	6.8	6.3	6.4	6.2	6.3	6.7	6.6	6.8	6.7	6.4
Wilbur Brook ...	5.3	5.6	6.5	6.6	6.2	6.2	6.2	6.1	6.5	6.5	6.6	6.4	6.2
Westconnaug Res. ...	6.0	5.3	6.1	6.3	6.2	6.3	6.2	6.4	6.8	6.8	6.8	6.7	6.3
Barden Reservoir ...	5.2	5.2	5.8	6.3	5.9	6.3	6.3	6.5	6.7	6.8	6.7	6.6	6.2
Cork Brook ...	5.4	5.6	5.8	6.3	5.9	6.1	5.7	5.7	6.6	**	**	5.7	5.9
Rush Brook ...	5.6	5.7	6.0	6.1	6.0	6.1	6.0	6.3	6.7	6.5	6.3	6.2	6.1
Huntinghouse Brook.	6.1	6.0	6.3	6.2	6.0	6.2	6.5	6.1	6.8	6.5	6.6	6.5	6.3
Harrisdale Brook ...	5.8	6.3	6.6	6.4	6.2	6.3	6.4	6.5	7.2	6.9	7.0	6.7	6.5
Blanchard Brook ...	6.0	5.4	6.9	5.2	6.0	6.2	6.8	6.0	6.0	6.0	6.0	6.0	6.0
Moswansicut Pond ...	6.3	6.4	6.8	6.1	6.0	6.3	6.9	6.5	6.3	6.3	6.4	6.5	6.4
Regulating Reservoir.	5.9	6.0	7.0	6.3	5.9	6.8	6.9	6.7	7.0	6.8	6.9	6.8	6.6
Quonapaug Brook ...	5.1	5.4	5.8	5.9	5.6	6.4	6.0	6.2	6.1	6.2	6.4	6.0	5.9
Hemlock Brook ...	5.0	6.3	6.1	6.0	5.6	6.0	5.8	6.2	6.7	6.6	7.0	6.3	6.1
Betty Pond Stream...	6.0	6.3	6.1	5.9	5.6	6.0	5.9	6.1	6.3	6.2	6.3	6.3	6.1

*Parts per million, except Hydrogen Ion Concentration.

**No sample obtained—Brook or Pond was dry.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is South-west 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, 1960

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Hydrogen Ion Concentration													
Spruce Brook	5.5	5.6	5.9	6.0	6.0	6.1	6.0	6.2	6.4	6.5	6.8	6.6	6.1
Brandy Brook	5.8	6.3	6.0	6.0	6.3	6.2	5.6	6.4	6.6	6.7	6.6	6.5	6.3
Moswansicut—South.	6.3	6.5	5.7	6.8	6.3	6.4	6.5	6.4	6.8	7.0	7.0	6.7	6.5
Windsor Brook	6.1	6.0	5.8	6.1	5.6	6.4	7.0	6.3	5.8	7.0	6.9	6.7	6.3
Paine Pond	5.2	5.8	5.6	6.5	5.6	5.6	5.5	6.2	5.7	**	**	6.3	5.8
Unnamed Brook—A..	5.3	5.8	5.6	6.0	5.5	5.8	6.1	6.2	**	4.8	5.0	6.3	5.7
Unnamed Brook—B..	5.2	5.5	5.8	6.0	5.5	5.8	5.7	5.6	**	**	**	6.5	5.7
Free CO₂													
Ponaganset Reservoir						3.0	2.0	3.5	4.0	4.5	2.5	3.0	3.2
Coventry Brook	5.0	3.0	3.0	3.5	2.0	2.0	2.5	2.0	4.0	2.5	2.0	2.0	2.8
Wilbur Brook	10.0	6.0	3.0	4.0	2.0	3.0	2.5	2.5	4.5	4.0	2.0	2.0	3.8
Westconnaug Res.	4.5	6.0	3.0	3.0	2.0	2.5	2.0	2.0	3.0	3.0	1.5	1.5	2.8
Barden Reservoir	8.0	5.0	2.5	3.5	2.5	2.5	2.0	2.0	3.0	3.0	1.5	1.5	3.1
Cork Brook	6.0	4.5	2.5	3.0	2.5	2.5	2.0	2.5	2.5	**	**	2.0	3.0
Rush Brook	5.0	4.0	3.0	3.0	2.0	2.0	2.0	2.0	7.0	3.5	2.5	2.5	3.2
Huntinghouse Brook..	5.0	4.0	3.5	3.5	2.0	2.0	2.0	2.5	7.0	2.0	1.5	3.0	3.2
Harrisdale Brook ...	5.0	3.5	3.5	3.0	2.5	2.0	1.5	2.0	2.5	2.5	2.0	1.5	2.6
Blanchard Brook	12.0	8.0	3.5	6.0	3.0	2.0	1.5	2.0	9.0	2.0	3.0	2.0	4.5
Moswansicut Pond ...	3.0	3.0	3.0	2.5	3.0	1.5	1.5	2.0	3.0	2.0	1.5	2.0	2.3
Regulating Reservoir..	7.0	3.5	3.0	2.0	3.0	2.0	2.0	2.5	2.0	2.0	1.5	2.5	2.8
Quonapaug Brook ...	11.0	10.0	3.0	6.0	3.5	2.5	2.0	3.0	15.0	2.0	2.0	2.5	5.2
Hemlock Brook	8.0	4.0	3.5	3.0	3.0	2.0	2.5	2.0	2.5	2.5	2.5	3.0	3.2
Betty Pond Stream..	5.0	5.0	3.5	9.0	3.0	2.5	2.0	2.0	5.0	3.0	2.0	3.0	3.8
Spruce Brook	4.0	5.0	3.0	3.0	3.0	2.0	1.5	2.0	3.5	3.5	1.0	4.0	3.0
Brandy Brook	9.0	4.0	5.0	2.0	2.5	2.0	1.5	2.0	3.0	4.0	3.5	3.5	3.5
Moswansicut—South.	5.0	4.0	4.0	2.0	2.5	1.5	2.0	2.0	7.0	3.5	2.0	1.5	3.1
Windsor Brook	4.0	4.0	3.0	2.5	2.5	2.5	2.0	3.0	5.0	4.0	1.5	2.0	3.0
Paine Pond	5.0	4.5	3.0	3.0	3.0	4.0	3.0	2.5	5.0	**	**	5.0	3.8
Unnamed Brook—A..	5.0	4.0	4.5	2.0	3.0	3.0	2.5	3.0	**	4.0	2.0	6.0	3.5
Unnamed Brook—B..	4.5	6.0	3.0	3.0	3.0	3.0	2.5	4.0	**	**	**	10.0	4.3
Alkalinity													
Ponaganset Reservoir						3.0	1.0	4.0	0.5	2.0	1.5	2.0	2.0
Coventry Brook	3.5	4.0	4.5	5.0	4.0	4.0	3.0	5.0	6.5	7.0	7.0	5.0	4.9
Wilbur Brook	5.0	4.0	4.5	5.0	3.0	4.0	3.0	6.0	7.0	8.0	9.0	5.0	5.3
Westconnaug Res.	6.0	3.0	4.0	4.0	4.0	4.0	3.0	5.0	6.0	5.0	6.0	5.0	4.6
Barden Reservoir	4.0	3.0	4.0	4.0	3.5	4.0	4.0	5.0	6.0	5.0	6.0	4.5	4.4
Cork Brook	5.0	3.0	3.5	4.0	3.0	4.0	4.5	4.0	6.0	**	**	4.0	4.1
Rush Brook	6.0	3.5	4.0	5.0	3.0	4.0	4.0	6.0	9.0	8.0	10.0	4.5	5.6
Huntinghouse Brook..	5.0	4.0	6.5	5.0	4.0	4.0	4.0	7.0	12.0	12.0	15.0	5.0	7.0
Harrisdale Brook ...	5.0	5.0	6.0	6.0	4.0	4.0	6.5	8.5	12.0	12.0	11.0	5.5	7.1
Blanchard Brook	8.0	3.0	3.0	2.5	4.0	3.0	6.0	4.0	6.0	5.0	5.0	5.0	4.5
Moswansicut Pond ...	7.0	7.0	10.0	5.0	6.0	5.5	6.0	5.0	6.0	6.0	6.0	5.0	6.2
Regulating Reservoir..	4.5	4.0	8.0	5.0	4.0	4.0	5.0	6.0	6.0	7.0	15.0	5.5	6.2
Quonapaug Brook ...	8.0	4.0	4.5	4.0	4.0	4.5	4.5	6.5	12.0	12.0	6.0	4.5	6.2
Hemlock Brook	2.0	5.5	4.0	3.0	4.0	4.0	4.0	5.0	4.0	4.0	6.0	5.5	4.3
Betty Pond Stream..	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.5	4.5
Spruce Brook	4.5	4.0	4.0	3.0	4.0	4.0	4.0	4.0	3.5	6.0	11.0	6.0	4.8
Brandy Brook	7.0	6.5	6.0	5.5	8.0	5.0	5.0	8.0	9.0	18.0	19.5	6.5	8.7
Moswansicut—South.	13.0	13.0	3.0	8.0	4.0	4.5	9.0	12.0	16.0	9.0	10.0	5.0	8.9
Windsor Brook	4.0	3.0	3.5	3.5	3.5	4.5	4.0	4.5	7.0	7.0	9.0	5.0	4.9
Paine Pond	4.0	3.0	4.0	6.0	5.0	8.0	3.5	5.0	0.5	**	**	3.0	4.2
Unnamed Brook—A..	4.0	5.0	4.0	4.0	3.5	5.0	4.5	6.0	**	0.5	0.5	5.0	3.8
Unnamed Brook—B..	3.0	3.0	4.0	2.0	3.5	3.0	3.0	4.0	**	**	**	5.0	3.4

*Parts per million, except Hydrogen Ion Concentration.

**No sample obtained—Brook or Pond was 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, 1960

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Hydrogen Ion Concentration													
Neutaconkanut Reservoir..	9.8	10.0	10.0	10.0	10.0	10.1	10.0	9.9	9.8	9.9	9.9	9.9	9.9
Phenix Ave., Cranston....	9.8	10.0	10.0	10.0	10.0	10.1	10.0	9.9	9.8	9.9	9.9	9.9	9.9
Westminster St., Olneyville	9.8	10.0	10.0	10.1	10.0	10.1	10.0	9.9	9.9	9.9	9.9	9.9	10.0
Budlong Road, Cranston..	9.8	10.0	10.0	10.1	10.0	10.1	10.0	9.9	9.9	9.9	9.9	9.9	10.0
Reservoir Ave., Cranston..	9.8	10.0	10.0	10.0	10.0	10.1	10.0	9.9	9.9	9.9	9.9	9.9	10.0
T. F. Green Airport, War.	9.8	10.0	10.0	10.0	10.0	10.1	10.0	9.9	9.9	9.9	9.9	9.9	10.0
Biltmore Hotel	9.8	10.0	10.0	10.0	10.0	10.1	10.0	9.9	9.9	9.9	9.9	9.9	10.0
Crown Hotel	9.8	10.0	10.0	10.0	10.0	10.1	10.0	9.9	9.8	9.9	9.9	9.9	9.9
State Office Bldg.	9.8	10.0	10.0	10.1	10.0	10.1	10.0	9.9	9.9	9.9	9.9	9.9	10.0
*Longview Reservoir	9.8	10.0	10.0	9.9	10.0	10.1	10.0	9.9	9.8	9.9	9.9	9.9	9.9
**10 Westminster St.....	.....	.....	.....	.....	.....	10.1	10.0	9.9	9.8	9.9	9.9	9.9	9.9
Phenolphthalein Alkalinity													
Neutaconkanut Reservoir..	7.8	7.7	7.0	6.8	6.3	6.8	6.6	6.9	7.0	6.9	7.8	7.5	7.1
Phenix Ave., Cranston....	7.9	7.5	6.9	6.9	6.3	6.9	6.6	6.9	7.0	7.1	7.8	7.7	7.1
Westminster St., Olneyville	8.0	7.7	7.0	6.8	6.3	7.0	6.6	6.9	7.1	7.1	7.8	7.8	7.2
Budlong Road, Cranston..	7.8	7.7	7.0	6.9	6.3	6.9	6.6	7.0	7.1	7.1	7.8	7.8	7.2
Reservoir Ave., Cranston..	8.0	7.6	7.0	6.9	6.3	6.9	6.6	6.9	7.1	7.1	7.8	7.8	7.2
T. F. Green Airport, War.	7.9	7.7	7.0	6.9	6.3	7.0	6.6	6.9	7.1	7.3	7.9	7.9	7.2
Biltmore Hotel	7.8	7.7	7.0	6.9	6.3	7.0	6.6	6.9	7.1	7.2	7.8	7.8	7.2
Crown Hotel	7.9	7.8	7.0	6.9	6.3	7.1	6.8	6.9	7.1	7.2	7.8	7.9	7.2
State Office Bldg.	7.9	7.8	7.0	6.9	6.3	7.1	6.8	6.9	7.0	7.3	7.9	7.9	7.2
*Longview Reservoir	8.7	8.8	8.1	7.3	6.7	7.0	7.0	7.0	7.3	7.2	8.3	7.9	7.6
**10 Westminster St.....	.....	.....	.....	.....	.....	7.1	6.5	6.9	7.0	7.2	7.9	7.8	7.2
Methyl Orange Alkalinity													
Neutaconkanut Reservoir..	15.7	15.2	13.9	13.4	12.5	13.6	13.2	13.8	14.0	14.0	15.5	15.2	14.2
Phenix Ave., Cranston....	15.8	15.3	13.8	13.5	12.7	13.8	13.2	13.8	14.1	14.3	15.5	15.6	14.3
Westminster St., Olneyville	15.8	15.3	13.9	13.5	12.6	14.0	13.2	13.8	14.2	14.3	15.5	15.6	14.3
Budlong Road, Cranston..	15.6	15.2	14.0	13.6	12.7	13.8	13.2	13.9	14.2	14.4	15.5	15.6	14.3
Reservoir Ave., Cranston..	15.8	15.1	13.9	13.6	12.7	13.9	13.3	13.8	14.1	14.5	15.5	15.7	14.3
T. F. Green Airport, War.	15.6	15.4	14.0	13.6	12.6	14.0	13.3	13.8	14.1	14.6	15.7	15.8	14.4
Biltmore Hotel	15.6	15.3	14.0	13.6	12.7	14.0	13.3	13.8	14.2	14.6	15.5	15.7	14.4
Crown Hotel	15.6	15.4	14.0	13.6	12.6	14.1	13.5	13.8	14.2	14.6	15.6	15.7	14.4
State Office Bldg.	15.7	15.5	13.9	13.5	12.7	14.2	13.5	13.8	14.1	14.6	15.7	15.9	14.4
*Longview Reservoir	17.2	15.9	16.1	14.3	13.4	14.2	14.0	13.9	14.5	14.6	16.5	16.6	15.2
**10 Westminster St.....	.....	.....	.....	.....	.....	14.3	13.6	13.8	14.1	14.4	15.8	15.7	14.5
Color													
Neutaconkanut Reservoir..	5	5	5	6	7	7	6	6	6	7	6	5	6
Phenix Ave., Cranston....	5	5	5	6	7	7	6	6	6	6	6	5	6
Westminster St., Olneyville	5	5	5	6	7	7	6	6	6	6	6	5	6
Budlong Road, Cranston..	5	5	5	6	7	7	6	6	6	6	6	5	6
Reservoir Ave., Cranston..	5	5	5	6	7	7	6	6	6	6	7	5	6
T. F. Green Airport, War.	5	5	5	6	7	7	6	6	6	6	6	5	6
Biltmore Hotel	5	5	5	6	6	7	6	6	6	6	6	5	6
Crown Hotel	5	5	5	6	7	7	6	6	6	6	6	5	6
State Office Bldg.	5	5	5	6	7	7	6	6	6	6	6	5	6
*Longview Reservoir	5	5	5	6	7	7	7	7	7	7	7	6	6
**10 Westminster St.....	.....	.....	.....	.....	.....	7	6	6	6	6	6	5	6
Iron													
Neutaconkanut Reservoir..	0.00	0.00	0.01	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Phenix Ave., Cranston....	.01	.01	.01	.03	.04	.03	.02	.01	.01	.01	.01	.01	.02
Westminster St., Olneyville	.00	.00	.00	.02	.03	.02	.01	.01	.01	.01	.01	.01	.01
Budlong Road, Cranston..	.00	.00	.00	.03	.03	.02	.01	.01	.01	.01	.01	.01	.01
Reservoir Ave., Cranston..	.01	.01	.00	.03	.03	.03	.01	.01	.01	.01	.01	.01	.01
T. F. Green Airport, War.	.04	.05	.08	.06	.06	.06	.03	.03	.03	.03	.02	.02	.04
Biltmore Hotel .....	.01	.01	.01	.02	.03	.03	.01	.01	.01	.01	.01	.00	.01
Crown Hotel .....	.01	.01	.01	.03	.03	.03	.01	.01	.01	.01	.01	.01	.02
State Office Bldg. ....	.00	.01	.01	.02	.03	.02	.01	.01	.01	.01	.01	.01	.01
*Longview Reservoir .....	.04	.05	.04	.05	.06	.05	.06	.06	.06	.05	.03	.05	.05
**10 Westminster St.....	.....	.....	.....	.....	.....	.05	.01	.01	.01	.01	.01	.01	.02

*Sample obtained at Our Lady of Fatima Hospital.

**From Mar. 8 to 17, sample was obtained at 31 Canal St.

TABLE 13 (Continued)

WATER PURIFICATION WORKS
CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN
VARIOUS PARTS OF THE DISTRIBUTION SYSTEM
YEAR ENDED SEPTEMBER 30, 1960

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Avg. for Year
Chlorides													
Neutaconkanut Reservoir..	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.5
Phenix Ave., Cranston....	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.8	2.5	2.5
Westminster St., Olneyville	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.5
Budlong Road, Cranston..	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.5
Reservoir Ave., Cranston..	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.5
T. F. Green Airport, War.	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.5
Biltmore Hotel	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.5
Crown Hotel	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.8	2.6	2.5
State Office Bldg.	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.9	2.6	2.5
*Longview Reservoir	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.6	2.5
**10 Westminster St.....						2.5	2.5	2.5	2.6	2.7	2.8	2.5	2.6
Nitrites													
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 Ave., Cranston....	.000	.001	.000	.000	.000	.000	.000	.001	.001	.001	.001	.001	.001
Westminster St., Olneyville	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Budlong Road, Cranston..	.001	.000	.000	.000	.000	.000	.000	.000	.001	.001	.001	.000	.000
Reservoir Ave., Cranston..	.001	.000	.000	.000	.000	.000	.000	.000	.001	.001	.001	.000	.000
T. F. Green Airport, War.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.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 Bldg. ....	.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 St.....						.000	.000	.000	.000	.000	.000	.000	.000
Taste													
Neutaconkanut Reservoir..	0	0	0	0	0	0	0	0	0	0	0	0	0
Phenix Ave., Cranston....	0	0	0	0	0	0	0	0	0	0	0	0	0
Westminster St., 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 Ave., Cranston..	0	0	0	0	0	0	0	0	0	0	0	0	0
T. F. Green Airport, War.	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 Bldg.	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 St.....						0	0	0	0	0	0	0	0
Odor													
Neutaconkanut Reservoir..	0	0	0	0	0	0	0	0	0	0	0	0	0
Phenix Ave., Cranston....	0	0	0	0	0	0	0	0	0	0	0	0	0
Westminster St., 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 Ave., Cranston..	0	0	0	0	0	0	0	0	0	0	0	0	0
T. F. Green Airport, War.	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 Bldg.	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 St.....						0	0	0	0	0	0	0	0
Fluoride													
Neutaconkanut Reservoir..	1.13	1.16	1.15	1.14	1.14	1.16	1.20	1.21	1.08	0.99	0.98	0.99	1.11
Phenix Ave., Cranston....	1.13	1.15	1.11	1.14	1.11	1.14	1.16	1.18	0.98	0.93	0.98	0.98	1.08
Westminster St., Olneyville	1.14	1.14	1.16	1.14	1.13	1.16	1.17	1.19	0.98	0.97	0.93	0.99	1.09
Budlong Road, Cranston..	1.12	1.15	1.11	1.14	1.10	1.15	1.19	1.17	0.95	0.90	0.98	0.98	1.08
Reservoir Ave., Cranston..	1.11	1.15	1.14	1.11	1.11	1.15	1.19	1.17	0.98	0.92	0.99	0.96	1.08
T. F. Green Airport, War.	1.16	1.15	1.14	1.14	1.16	1.17	1.20	1.19	1.04	1.04	0.95	0.98	1.11
Biltmore Hotel	1.15	1.17	1.16	1.14	1.15	1.17	1.21	1.18	1.03	1.02	1.00	1.00	1.12
Crown Hotel	1.15	1.16	1.15	1.13	1.15	1.18	1.20	1.18	1.03	1.00	0.97	0.99	1.11
State Office Bldg.	1.14	1.15	1.16	1.15	1.15	1.18	1.21	1.20	1.03	0.99	0.99	1.00	1.11
*Longview Reservoir	1.10	1.16	1.14	1.13	1.13	1.15	1.20	1.19	1.10	1.00	0.99	0.99	1.11
**10 Westminster St.....						1.18	1.20	1.19	1.04	1.00	0.99	1.09	

*Sample obtained at Our Lady of Fatima Hospital.

**From Mar. 8 to 17, sample was obtained at 31 Canal St.

TABLE 14
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1960

1959-60	BACTERIA per ml. (48 HOURS ON AGAR AT 20°C.)											
	Raw Water			Settled Water			*Effluent Water			Tap Water		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	135	12	47	1200	9	204	700	4	121	2	0	0
Nov.	110	17	40	800	180	451	600	45	297	12	0	1
Dec.	70	2	29	1400	0	507	700	40	234	9	0	1
Jan.	280	5	54	650	0	124	300	0	58	55	0	2
Feb.	250	4	34	4500	0	696	900	0	161	4	0	0
Mar.	250	3	23	3000	1	345	800	0	136	9	0	0
Apr.	80	2	20	1300	1	233	600	0	143	2	0	0
May	60	1	10	600	0	98	350	8	93	4	0	0
June	35	1	16	120	0	41	300	1	57	140	0	6
July	120	0	21	90	0	14	55	0	14	4	0	0
Aug.	27	0	8	55	1	19	60	1	16	3	0	0
Sept.	50	0	13	95	0	43	110	0	29	25	0	1
For Year	280	0	26	4500	0	231	900	0	113	140	0	1

*Before treatment with chlorine and sodium silicofluoride.

TABLE 15
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1960

1959-60	BACTERIA per ml. (24 HOURS ON AGAR AT 35°C.)											
	Raw Water			Settled Water			*Effluent Water			Tap Water		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	30	0	13	30	0	3	20	0	1	9	0	1
Nov.	35	0	9	160	0	14	250	0	12	35	0	5
Dec.	25	0	5	700	0	36	2	0	0	450	0	18
Jan.	150	1	12	60	0	4	30	0	2	180	0	8
Feb.	21	1	9	18	0	1	8	0	1	140	0	12
Mar.	30	1	8	7	0	1	2	0	0	8	0	1
Apr.	8	0	3	300	0	12	12	0	1	3	0	0
May	6	0	2	20	0	1	3	0	0	4	0	0
June	13	0	3	4	0	1	2	0	0	300	0	12
July	18	0	3	6	0	1	3	0	1	2	0	0
Aug.	20	0	4	5	0	1	16	0	2	300	0	12
Sept.	18	0	5	18	0	2	5	0	0	4	0	0
For Year	150	0	6	700	0	6	250	0	2	450	0	6

*Before treatment with chlorine and sodium silicofluoride.

TABLE 16
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1960

1959-60	B. COLI											
	Raw Water			Settled Water			*Effluent Water			Tap Water		
	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.
Oct.	78	55	.071	52	8	.015	52	0	.000	130	0	.000
Nov.	69	64	.093	46	1	.002	46	0	.000	115	0	.000
Dec.	78	75	.096	52	6	.012	52	1	.002	130	0	.000
Jan.	75	63	.084	50	1	.002	50	0	.000	125	0	.000
Feb.	72	22	.031	48	1	.002	48	0	.000	120	0	.000
Mar.	81	6	.007	54	0	.000	54	1	.002	135	0	.000
Apr.	78	9	.012	52	1	.002	52	0	.000	130	0	.000
May	72	4	.006	48	1	.002	48	0	.000	120	0	.000
June	78	3	.004	52	0	.000	52	1	.002	130	1	.001
July	75	1	.001	50	0	.000	50	0	.000	125	0	.000
Aug.	78	4	.005	52	3	.006	52	1	.002	130	0	.000
Sept.	75	9	.012	50	0	.000	50	2	.004	125	2	.002
For Year	909	315	.035	606	22	.004	606	5	.001	1515	3	.000

*Before treatment with chlorine and sodium silicofluoride.

TABLE 17
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN VARIOUS
BROOKS AND RESERVOIRS ON SCITUATE WATERSHED
YEAR ENDED SEPTEMBER 30, 1960

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Bacteria Per Ml. 48 Hours on Agar at 20° C													
Ponaganset Reservoir.	400	600	340	115	25	40	80	40	900	130	350	18	223
Coventry Brook	3,800	350	150	70	45	80	160	180	250	150	1,600	650	379
Wilbur Brook	450	180	400	60	200	300	370	220	1,600	400	460	1,800	776
Westconnaug Res.	2,600	450	120	30	80	90	300	350	280	160	110	240	253
Barden Reservoir	1,200	650	190	70	70	160	35	120	240	170	330	170	370
Cork Brook	2,500	500	350	110	100	250	60	32	170	*	*	400	300
Rush Brook	3,800	14,000	650	160	110	180	250	330	220	210	250	440	900
Huntinghouse Brook	4,000	6,000	800	200	90	270	120	140	530	450	420	750	310
Harrisdale Brook	3,500	3,000	200	45	35	200	210	400	300	1,500	4,000	250	1,137
Blanchard Brook	370	3,500	3,000	50	28	18	18	350	350	700	290	120	733
Moswansicut Pond	900	700	320	100	190	45	50	40	80	60	140	95	227
Regulating Reservoir	2,200	160	300	45	55	50	130	170	1,100	300	520	230	438
Quonapaug Brook	3,000	450	140	60	70	60	270	90	400	45	310	80	415
Hemlock Brook	300	250	200	140	60	15	90	500	450	330	550	10	241
Betty Pond Stream	700	2,000	1,500	30	25	230	160	160	300	70	150	8	444
Spruce Brook	1,200	12,000	550	85	70	110	240	550	180	450	700	20	1,346
Brandy Brook	4,500	16,000	2,500	220	450	400	500	11,000	2,300	20	140	11	3,170
Moswansicut—South	3,000	4,000	450	115	80	190	130	220	4,500	140	800	10	1,136
Windsor Brook	3,500	9,000	400	150	190	120	280	150	500	*	*	70	1,436
Paine Pond	21,000	1,500	250	120	120	300	50	170	*	250	350	65	2,198
Unnamed Brook—A	8,000	3,000	350	18	30	70	25	60	*	*	*	52	1,289
Unnamed Brook—B													
Bacteria Per Ml. 24 Hours on Agar at 35° C													
Ponaganset Reservoir.	150	25	15	19	17	2	5	26	600	160	170	12	139
Coventry Brook	220	75	22	18	53	5	23	55	55	150	2,800	75	282
Wilbur Brook	80	42	20	11	18	9	30	70	200	320	210	52	107
Westconnaug Res.	250	80	45	7	19	6	4	40	140	140	65	38	59
Barden Reservoir	90	35	50	12	35	10	2	4	60	*	*	55	84
Cork Brook	350	55	60	14	55	18	20	240	220	550	180	40	34
Rush Brook	6,600	16,000	600	10	40	26	60	150	180	370	430	250	168
Huntinghouse Brook	6,000	27,000	150	9	50	30	90	170	350	450	550	120	2,049
Harrisdale Brook	2,600	700	100	12	40	27	85	320	900	520	2,200	50	2,908
Blanchard Brook	400	46	400	27	20	45	15	100	310	240	320	110	635
Moswansicut Pond	270	40	320	8	80	11	4	18	85	80	210	75	167
Regulating Reservoir	800	45	40	25	90	16	19	300	500	180	180	19	95
Quonapaug Brook	350	110	18	30	50	15	45	115	90	37	190	80	190
Hemlock Brook	160	15	10	13	17	9	40	110	850	375	600	11	88
Betty Pond Stream	190	50	50	2	13	12	30	25	160	95	27	90	191
Spruce Brook	300	40	500	15	65	17	170	90	230	600	1,900	6	55
Brandy Brook	2,500	14,000	1,800	90	80	40	120	6,000	1,200	40	130	13	328
Moswansicut—South	3,200	3,200	250	6	10	6	12	35	1,500	110	620	7	2,167
Windsor Brook	8,400	190	400	10	15	35	80	14	820	*	*	18	747
Paine Pond	7,000	100	160	14	21	8	25	40	*	550	170	45	1,001
Unnamed Brook—A	550	30	80	3	3	13	11	20	*	*	*	20	737
Unnamed Brook—B												15	81
B. Coli Index Per 100 Ml.													
Ponaganset Reservoir.	70	70	70	0	25	0	6	6	0	0	70	70	.....
Coventry Brook	110†	25	25	6	25	6	110†	25	70	110†	110†	110†	.....
Wilbur Brook	110†	25	70	5	110†	25	70	110†	70	25	110†	110†	.....
Westconnaug Res.	110†	110†	25	6	25	0	0	25	13	110†	70	6	.....
Barden Reservoir	110†	25	25	25	25	0	0	25	110†	70	110†	110†	.....
Cork Brook	110†	25	25	25	25	70	25	0	70	*	*	110†	.....
Rush Brook	110†	70	13	0	25	25	25	110†	25	110†	110†	110†	.....
Huntinghouse Brook	110†	110†	110†	70	110†	25	25	70	110†	110†	25	110†	.....
Harrisdale Brook	110†	110†	110†	25	6	6	70	70	25	20	70	13	.....
Blanchard Brook	110†	25	110†	6	6	25	25	70	70	110†	110†	110†	.....
Moswansicut Pond	110†	70	25	6	25	6	6	70	110†	70	110†	110†	.....
Regulating Reservoir	110†	70	25	0	70	0	13	70	0	6	70	0	.....
Quonapaug Brook	110†	70	70	70	25	6	25	70	70	110†	110†	70	.....
Hemlock Brook	110†	70	25	110†	25	25	20	6	70	110†	25	6	.....
Betty Pond Stream	110†	25	20	6	70	0	70	70	6	110†	70	5	.....
Spruce Brook	110†	25	70	6	6	6	25	70	110†	110†	110†	110†	.....
Brandy Brook	110†	25	6	6	70	13	70	25	70	110†	110†	110†	.....
Moswansicut—South	110†	110†	70	110†	13	17	70	110†	110†	25	70	6	.....
Windsor Brook	1,100	93	9.1	75	43	93	43	1100	460	460	240	110	.....
Paine Pond	110†	110†	13	6	25	0	13	110†	25	*	*	110†	.....
Unnamed Brook—A	110†	110†	25	13	25	70	70	110†	*	25	70	110†	.....
Unnamed Brook—B	110†	25	70	0	25	0	6	25	*	*	*	110†	.....

†Indicates Index of 110+

*No sample obtained—Brook or Pond was 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, 1960

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Bacteria Per Ml.													
48 Hours on Agar at 20° C													
Neutaconkanut Reservoir ..	0	1	0	0	0	0	0	2	1	1	0	1	1
Phenix Ave., Cranston....	1	0	1	1	0	0	1	0	4	0	0	1	1
Westminster St., Olneyville	0	0	0	1	0	4	0	1	3	3	1	1	1
Budlong Road, Cranston...	1	0	0	0	1	1	0	0	6	0	1	0	1
Reservoir Ave., Cranston..	0	1	0	0	0	0	0	0	3	0	0	0	0
T. F. Green Airport, War..	0	1	16	2	1	0	0	0	0	1	0	0	2
Biltmore Hotel	0	0	0	2	1	0	0	0	1	0	1	0	0
Crown Hotel	0	0	0	1	0	0	0	0	0	0	1	1	0
State Office Bldg.....	0	0	0	1	0	0	0	0	1	0	1	1	0
*Longview Reservoir	0	0	2	1	0	0	0	1	1	0	0	0	0
**10 Westminster St. ....	.....	.....	.....	.....	.....	0	0	0	2	0	1	0	0
Bacteria Per Ml.													
24 Hours on Agar at 35° C													
Neutaconkanut Reservoir ..	0	1	5	0	0	16	0	0	1	0	0	1	2
Phenix Ave., Cranston....	1	1	22	0	0	0	2	0	0	1	3	3	3
Westminster St., Olneyville	3	1	6	0	1	0	0	0	0	0	2	0	1
Budlong Road, Cranston...	0	0	0	0	1	2	0	1	0	0	1	1	1
Reservoir Ave., Cranston..	0	0	0	0	1	9	10	2	1	0	2	0	2
T. F. Green Airport, War..	0	0	5	3	31	1	0	0	0	3	21	1	5
Biltmore Hotel	7	1	0	8	0	0	0	1	4	0	1	1	2
Crown Hotel	0	1	0	0	0	10	0	0	1	13	1	0	2
State Office Bldg.....	12	1	0	0	0	0	0	0	0	1	1	1	1
*Longview Reservoir	0	0	1	0	0	0	0	2	0	0	1	0	0
**10 Westminster St. ....	.....	.....	.....	.....	.....	0	0	0	0	0	1	0	0
B. Coli													
Index Per Ml.													
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 Ave., Cranston....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Westminster St., Olneyville	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001
Budlong Road, Cranston...	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Reservoir Ave., Cranston..	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
T. F. Green Airport, War..	.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	.002	.000
State Office Bldg.....	.000	.000	.001	.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 St. ....	.....	.....	.....	.....	.....	.000	.000	.000	.000	.000	.000	.000	.000

*Sample obtained at Our Lady of Fatima Hospital.
**From Mar. 8 to 17, sample was obtained at 31 Canal St.

TABLE 19
WATER PURIFICATION WORKS
MINERAL ANALYSIS OF WATER—YEAR ENDED SEPTEMBER 30, 1960

Parts per Million	RAW WATER*					TAP WATER						
	1960				Avg.	1960				Avg.		
	1959					1959						
	Oct.- Dec.	Jan.- Mar.	Apr.- June	July- Sept.		Oct.- Dec.	Jan.- Mar.	Apr.- June	July- Sept.			
Aluminum	0.02	0.02	0.03	0.02	0.02	0.04	0.07	0.07	0.07	0.06		
Arsenic	0.00	.....	0.00	.....	0.00	.....	.....	0.00	.....	0.00
Calcium	2.48	2.61	2.80	2.75	2.66	8.74	9.16	9.95	9.94	9.45		
Chloride	2.33	2.50	2.53	2.60	2.49	2.37	2.50	2.53	2.70	2.53		
Copper	0.02	0.06	0.06	0.07	0.05	0.01	0.01	0.01	0.02	0.01		
Fluoride	0.15	0.15	0.15	0.15	0.15	1.15	1.15	1.13	0.99	1.11		
Hardness	10	10	10	9	10	27	28	28	29	28		
Iron	0.11	0.05	0.02	0.12	0.08	0.00	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	0.51	1.10	0.30	0.41	0.58	0.40	0.56	0.10	0.21	0.32		
Manganese	0.05	0.00	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00		
Phenolic Compounds ..	.....	0.007	.....	0.003	0.005	.....	0.000	.....	0.000	0.000
Selenium	4.0	4.5	5.0	4.5	4.5	4.5	4.0	4.5	4.5	4.4		
Silica	7.4	7.8	7.5	7.1	7.5	12.2	14.6	13.8	14.5	13.8		
Sulphate .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total Solids	34	32	34	32	33	50	52	55	52	52		
Loss On Ignition	12	11	14	13	12	14	14	16	12	14		
Total Alkalinity	4.1	4.0	3.9	4.2	4.1	14.9	13.3	13.7	15.1	14.3		
Phenolphthalein Alk. .	0.0	0.0	0.0	0.0	0.0	7.5	6.7	6.9	7.6	7.2		
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 SEPT. 30, 1960

1959- 1960	RAW WATER*										TAP WATER							1959- 1960	
	Ammonia		Nitrites	Nitrates	Chlorides	Dissolved Oxygen		Total Solids	Loss on Ignition	Ammonia		Nitrites	Nitrates	Chlorides	Dissolved Oxygen		Total Solids		Loss on Ignition
	Free	Alb.				P.P.M.	% Sat.			Free	Alb.				P.P.M.	% Sat.			
Oct.	0.024	0.045	0.001	0.00	2.3	9.4	90.4	34	12	0.026	0.030	0.001	0.00	2.3	.....	.....	51	17
Nov.	0.003	0.045	0.000	0.04	2.2	10.3	90.9	32	11	0.008	0.037	0.000	0.00	2.3	.....	.....	49	11
Dec.	0.004	0.053	0.000	0.02	2.5	11.7	90.0	35	12	0.016	0.045	0.000	0.01	2.5	.....	.....	51	13
Jan.	0.020	0.061	0.000	0.01	2.5	12.8	93.0	28	7	0.040	0.029	0.000	0.01	2.5	.....	.....	45	7
Feb.	0.012	0.045	0.000	0.01	2.5	13.8	99.8	31	13	0.016	0.053	0.000	0.01	2.5	.....	.....	53	18
Mar.	0.001	0.077	0.000	0.00	2.5	13.8	98.8	36	13	0.016	0.069	0.000	0.00	2.5	.....	.....	58	18
Apr.	0.020	0.094	0.000	0.01	2.5	12.5	99.0	36	13	0.002	0.045	0.000	0.01	2.5	.....	.....	57	18
May	0.032	0.054	0.000	0.01	2.5	9.6	83.6	31	15	0.028	0.022	0.000	0.02	2.5	.....	.....	55	13
June	0.024	0.048	0.000	0.05	2.6	8.4	75.1	35	13	0.024	0.043	0.000	0.04	2.6	.....	.....	53	17
July	0.048	0.064	0.000	0.01	2.5	9.8	87.6	29	12	0.026	0.030	0.001	0.01	2.7	.....	.....	52	15
Aug.	0.048	0.078	0.000	0.07	2.8	4.9	45.0	32	14	0.024	0.048	0.000	0.05	2.8	.....	.....	53	12
Sept.	0.039	0.069	0.000	0.03	2.5	8.7	80.7	36	13	0.021	0.043	0.000	0.03	2.6	.....	.....	51	10
Avg.	0.023	0.061	0.000	0.02	2.5	10.5	86.2	33	12	0.021	0.041	0.000	0.02	2.5	.....	.....	52	14

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

TABLE 21 (Continued)
WATER PURIFICATION WORKS
LABORATORY EXAMINATIONS MADE DURING THE FISCAL YEAR ENDED SEPTEMBER 30, 1960

	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
VI	NEUTACONKANUT DISTRIBUTION RESERVOIR	Daily..... Bi-Weekly.....	1,505	1,757	.....	1,004	.....	.....	4,266
			.....	.....	26	.....	.....	.....	26
VII	LONGVIEW DISTRIBUTION RESERVOIR	Daily..... Bi-Weekly.....	1,505	1,757	.....	1,004	.....	.....	4,266
			.....	.....	26	.....	.....	.....	26
VIII	DISTRIBUTION SYSTEM	Daily..... Bi-Weekly..... Monthly..... Every 13 Weeks..... Monthly..... Monthly..... Consumers' Complaints (17 during the year)..... Sterilization of Newly Laid Mains..... †Sectional Tests.....	2,420	2,124	.....	1,514	.....	303	6,361
			.....	.....	26	.....	.....	.....	26
			.....	.....	.....	60**	.....	.....	60
			.....	.....	.....	.....	36	.....	36
			624	384	.....	288	.....	.....	1,296
			207	210	.....	190	.....	.....	607
			.....	815	.....	93	.....	.....	908
			11,218	13,117	.....	7,487	.....	.....	31,822
		
			144	.....	.....	.....	.....	72	216
IX	MISCELLANEOUS TESTS	..... ..... ..... ..... .....	54	.....	.....	.....	.....	18	72
			22	.....	.....	.....	.....	44	66
		
		
			580	1,212	.....	170	.....	358	2,320
	Totals.....	.....	38,841	34,756	182	20,914	72	1,515	96,280

*For Oxygen Consumed only.
**Exclusive of Oxygen Consumed.
***Composite of 13 Weekly Samples.
****Samples from 8 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, 1960

1959-1960	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—15" Pump 7000 GPM. TDH 96'				Power Used*				No. 4—16" Pump 7000 GPM. TDH 96'				Total Water Pumped — Mil. Gals.	Fuel Oil Used For Heat- ing — Gals.
	Operated		Water Pumped — Mil. Gals.	Operated		Water Pumped — Mil. Gals.	Operated		Water Pumped — Mil. Gals.	KWH	Cost	†Operated		Water Pumped — Mil. Gals.	Gasoline Used — Gals.	Oil Used — Qts.	For Month	Avg. Per Day				
	Days	Hours and Minutes		Days	Hours and Minutes		Days	Hours and Minutes				Days	Minutes									
Oct.	31	399-15	103.68	16	184-15	42.54	17	163-00	47.38	78,000	\$1,252.54	2	2-00	0.47	80	0	194.07	6.26	150			
Nov.	14	180-30	50.33	20	324-30	93.75	22	196-15	59.95	79,000	1,270.06	3	3-00	1.28	120	0	205.31	6.84	471			
Dec.	30	699-15	123.83	2	32-45	8.45	1	7-00	2.20	52,000	973.22	5	5-00	2.07	162	0	136.57	4.41	693			
Jan.	31	737-30	129.90	0	0	0	0	0	0	48,500	862.06	4	4-00	1.67	131	0	131.57	4.24	1,072			
Feb.	29	680-35	120.39	0	0	0	0	0	0	43,000	807.12	4	4-00	1.69	123	0	122.08	4.21	821			
Mar.	31	698-30	124.06	1	7-00	1.43	0	0	0	41,000	786.16	4	4-00	1.44	129	0	126.93	4.09	982			
Apr.	30	690-00	120.40	1	12-15	3.29	0	0	0	46,000	845.64	4	4-00	1.42	95	100	125.11	4.17	461			
May	31	690-30	122.41	5	48-15	11.73	0	0	0	45,500	840.78	2	2-00	0.83	60	0	134.97	4.35	100			
June	17	302-00	57.30	18	360-45	98.15	3	57-30	20.44	50,500	778.34	5	5-00	1.79	140	0	177.68	5.92	0			
July	15	220-00	43.11	23	490-30	131.09	2	47-00	18.51	90,000	1,396.75	4	4-00	1.31	110	0	194.02	6.26	0			
Aug.	27	604-30	109.91	8	105-30	28.49	2	34-30	12.81	47,000	913.22	5	5-00	2.03	177	0	153.24	4.94	0			
Sept.	1	12-30	3.31	29	634-30	176.78	1	9-00	2.89	78,500	1,271.94	5	19-00	5.83	433	0	188.81	6.29	0			
Totals	287	5,915-05	1,108.65	123	2,200-15	595.70	48	514-15	164.18	699,000	\$11,997.83	47	61-00	21.83	1,760	100	1,890.36	5.16	4,750			

*Naragansett Electric Co. Power Rate G.
†Engine Test Run.

TABLE 23
WATER DISTRIBUTION SYSTEM
BATH STREET HIGH SERVICE PUMPING STATION
 OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1960

1959-1960	ELECTRICALLY-DRIVEN PUMPS						GASOLINE ENGINE-DRIVEN PUMPS						TOTAL WATER PUMPED		Fuel Oil Used for Heating Gals.						
	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			Mil. Gals.	For Month	Avg. Per Day			
	Operated			Operated			KWH	Cost	†Operated			†Operated									
	Days	Hours and Minutes		Days	Hours and Minutes				Water Pumped Mil. Gals.	Gasoline Used — Gals.	Oil Used — Qts.	Days	Hours and Minutes			Water Pumped Mil. Gals.	Gasoline Used — Gals.	Oil Used — Qts.			
		Water Pumped Mil. Gals.	Hours		Minutes	Water Pumped Mil. Gals.							Hours	Minutes					Days	Hours	Minutes
Oct.....	31	505-30	67.29	31	461-00	61.17	56,140	\$850.24	1	1-00	.13	12	0	1	1-00	.13	12	0	128.72	4.15	0
Nov.....	15	155-00	20.81	16	185-00	24.67	29,120	580.63	1	1-00	.12	2	0	1	1-00	.12	2	0	43.72	1.52	93
Dec.....	21	305-30	42.56	18	319-15	43.93	27,020	556.19	1	1-00	.14	8	0	1	0-45	.10	7	0	86.73	2.80	293
Jan.....	26	324-30	44.75	23	350-00	47.83	38,220	670.35	1	1-00	.14	9	0	1	1-00	.14	8	0	92.86	3.00	366
Feb.....	27	331-30	45.48	27	315-00	43.21	39,060	680.50	1	1-00	.14	7	0	1	1-00	.14	7	0	88.97	3.07	260
Mar.....	27	352-00	47.44	30	367-15	49.73	37,520	669.22	1	1-00	.13	5	0	1	1-00	.13	5	0	97.43	3.14	305
Apr.....	24	332-30	45.27	24	275-30	37.04	37,100	672.10	2	1-40	.22	13	4	2	1-40	.22	13	4	82.75	2.76	110
May.....	26	332-00	45.13	23	332-30	44.78	35,700	652.47	2	2-00	.26	15	0	2	2-00	.26	16	0	90.43	2.92	0
June.....	24	382-15	50.00	25	340-00	44.86	35,140	598.70	2	2-00	.26	12	0	2	2-00	.26	12	0	95.38	3.18	0
July.....	26	323-30	42.50	25	307-00	40.08	41,580	712.65	1	1-00	.13	8	0	1	1-00	.13	8	0	82.84	2.67	0
Aug.....	26	380-30	51.21	25	321-30	43.07	40,180	700.06	2	2-00	.26	10	0	2	2-00	.26	11	0	94.80	3.06	0
Sept.....	19	159-30	21.59	13	131-45	17.49	20,440	485.33	2	2-30	.31	40	0	2	10-00	1.18	40	0	40.57	1.35	0
Totals...	292	3,884-15	524.03	280	3,705-45	497.86	437,220	\$7,828.44	17	17-10	2.24	141	4	17	24-25	3.07	141	4	1,027.20	2.81	1,427

*Narragansett Electric Co. Power Rate G.

†Engine Test Run.

TABLE 24

*Storage capacity at overflow elevation of 227.00=42,090,000 gallons. †Average of 7 A.M. statistics.
Note:---Water levels are elevations in feet above mean high water in Providence harbor.

TABLE 25
WATER DISTRIBUTION SYSTEM
LONGVIEW DISTRIBUTION RESERVOIR*
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1960

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.		
1959- 1960	Water Level	Storage Mil. Gals.	Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	305.00	11.94	305.23	302.49	304.79	12.04	10.78	11.84	1.82	0.88	1.66	1.15	0.41	0.76
Nov.	304.40	11.66	305.18	302.58	304.62	12.02	10.82	11.76	2.36	0.77	1.59	1.09	0.20	0.73
Dec.	304.32	11.62	305.11	302.34	304.61	11.99	10.71	11.76	2.35	0.39	1.66	1.09	0.37	0.78
Jan.	304.90	11.89	305.13	302.23	304.57	12.00	10.65	11.74	2.73	1.08	2.12	1.27	0.78	1.00
Feb.	304.72	11.81	305.21	302.11	304.55	12.04	10.60	11.73	3.10	0.90	2.11	1.44	0.72	0.98
Mar.	304.30	11.61	305.09	301.33	304.35	11.98	10.24	11.63	2.58	0.90	1.95	1.19	0.42	0.90
Apr.	304.03	11.48	305.24	301.77	304.31	12.05	10.44	11.62	3.47	1.30	1.93	1.61	0.60	0.89
May	304.83	11.86	304.95	301.48	304.43	11.92	10.31	11.67	2.98	1.16	2.11	1.38	0.54	0.98
June	304.54	11.72	305.00	299.30	304.47	11.94	9.30	11.69	5.45	0.78	2.70	2.53	0.36	1.23
July	304.68	11.79	305.13	300.21	304.56	12.00	9.72	11.73	4.20	0.86	2.19	1.94	0.40	1.00
Aug.	304.57	11.74	305.08	301.50	304.55	11.98	10.32	11.73	3.49	1.00	2.05	1.62	0.47	0.95
Sept.	304.40	11.66	305.21	300.55	304.44	12.04	9.87	11.68	4.37	0.90	1.93	2.03	0.43	0.90
For Year ..	—	—	305.24	299.30	304.52	12.05	9.30	11.72	5.45	0.39	2.00	2.53	0.70	0.93

*Storage capacity at overflow elevation of 306.00—12,400,000 gallons. †Average of 7 A.M. statistics.
Note:—Water levels are elevations in feet above mean high water in Providence harbor.

TABLE 26

**WATER PIPE LAID, REMOVED AND ADDED
YEAR ENDED SEPTEMBER 30, 1960**

	PIPE LAID IN FEET							
	6"	8"	10"	12"	16"	20"	30"	Totals
Providence.....	3,676.99	1,127.06	0	2,196.40	644.50	259.10	594.24	8,498.29
Cranston.....	2,837.52	3,156.39	0	3,467.84	0	0	324.91	9,786.66
Johnston.....	1,600.90	2,904.63	0	5.95	0	0	0	4,511.48
North Providence.	1,809.43	3,632.11	0	0	0	0	0	5,441.54
Totals.....	9,924.84	10,820.19	0	5,670.19	644.50	259.10	919.15	28,237.97

	PIPE REMOVED IN FEET							
	6"	8"	10"	12"	16"	20"	30"	Totals
Providence.....	2,696.67	595.10	8.50	1,033.95	0	161.00	539.00	5,034.22
Cranston.....	603.60	260.10	0	0	0	0	0	863.70
Johnston.....	212.38	470.28	0	0	0	0	0	682.66
North Providence.	0	0	0	0	0	0	0	0
Totals.....	3,512.65	1,325.48	8.50	1,033.95	0	161.00	539.00	6,580.58

	NET LENGTH IN FEET ADDED TO DISTRIBUTION SYSTEM							
	6"	8"	10"	12"	16"	20"	30"	Totals
Providence.....	+ 980.32	+ 531.96	-8.50	+1,162.45	+644.50	+ 98.10	+ 55.24	+ 3,464.07
Cranston.....	+2,233.92	+ 2,896.29	0	+3,467.84	0	0	+324.91	+ 8,922.96
Johnston.....	+1,388.52	+ 2,434.35	0	+ 5.95	0	0	0	+ 3,828.82
North Providence.	+1,809.43	+ 3,632.11	0	0	0	0	0	+ 5,441.54
Totals.....	+6,412.19	+ 9,494.71	-8.50	+4,636.24	+644.50	+ 98.10	+380.15	+21,657.39

TABLE 27

PUBLIC WATER MAINS IN USE ON SEPTEMBER 30, 1960														SPECIAL HIGH PRESSURE FIRE SERVICE		
Diameter of Pipe	Providence*		Cranston		Johnston		No. Providence		Pawtucket		Smithfield		Total*		Providence	
	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles
6-inch.	1,512,565.51	286.47	605,957.73	114.76	111,946.96	21.20	147,753.61	27.98	870.75	0.16	0	0	2,379,094.56	450.59	82.06	0.02
8-inch.	338,118.19	64.04	271,450.75	51.41	122,569.53	23.21	99,060.13	18.76	0	0	0	0	831,198.62	157.42	1,577.52	0.30
10-inch.	14,345.65	2.72	0	0	0	0	0	0	0	0	0	0	14,345.65	2.72	0	0
12-inch.	237,509.58	44.98	103,356.10	19.58	9,375.81	1.78	28,387.99	5.38	44.47	0.01	146.00	0.03	378,819.95	71.75	6,893.80	1.31
16-inch.	141,167.56	26.74	3,512.31	0.67	6,393.63	1.21	0	0	0	0	0	0	151,073.50	28.61	54,865.59	10.39
20-inch.	19,775.66	3.74	0	0	0	0	0	0	0	0	0	0	19,775.66	3.74	0	0
24-inch.	60,131.20	11.39	5,405.43	1.02	31,347.98	5.94	2,368.71	0.45	0	0	0	0	99,253.32	18.80	4,299.44	0.81
30-inch.	43,631.87	8.26	31,932.22	6.05	0	0	3,753.06	0.71	0	0	0	0	79,317.15	15.02	0	0
36-inch.	4,555.68	0.86	5,395.12	1.02	0	0	0	0	0	0	0	0	9,950.80	1.88	0	0
42-inch.	2,893.25	0.55	22,556.37	4.27	0	0	0	0	0	0	0	0	25,449.62	4.82	0	0
48-inch.	14,918.00	2.83	1,584.00	0.30	394.00	0.07	0	0	0	0	0	0	16,896.00	3.20	0	0
60-inch.	5,559.00	1.05	10,671.00	2.02	4,340.00	0.82	0	0	0	0	0	0	20,570.00	3.90	0	0
66-inch.	0	0	8,448.00	1.60	0	0	0	0	0	0	0	0	8,448.00	1.60	0	0
Totals.	2,395,171.15	453.63	1,070,269.03	202.70	286,367.93	54.24	281,323.50	53.28	915.22	0.17	146.00	0.03	4,034,192.83	764.05	67,718.41	12.83

Special High Pressure Fire Service included

*Special High Pressure Fire Service included.

TABLE 28

GATES IN USE ON SEPTEMBER 30, 1960

City or Town	Stop Gates											Gates on Public Fire Hydrants			Gates on Unwatering Hydrants			Gates on Blowoffs				Total Gates in use at end of year
	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total	
Providence	4586	930	20	614	258	28	70	35	7	1	11	745	1835	2580	2	14	16	1	2	1	4	*9160
Cranston	1664	657	0	200	9	0	9	16	12	9	4	837	4	841	3	5	8	0	2	3	5	*3434
Johnston	295	244	1	25	12	5	5	0	0	0	2	229	12	241	3	0	3	0	0	2	2	*835
N. Providence ..	390	203	0	62	0	0	2	0	0	0	0	276	0	276	0	3	3	0	0	0	0	936
Totals	6935	2034	21	*901	*279	*33	86	51	19	10	*17	2087	1851	3938	8	22	30	1	4	6	11	*14365

Note: Above table includes all gates in the special high pressure fire system in Providence (129) and gates on Neutaconkanut Conduit and Scituate Aqueduct east of the Siphon Chamber.
 *Totals include 4-12" and 5-16" Rotary Plug Valves in Providence, 5-16" Rotary Plug Valves in Cranston, 5-16" Rotary Plug Valves in Johnston, 1-16", 2-20", and 1-48" Butterfly Valves in Providence, and 1-48" Butterfly Valve in Cranston.

TABLE 29
SERVICE PIPES INSTALLED, REMOVED, AND REPAIRED FOR YEAR ENDED SEPT. 30, 1960

CITY OR TOWN	INSTALLED				REMOVED				REPAIRED			
	General		Fire Supply		General		Fire Supply		General		Fire Supply	
	Copper 3/4"-2"	Cast Iron 4"-8"	Cast Iron 4"-8"	Total	Lead or Copper 1/2"-2"	Cast Iron 4"	Cast Iron 4"-6"	Total	Lead or Copper 5/8"-1 1/2"	Cast Iron 4"-6"	Cast Iron 6"	Total
Providence	228	9	33	270	123	1	2	126	28	1	1	30
Cranston	358	8	5	371	29	1	2	32	19	0	0	19
Johnston	135	2	0	137	4	0	0	4	8	0	0	8
North Providence	196	3	1	200	16	0	0	16	12	1	0	13
Totals	917	22	39	978	172	2	4	178	67	2	1	70

Total number of active services in the system as of Sept. 30, 1960—60,519.

TABLE 30
NUMBER AND SIZE OF ACTIVE SERVICES
AS OF SEPTEMBER 30, 1960

	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	24"	30"	Total
Providence	267	26,697	7,064	1,343	587	226	429	6	979	863	59	4	5	2	..	..	38,531
Cranston	5	7,166	6,808	801	50	183	218	..	64	63	19	..	2	..	..	..	15,379
Johnston .....	..	792	1,900	311	10	52	37	..	5	8	2	..	..	..	..	..	3,117
North Providence .....	..	1,110	1,815	379	6	109	45	..	13	6	2	..	..	..	..	..	3,485
Warwick .....	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	1	4
East Smithfield .....	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	2
Kent County WA .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Totals	272	35,765	17,587	2,834	653	570	729	6	1,061	941	83	4	10	2	1	1	60,519

TABLE 31
PUBLIC FIRE HYDRANTS

HYDRANT ACTIVITIES DURING YEAR ENDED SEPT. 30, 1960					
	Providence	Cranston	Johnston	North Providence	Totals
Post Hydrants—New Installations.....	17	53	1	3	74
Post Hydrants—Replaced	11	16	3	9	39
Flush Hydrants Replaced with Post Hydrants ..	129	0	4	0	133
Total Post Hydrant Installations	157	69	8	12	246
Post Hydrants Abandoned	0	0	0	0	0
Flush Hydrants Abandoned	0	0	0	0	0

TABLE 32
PUBLIC FIRE HYDRANTS

HYDRANTS IN DISTRIBUTION SYSTEM ON SEPT. 30, 1960**					
	Providence	Cranston	Johnston	North Providence	Totals
Post Hydrants	1,337	844	259	273	2,713
Flush Hydrants	1,778	0	0	0	1,778
Total	*3,115	844	259	273	*4,491

*Includes 111 Post Hydrants and 50 Flush Hydrants in Special High Pressure Fire Service in Providence.

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

TABLE 33
NUMBER, MAKE AND SIZE OF METERS ON ACTIVE SERVICES
AS OF SEPTEMBER 30, 1960

PROVIDENCE

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	15"	Total
Crown.....	68	18	9	50	12	1	3						161
Empire.....	321	16	13	111	41	1	1			2			506
Hersey.....				2	3	2	13	72	6				98
Thomson.....	8,809	821	389	59	128	2	4						10,212
Trident.....	21,857	2,317	677	927	1,154	92	73	57	14	5			27,173
Venturi.....											2		2
TOTALS.....	31,055	3,172	1,088	1,149	1,338	98	94	129	22	5	7	2	38,152

***CRANSTON**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	15"	Total
Crown.....	5			4	1								10
Empire.....	79	4		10	6								99
Hersey.....					1			4	4				9
Thomson.....	2,591	70	40	9	12								2,722
Trident.....	11,257	606	239	192	188	2	6	10	2	1	1		12,504
Venturi.....											2		2
TOTALS.....	13,932	680	279	215	208	2	6	14	6	1	3	3	*15,346

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

***JOHNSTON**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown.....				2									2
Empire.....				3									4
Thomson.....	301	13	5		2								321
Trident.....	2,463	224	52	30	27				1				2,797
TOTALS.....	2,765	237	57	35	29	1	1	1	1	1	1	1	*3,124

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

***NORTH PROVIDENCE**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown.....				1									1
Empire.....	2			4	1								7
Hersey.....								5					5
Thomson.....	465	14	7	1	1								488
Trident.....	2,590	226	117	34	16	1	2	3			1		2,990
TOTALS.....	3,057	240	125	39	18	1	2	8	5	1	1	1	*3,491

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

TABLE 34
CAPACITY AND CONSUMPTION

Year Ended Sept. 30	Purif. Works Capacity M.G.D.	CONSUMPTION							
		Total During Year M.G.	Average M.G.D.	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

TABLE 35
CONSUMPTION OF WATER—MILLION GALLONS
YEAR ENDED SEPTEMBER 30, 1960

1959- 1960	LOW SERVICE*			HIGH SERVICE†			TOTAL SERVICE*†			1959- 1960
	Max. Day	Min. Day	Avg. Day	Max. Day	Min. Day	Avg. Day	Max. Day	Min. Day	Avg. Day	
Oct.	38.81	21.24	31.51	11.89	9.06	10.42	49.94	30.30	41.93	Oct.
Nov.	38.85	22.05	31.63	10.84	6.34	8.37	46.51	31.17	40.00	Nov.
Dec.	38.05	22.32	32.44	7.77	6.10	7.19	45.55	28.42	39.63	Dec.
Jan.	37.88	23.51	32.24	7.91	6.19	7.24	45.17	29.70	39.48	Jan.
Feb.	36.95	25.30	32.90	8.06	6.35	7.28	44.54	31.66	40.19	Feb.
Mar.	38.64	24.30	32.48	8.24	6.44	7.24	46.01	30.93	39.72	Mar.
Apr.	37.72	25.53	33.42	7.43	5.89	6.92	45.02	31.67	40.34	Apr.
May	41.13	25.68	34.79	8.01	6.00	7.27	49.12	31.67	42.06	May
June	62.56	27.05	42.65	14.65	6.87	9.10	77.45	34.49	51.75	June
July	56.39	25.59	40.82	13.44	6.48	8.93	69.82	32.26	49.75	July
Aug.	60.83	26.56	41.48	11.40	6.56	8.00	72.23	32.92	49.49	Aug.
Sept.	53.47	24.56	37.93	10.19	5.79	7.64	65.65	31.49	45.57	Sept.
For Year	62.56(a)	21.24(b)	35.36	14.65(c)	5.79(d)	7.97	77.45(e)	28.42(f)	43.33	For Year
										15,859.03

(a) June 27; (b) October 11.

(c) June 28; (d) Sept. 4.

(e) June 28; (f) Dec. 25.

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

†Includes water supplied to East Smithfield Water Co.

TABLE 36
WATER SOLD TO STATE INSTITUTIONS, AND CITY OF WARWICK
YEAR ENDED SEPTEMBER 30, 1960

1959-1960	STATE INSTITUTIONS					CITY OF WARWICK							
	S.S. 50,767 Sackanosset Rd. Cranston 12"x5.50" Venturi Meter	S.S. 24,215A East St. Cranston		Total Gallons per Month	Average Gallons per Day	S.S. 47,269 Fetta- const Cranston 10" Tri- Protectus Meter	S.S. 47,475 Pawtuxet Bridge Cranston		S.S. 61,515 Oaklawn Avenue Cranston		S.S. 61,780 Dresden Street Cranston	Total Gallons per Month	Average Gallons per Day
		12"x5.50" Venturi Meter	8" Tri-Prot. Meter				6" Tri-Comp. Meter	6" Tri- Protectus Meter	6" Tri- Protectus Meter				
	Gallons per Month	Gallons per Month	Gallons per Month			Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month				
Oct.....	41,661,000	17,700	41,678,700	1,344,474		66,480,000	Closed Non-Use 12-10-58	4,125,450	6,487,725	77,093,175	2,486,877		
Nov.....	42,579,000	15,500	42,594,600	1,419,820		64,588,000		4,145,175	4,824,450	73,557,625	2,451,921		
Dec.....	40,306,000	50,250	40,356,250	1,301,815		70,473,967		3,634,425	4,119,300	78,227,692	2,523,474		
Jan.....	36,948,000	6,900	36,954,900	1,192,094		57,340,300		3,566,850	4,195,425	65,102,575	2,100,083		
Feb.....	32,712,000	10,425	32,722,425	1,128,359		58,062,100		3,748,725	4,039,575	65,850,400	2,270,703		
Mar.....	35,295,000	13,500	35,308,500	1,138,984		66,021,800		4,311,525	4,822,350	75,155,675	2,424,377		
Apr.....	33,455,000	1,275	33,456,275	1,115,209		75,352,862	Opened 6-1-60	5,498,881	4,233,075	85,084,818	2,836,161		
May.....	35,746,000	4,575	35,750,575	1,153,244		72,754,488		5,309,265	7,888,725	85,952,478	2,772,661		
June.....	44,944,000	57,450	45,001,450	1,500,048		85,746,361	2,597,250	6,257,347	19,441,275	114,042,233	3,801,408		
July.....	44,480,000	13,425	44,493,425	1,435,272		94,615,043	3,914,250	10,548,750	14,571,543	123,649,586	3,988,696		
Aug.....	45,198,000	57,000	45,255,000	1,459,839		100,922,714	2,779,500	8,242,875	28,066,147	140,011,236	4,516,491		
Sept.....	42,892,000	36,750	42,928,750	1,430,958		94,615,043	2,493,000	6,577,050	13,104,410	116,789,503	3,892,983		
For Year.....	476,216,000	284,850	476,500,850	1,301,915		906,972,678	11,784,000	65,966,318	115,794,000	1,100,516,996	3,006,877		

TABLE 37

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

YEAR ENDED SEPTEMBER 30, 1960

1959- 1960	EAST SMITHFIELD WATER COMPANY				KENT COUNTY WATER AUTHORITY			
	S.S. 51,198 Waterman Street No. Prov.	S.S. 52,403 Dean Avenue Smithfield	Total	Average	S.S. 58,985 Oaklawn Avenue Cranston	S.S. 60,757 Purification Works Scituate	Total	Average
	12" Tri-Crest Meter	8" Tri-Crest Meter	Gallons per Month	Gallons per Day	12" Tri-Crest Meter	12" Venturi Meter	Gallons per Month	Gallons per Day
	Gallons per Month	Gallons per Month			Gallons per Month	Gallons per Month		
Oct.....	3,931,500	2,703,000	6,634,500	214,016	4,598,250	17,262,000	21,860,250	705,169
Nov.....	3,282,750	1,578,000	4,860,750	162,025	4,970,250	18,791,000	23,761,250	792,042
Dec.....	3,174,750	4,306,500	7,481,250	241,331	5,251,500	23,688,000	28,939,500	933,532
Jan.....	3,147,750	2,237,250	5,385,000	173,710	5,713,500	25,235,000	30,948,500	998,339
Feb.....	3,357,000	2,264,250	5,621,250	193,836	5,459,250	20,957,000	26,416,250	910,905
Mar.....	3,495,000	2,451,000	5,946,000	191,806	6,482,250	18,413,000	24,895,250	803,073
Apr.....	4,935,750	2,452,500	7,388,250	246,275	4,869,000	15,577,000	20,446,000	681,533
May.....	5,277,000	2,529,000	7,806,000	251,806	4,101,750	19,006,000	23,107,750	745,411
June....	6,576,750	4,215,000	10,791,750	359,725	7,520,250	30,512,000	38,032,250	1,267,742
July.....	7,434,000	4,242,750	11,676,750	376,669	7,110,000	32,675,000	39,785,000	1,283,387
Aug.....	5,592,000	3,497,250	9,089,250	293,202	5,666,250	33,910,000	39,576,250	1,276,653
Sept....	4,350,750	3,765,000	8,115,750	270,525	5,125,500	29,142,000	34,267,500	1,142,250
For Year...	54,555,000	36,241,500	90,796,500	248,078	56,867,750	285,168,000	352,035,750	961,846

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.	Avg. for Year
1877.....	.....	.....	.....	2.27	2.26	1.84	2.25	2.53	2.94	2.91	2.76	3.01	2.53†
1878.....	2.61	2.22	2.30	2.16	2.15	2.20	2.32	2.85	2.89	3.88	3.12	3.17	2.66
1879.....	2.84	2.39	2.38	2.82	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	3.66
1882.....	3.92	3.60	3.38	3.30	3.27	3.06	3.05	3.24	4.02	4.69	5.09	3.84	3.70
1883.....	3.40	3.33	3.65	3.94	3.74	3.91	3.43	3.82	4.64	5.24	5.18	4.70	4.08
1884.....	3.81	3.67	3.58	4.24	3.87	3.90	3.43	3.79	4.70	4.38	4.06	4.82	4.02
1885.....	4.24	3.67	3.99	4.48	4.73	4.80	4.10	4.10	5.44	5.56	5.01	4.92	4.59
1886.....	4.37	4.20	4.71	4.82	4.75	4.83	4.33	4.53	4.93	6.02	4.88	4.94	4.78
1887.....	4.62	4.24	4.94	5.06	4.90	4.84	4.41	4.90	5.16	5.58	5.00	5.08	4.89
1888.....	4.80	4.40	5.10	5.44	5.79	5.39	4.86	4.84	6.17	6.51	5.87	5.32	5.37
1889.....	5.34	5.18	5.51	5.72	7.34	5.80	5.27	5.75	6.14	5.69	5.59	5.52	5.74
1890.....	5.41	5.17	6.14	6.34	6.79	6.28	6.84	6.60	6.90	8.11	7.13	6.72	6.54
1891.....	6.28	6.08	6.83	6.35	6.53	6.72	6.67	7.55	7.75	7.73	7.78	7.57	6.99
1892.....	7.53	7.32	7.69	7.65	7.83	7.62	7.27	6.77	8.37	9.30	9.11	8.63	7.92
1893.....	8.00	7.65	8.48	9.30	8.85	8.74	8.07	8.58	9.92	10.78	10.50	9.48	9.03
1894.....	8.79	7.85	8.61	9.11	9.07	9.09	8.73	9.97	11.28	12.39	10.76	10.22	9.66
1895.....	10.20	8.86	9.08	9.02	9.82	8.60	7.70	8.78	9.49	8.99	9.50	9.10	9.10
1896.....	8.15	8.19	9.56	10.19	8.79	8.74	8.60	9.26	9.64	9.93	9.70	8.83	9.13
1897.....	8.49	8.05	8.98	8.83	8.52	8.44	8.06	8.27	8.90	9.13	8.70	9.07	8.62
1898.....	8.76	8.29	8.63	8.56	9.09	8.68	8.38	8.35	10.04	10.10	9.44	9.84	9.01
1899.....	8.94	8.75	9.64	9.45	9.53	8.91	8.52	9.18	11.18	10.21	10.12	9.70	9.51
1900.....	9.15	9.27	9.53	9.81	9.49	9.66	9.23	8.59	10.48	12.11	10.95	11.71	10.00
1901.....	9.99	9.54	9.95	10.09	10.52	10.20	8.92	10.05	11.50	12.02	11.69	11.15	10.47
1902.....	10.91	10.70	11.02	11.65	11.00	10.92	10.52	10.48	11.85	12.09	11.97	11.66	11.23
1903.....	11.89	11.81	12.85	12.84	12.62	11.92	12.33	13.92	13.02	13.54	12.91	13.76	12.78
1904.....	13.09	13.89	13.49	14.29	14.58	13.42	12.07	12.72	13.94	14.21	13.18	13.85	13.56
1905.....	14.57	14.88	14.60	14.20	14.65	13.88	13.85	14.77	15.06	16.34	14.30	13.99	14.59
1906.....	13.73	14.96	14.63	15.00	15.07	14.77	14.49	15.01	15.69	15.08	15.74	16.06	15.02
1907.....	15.02	14.37	14.25	15.74	16.24	16.26	15.62	16.29	17.18	18.50	18.00	15.02	16.04
1908.....	15.34	15.13	15.34	15.46	16.07	15.21	14.53	14.67	16.63	16.77	15.42	15.62	15.52
1909.....	15.83	15.80	15.44	15.16	14.87	14.88	13.94	14.04	15.54	17.71	16.15	14.80	15.35
1910.....	14.76	14.66	15.28	15.62	15.65	15.22	14.74	14.72	15.53	17.13	15.95	15.61	15.40
1911.....	15.56	14.98	16.11	16.39	16.27	16.00	15.30	16.19	17.09	19.36	17.09	16.08	16.37
1912.....	16.29	16.49	16.44	18.12	18.14	17.16	16.39	16.70	17.32	20.54	17.62	17.06	17.36
1913.....	17.36	16.72	17.17	17.49	17.98	17.59	17.06	17.12	18.95	19.55	18.40	17.12	17.71
1914.....	16.76	16.87	17.27	17.83	18.52	17.60	16.99	17.43	20.24	17.62	17.09	18.51	17.73
1915.....	17.29	16.43	17.27	17.07	17.60	17.44	16.80	16.68	18.04	16.49	16.76	17.80	17.14
1916.....	16.90	17.03	17.79	18.16	18.47	18.57	17.43	17.57	17.82	17.90	16.58	18.76	17.75
1917.....	18.51	18.08	18.50	19.73	20.62	19.31	18.09	17.67	18.28	19.61	20.03	18.76	18.93
1918.....	18.62	18.71	20.64	23.82	22.98	23.07	22.43	22.31	21.85	22.23	21.50	20.63	21.56
1919.....	20.42	20.31	21.04	21.72	20.94	19.35	19.45	19.60	21.77	20.70	20.40	20.68	20.53
1920.....	20.62	20.18	21.64	23.80	23.16	23.03	20.67	20.45	20.98	21.06	21.58	21.89	21.59
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	23.63	23.05	24.31	26.69	23.58	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	33.44	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	45.65	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	38.45	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

†Average for 9 months.

TABLE 39
FINANCIAL STATEMENT OF THE PROVIDENCE
WATER SUPPLY BOARD FOR THE YEAR
ENDED SEPT. 30, 1960

REVENUE	
Water Rents	\$2,528,805.97
Hydrant Rental	90,605.18
Electric Power	28,455.92
Setting Meters	5,606.00
Repairing Meters	1,686.39
Rents from Non-Operating Property	880.94
Repairs to Water Services	2,536.09
Repairs to Distribution Mains	4,539.64
Repairs to Hydrants	2,563.63
Repairs to Gates and Valves	776.39
Installation of New Fire Supplies	12,690.00
Installation of New Water Services	84,897.00
Installation of New Water Mains	76,082.34
Revolving Fund—Water Meters	6,819.25
Sale of Scrap Iron, Brass, Lead, Etc.	10,094.26
Sale of Lumber, Pulpwood, Etc.	507.88
Sale of Obsolete Equipment	25.00
Sale of Material	754.03
Sundries.	600.38
Total Revenue	\$2,858,926.29
DISBURSEMENTS	
OPERATING EXPENSE:	
Salaries.	\$783,798.41
Services Other Than Personal	97,408.81
Materials and Supplies	258,316.87
Special Items	8,650.45
Capital Outlay	36,928.05
Other Structures and Improvements (Water Main Extensions)	127,636.58
Taxes.	389,093.67
Employees' Retirement System	48,439.00
Social Security F.O.A.S.I.	21,083.73
Total Operating Expense	*\$1,771,355.57
Interest on Bonds	570,000.00
Depreciation and Extension Fund	200,000.00
Payable to Sinking Fund	** 317,570.72
Total Disbursements	\$2,858,926.29
Gross Water Rents	\$2,614,795.48
Minus Refunds (Current Year)	85,885.54
Minus Refunds (Prior Year)	103.97
Net Water Rents	\$2,528,805.97

*See Table 40 for detailed account of Operating Expense.

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

TABLE 40
WATER SUPPLY BOARD OPERATING EXPENSES
FOR THE YEAR ENDED SEPT. 30, 1960

ADMINISTRATIVE	
Salaries:	
001 Officials	\$20,794.91
Clerical—Chief Engineer's Office	2,714.13
Clerical—Accounting	42,825.37
Engineering	55,448.98
Labor—General	10,562.31
008 Sick Leave Payrolls	3,640.32
009 Vacation Payrolls	6,126.89
Total	\$142,112.91
Services Other Than Personal:	
102 Expert Consultant and Other Service Fees \$	10.00
109 Fees Not Otherwise Classified	1,530.70
111 Telephone and Telegraph	1,984.06
112 Postage, Freight and Express	62.25
116 Transportation of Persons—Other	14.90
118 Travel Subsistence—Other	20.25
121 Printing, Binding and Reproduction Services	1,714.48
131 Light and Power	1,666.04
141 Repairs—Office Machinery	365.54
142 Repairs—Automobiles	419.04
145 Repairs—Plant Equipment	53.65
149 Repairs—Other Equipment	267.75
150 Repairs—Structures and Improvements	563.97
151 Maintenance and Servicing	397.60
181 Laundry and Cleaning	100.00
183 Dues and Subscriptions	187.20
199 Miscellaneous Services	8,836.50
Total	\$18,193.93
Outstanding Commitments	137.75
Total—Services Other Than Personal	\$ 18,331.68
Materials and Supplies:	
201 Stationery and Office Supplies	\$ 1,362.72
204 Wearing Apparel and Personal Supplies	81.18
211 Motor Fuel	571.63
212 Lubricants	84.59
213 Tires and Tubes	241.38
214 Repair Parts and Supplies—Trucks and Autos	234.55
221 Repair Parts and Supplies—Office Machinery	138.85
241 Fuel	818.14
244 Housekeeping Supplies and Minor Equipment	108.55
252 Seeds, Fertilizer, Trees and Shrubs	295.56
259 Other Agricultural, Horticultural and Landscaping Supplies	57.77
266 Lumber and Hardware .....	.91
267 Paint and Painters' Supplies	105.54
268 Plumbing and Electrical Supplies	27.59
272 Valves and Fittings	3.49
299 Miscellaneous Materials and Supplies	43.50
Total	\$ 4,175.95
Outstanding Commitments	100.00
Total—Materials and Supplies	\$ 4,275.95
Special Items:	
350 Blue Cross and Physicians Service	\$ 1,547.50
Total	\$ 1,547.50

Capital Outlay:

501	Office Furniture, Machinery and Equipment	\$ 402.96
502	Books, Maps and Charts	115.65
512	Trucks and Autos	1,730.00
521	Construction and Engineering Equipment	757.54
	Total	\$ 3,006.15
	Outstanding Commitments	Nil
	Total—Capital Outlay	\$ 3,006.15
	Total—Administrative	\$ 169,274.19

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

001	Supervision	\$ 130.45
001	Labor—Operation	8,821.47
	Repairs—Machinery and Equipment	56.66
	Total	\$ 9,008.58

Services Other Than Personal:

111	Telephone and Telegraph	\$ 120.69
146	Repairs—Plant Equipment	372.62
199	Miscellaneous Services	432.10
	Total	\$ 925.41

Materials and Supplies:

222	Repair Parts and Supplies—Plant Equipment	\$ 339.09
241	Fuel	195.20
266	Lumber and Hardware	252.45
268	Plumbing and Electrical Supplies	6.75
299	Miscellaneous Materials and Supplies	18.62
	Total	\$ 812.11

Water Purification Plant:**Salaries:**

001	Supervision	\$10,866.72
	Labor—Operation	42,014.23
	Technical	23,087.96
	Clerical—Laboratory	1,372.23
	Repairs—Structures and Improvements	9.60
	Repairs—Machinery and Equipment	856.31
	Repairs—Care of Grounds and Buildings	1,510.94
	Total	\$ 79,717.99

Services Other Than Personal:

111	Telephone and Telegraph	\$ 967.17
112	Postage, Freight and Express	156.92
121	Printing and Binding	10.00
141	Repairs—Office Machinery	66.10
142	Repairs—Trucks and Autos	41.60
143	Repairs—Construction and Other Automotive Equipment	95.51
146	Repairs—Plant Equipment	2,861.61
149	Repairs—Other Equipment	176.63
150	Repairs—Structures and Improvements	22.00
151	Maintenance and Servicing	597.81
162	Rental—Automotive and Construction Equipment	348.96
181	Laundry and Cleaning	283.38
183	Dues and Subscriptions	16.25
199	Miscellaneous Services	36.00
	Total	\$ 5,679.94

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 654.78
202	Small Tools and Shop Supplies.....	360.09
211	Motor Fuel	356.75
212	Lubricants	36.50
213	Tires and Tubes	138.94
214	Repair Parts and Supplies—Trucks and Autos	228.36
222	Repair Parts and Supplies—Plant Equipment	2,308.83
229	Repair Parts and Supplies—Other Equipment	169.15
231	Ferric Sulphate	49,362.26
231	Lime	18,006.88
231	Chlorine	3,580.50
231	Sodium Silicofluoride	15,360.78
231	Miscellaneous Laboratory Supplies.....	716.54
241	Fuel	4,235.68
244	Housekeeping Supplies	443.16
252	Seeds, Fertilizer, Trees and Shrubs....	340.34
264	Fabricated Cement Products	12.00
265	Fabricated Metal Products	3.23
266	Lumber and Hardware	231.76
267	Paint and Painters' Supplies	149.29
268	Plumbing and Electrical Supplies.....	428.85
272	Valves and Fittings	6.16
299	Miscellaneous Materials and Supplies...	37.41
Total		\$ 97,168.24

Special Items:

302	Liability Insurance	\$ 55.90
Total		\$ 55.90

Capital Outlay:

502	Books, Maps and Charts	\$ 46.79
541	Medical, Surgical and Laboratory Equipment	398.45
561	Shop and Plant Equipment.....	2,774.20
Total		\$ 3,219.44

Scituate Reservoir:

Salaries:

001	Labor—Operation	\$ 2,699.81
	Machinery and Equipment.....	114.53
	Repairs—Care of Grounds	13,320.97
Total		\$ 16,135.31

Services Other Than Personal:

102	Expert Consultant and Other Service Fees \$	15.00
111	Telephone and Telegraph	182.40
142	Repairs—Trucks and Autos	40.00
Total		\$ 237.40

Materials and Supplies:

213	Tires and Tubes	\$ 49.68
214	Repair Parts and Supplies—Trucks and Autos	25.02
252	Seeds, Fertilizer, Trees and Shrubs....	425.32
Total		\$ 500.02

Other Reservoirs:

Salaries:

001	Labor—Operation	\$ 3,829.37
	Repairs—Care of Grounds.....	2,072.60
Total		\$ 5,901.97

Services Other Than Personal:

106	Examining Titles	\$ 638.50	
142	Repairs—Trucks and Autos	83.95	
	Total		\$ 722.45

Materials and Supplies:

213	Tires and Tubes	\$ 47.28	
214	Repair Parts and Supplies—Trucks and Autos	36.10	
267	Paint and Painters' Supplies	44.49	
	Total		\$ 127.87

Reforestation:

Salaries:

001	Supervision	\$ 5,272.20	
	Labor—Operation	3,155.52	
	Repairs—Care of Grounds	9,720.46	
	Total		\$ 18,148.18

Services Other Than Personal:

102	Expert Consultant and Other Service Fees	\$ 70.00	
109	Fees Not Otherwise Classified	4.00	
117	Travel Subsistence—Conventions	51.80	
142	Repairs—Trucks and Autos	154.79	
146	Repairs—Plant Equipment	100.95	
149	Repairs—Other Equipment	145.45	
183	Dues and Subscriptions	9.00	
	Total		\$ 535.99

Materials and Supplies:

202	Small Tools and Shop Supplies	\$ 637.07	
204	Wearing Apparel and Personal Supplies	333.63	
212	Lubricants	3.42	
213	Tires and Tubes	96.96	
214	Repair Parts and Supplies—Trucks and Autos	231.87	
229	Repair Parts and Supplies—Other Equipment	206.70	
241	Fuel	313.28	
244	Housekeeping Supplies and Minor Equipment	5.88	
252	Seeds, Fertilizer, Trees and Shrubs	1,879.68	
259	Other Agricultural, Horticultural and Landscaping Supplies	1,327.87	
260	Loam	112.50	
266	Lumber and Hardware	158.20	
267	Paint and Painters' Supplies	59.56	
	Total		\$ 5,366.62

Capital Outlay:

512	Trucks and Autos	\$ 3,656.34	
571	Agricultural and Landscaping Equipment	281.60	
	Total		\$ 3,937.94

General:

Salaries:

001	Clerical	\$ 1,351.40	
	Labor—Operation	3,911.49	
	Repairs—Structures and Improvements	22.70	
	Repairs—Machinery and Equipment	383.04	
	Repairs—Care of Grounds	6,936.32	
	Repairs—Gates and Valves	101.84	
	Repairs—Care of Grounds—Rockland Cemetery	689.14	

008	Sick Leave Payrolls	4,812.59	
009	Vacation Payrolls	4,779.10	
025	Injured Employees' Payrolls	384.00	
	Total		\$ 23,371.62
Services Other Than Personal:			
109	Fees Not Otherwise Classified.....	\$ 484.80	
115	Transportation of Persons—Conventions	24.44	
117	Travel Subsistence—Conventions	110.36	
142	Repairs—Trucks and Autos	123.38	
151	Maintenance and Servicing	8.50	
	Total		\$ 751.48
Materials and Supplies:			
201	Stationery and Office Supplies	\$ 66.86	
202	Small Tools and Shop Supplies.....	47.04	
211	Motor Fuel	1,658.50	
212	Lubricants	169.25	
213	Tires and Tubes	550.10	
214	Repair Parts and Supplies—Trucks and Autos	155.55	
244	Housekeeping Supplies and Minor Equipment	26.31	
262	Cement, Plaster and Related Products	68.60	
264	Fabricated Cement Products	82.80	
266	Lumber and Hardware	10.14	
268	Plumbing and Electrical Supplies	108.60	
	Total		\$ 2,943.75
Special Items:			
350	Blue Cross and Physicians Service.....	\$ 1,529.45	
	Total		\$ 1,529.45
Capital Outlay:			
591	Equipment Not Otherwise Classified...	\$ 1,610.00	
	Total		\$ 1,610.00
	Outstanding Commitments—Materials and Supplies	162.92	
	Outstanding Commitments—Capital Outlay	21,430.00	
	Total—Source of Supply		\$ 300,000.58

TRANSMISSION AND DISTRIBUTION

Pumping Station:

Salaries:			
001	Labor—Operation	\$17,162.89	
	Total		\$ 17,162.89
Services Other Than Personal:			
109	Fees Not Otherwise Classified.....	\$ 42.21	
111	Telephone and Telegraph	438.38	
131	Light and Power	18,022.57	
146	Repairs—Plant Equipment	188.27	
151	Maintenance and Servicing	382.53	
159	Repairs—Other Structures	95.80	
181	Laundry and Cleaning	36.00	
199	Miscellaneous Services	18.00	
	Total		\$ 19,223.76
Materials and Supplies:			
201	Stationery and Office Supplies.....	\$ 211.83	
211	Motor Fuel	396.79	
212	Lubricants	1.45	
221	Repair Parts and Supplies—Office Machinery	16.50	

222	Repair Parts and Supplies—Plant Equip-	
	ment	45.71
241	Fuel	636.02
244	Housekeeping Supplies and Minor Equip-	
	ment	7.94
259	Other Agricultural, Horticultural and	
	Landscaping Supplies	2.20
264	Fabricated Cement Products	225.00
Total		\$ 1,543.44

Pipe Lines:

Salaries:

001	Supervision	\$ 7,666.48
	Clerical	5,940.73
	Labor—Operation	110,682.02
	Repairs—Trucks and Autos	7,028.42
	Repairs—Care of Grounds and Buildings	8,565.28
	Repairs—Transmission Mains	2,417.69
	Repairs—Distribution Mains	9,094.37
	Repairs—Gates and Valves	23,745.84
	Repairs—Hydrants	8,507.02
	Repairs—Services	10,170.14
	New Work—Transmission Mains	593.86
	New Work—Distribution Mains	1,757.94
	New Work—Gates and Valves	9,642.81
	New Work—Hydrants	16,139.36
	New Work—Services	52,740.47
	New Work—Meters (Emergency)	897.16
	Retirement Work—Transmission Mains	228.99
	Retirement Work—Hydrants	12.89
	Retirement Work—Services	3,241.07
Total		\$279,072.54

Services Other Than Personal:

102	Expert Consultant and Other Service Fees \$	85.00
109	Fees Not Otherwise Classified	50.00
111	Telephone and Telegraph	415.62
112	Postage, Freight and Express	41.01
131	Light and Power	2,740.47
141	Repairs—Office Machinery	27.08
142	Trucks and Autos	4,083.86
149	Repairs—Other Equipment	232.29
151	Maintenance and Servicing	146.58
153	Repairs—Street Openings	6,385.46
163	Rental—Other Equipment	354.00
165	Rental of Land	283.00
199	Miscellaneous Services	755.09
Total		\$ 15,599.46

Materials and Supplies:

201	Stationery and Office Supplies	\$ 657.36
202	Small Tools and Shop Supplies	2,653.51
204	Wearing Apparel and Personal Supplies	294.87
211	Motor Fuel	4,146.53
212	Lubricants	361.05
213	Tires and Tubes	959.22
214	Repair Parts and Supplies—Trucks and	
	Autos	3,384.35
229	Repair Parts and Supplies—Other Equip-	
	ment	27.72
231	Medical Chemical and Laboratory Sup-	
	plies	311.86
241	Fuel—Kerosene Oil	165.85
244	Housekeeping Supplies and Minor Equip-	
	ment	99.90
261	Gravel, Sand and Stone	364.88
262	Cement, Plaster and Related Products	483.63
264	Fabricated Cement Products	164.90
266	Lumber and Hardware	944.98
267	Paint and Painters' Supplies	9.43
268	Plumbing and Electrical Supplies	5,004.47

271	Pipe—Cast Iron	1,739.65	
271	Pipe—Service	7,639.79	
271	Pipe—Asbestos Cement	726.15	
271	Pipe—Other	74.78	
272	Hydrants, Valves and Fittings.....	63,836.65	
272	Gates and Valves	31,491.37	
273	Special Castings	486.65	
279	Water System Materials and Supplies Not Otherwise Classified	3.38	
299	Miscellaneous Materials and Supplies...	282.41	
	Total		\$126,315.34
Special Items:			
331	Payment of Claims and Damages.....	\$ 141.45	
	Total		\$ 141.45
Capital Outlay:			
512	Trucks and Tractors	\$ 1,730.00	
521	Construction and Engineering Equipment	845.00	
	Total		\$ 2,575.00
Other Structures and Improvements:			
721	New Main Extensions	\$99,892.48	
	Total		\$ 99,892.48
Distribution Reservoirs:			
Services Other Than Personal:			
111	Telephone and Telegraph	\$ 120.00	
131	Light and Power	26.35	
	Total		\$ 146.35
Materials and Supplies:			
222	Repair Parts and Supplies—Plant Equip- ment	\$ 15.30	
252	Seeds, Fertilizer, Trees and Shrubs.....	348.01	
	Total		\$ 363.31
Capital Outlay:			
591	Equipment Not Otherwise Classified....	\$ 441.23	
	Total		\$ 441.23
General:			
Salaries:			
001	Labor—Operation	\$ 3,405.36	
	Repairs—Structures and Improvements..	20.80	
	Repairs—Trucks and Autos	2,410.06	
008	Sick Leave Payrolls	7,063.88	
009	Vacation Payrolls	11,602.94	
025	Injured Employees' Payroll	605.32	
	Total		\$ 25,108.56
Services Other Than Personal:			
150	Repairs—Structures and Improvements..	\$ 615.00	
181	Laundry and Cleaning	100.00	
199	Miscellaneous Services	36.00	
	Total		\$ 751.00
Materials and Supplies:			
241	Fuel	\$ 630.94	
	Total		\$ 630.94

Special Items:

350 Blue Cross and Physicians Service.....	\$ 3,133.75	
Total	\$ 3,133.75	
Outstanding Commitments — Services Other Than Personal	74.64	
Outstanding Commitments — Materials and Supplies	1,662.44	
Outstanding Commitments—New Main Extensions	27,744.10	
Total—Transmission and Distribution	\$ 621,582.68	

METERING

Salaries:

001 Supervision	\$12,287.29	
Clerical	49,993.75	
Labor—Operation	40,124.40	
Repairing Meters	12,797.59	
Removing and Setting Meters	17,686.75	
Testing Meters	4,210.48	
Inspection—Services	3,890.88	
General Operation	13,418.85	
008 Sick Leave Payrolls	5,849.68	
009 Vacation Payrolls	7,798.19	
Total	\$168,057.86	

Services Other Than Personal:

102 Expert Consultant and Other Service Fees \$	21.00	
109 Fees Not Otherwise Classified.....	115.60	
111 Telephone and Telegraph	1,870.34	
112 Postage, Freight and Express.....	1,248.40	
116 Transportation of Persons—Carfares...	934.40	
121 Printing, Binding and Reproduction Services	35.00	
131 Light and Power	1,665.96	
141 Repairs—Office Machinery, Furniture and Furnishings	1,022.74	
142 Repairs—Trucks and Autos	994.00	
146 Repairs—Plant Equipment	6.00	
149 Repairs—Machinery and Equipment...	14.84	
150 Repairs—Structures and Improvements...	25.00	
151 Maintenance and Servicing	100.09	
181 Laundry and Cleaning	100.00	
199 Miscellaneous Services	26,275.88	
Total	\$ 34,429.25	

Materials and Supplies:

201 Stationery and Office Supplies	\$ 1,939.29	
202 Small Tools and Shop Supplies	826.87	
204 Wearing Apparel and Personal Supplies	212.42	
211 Motor Fuel	1,578.94	
212 Lubricants	88.21	
213 Tires and Tubes	220.96	
214 Repair Parts and Supplies—Trucks and Autos	647.00	
229 Repair Parts and Supplies—Other Equipment	93.50	
231 Medical, Chemical and Laboratory Supplies	62.82	
241 Fuel	545.33	
244 Housekeeping Supplies and Minor Equipment	226.98	
259 Other Agricultural, Horticultural and Landscaping Supplies	97.52	
266 Lumber and Hardware	4.76	
267 Paint and Painters' Supplies	29.35	
268 Plumbing and Electrical Supplies	463.66	
271 Pipe—Miscellaneous	2.89	
272 Valves and Fittings	507.51	
274 Meter Parts	7,816.95	
Total	\$ 15,364.96	

Special Items:

331	Payment of Claims and Damages.....	\$	200.00
350	Blue Cross and Physicians Service.....		2,042.40
	Total	\$	2,242.40

Capital Outlay:

501	Office Furniture, Machinery and Equip- ment	\$	213.29
591	Equipment Not Otherwise Classified ...		495.00
	Total	\$	708.29
	Outstanding Commitments — Materials and Supplies		1,078.96

Total—Metering	\$	221,881.72
Taxes		389,093.67
Employees' Retirement System		48,439.00
Social Security F.O.A.S.I.		21,083.73

TOTAL—OPERATING EXPENSE	\$1,771,355.57
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TABLE 41
STATEMENT OF REVENUE—ESTIMATED AND ACTUAL
FOR THE YEAR ENDED SEPTEMBER 30, 1960

Account	Estimated Revenue	Actual Revenue
Water Rents	\$2,436,000.00	\$2,528,805.97
Hydrant Rental	83,000.00	90,605.18
Electricity	20,000.00	28,455.92
Stores Account (Meters).....	7,000.00	6,819.25
Repairing and Setting Meters.....	5,900.00	7,292.39
Fire Supplies and Miscellaneous Repairs	3,700.00	23,105.75
New Service Installations.....	70,000.00	84,897.00
New Main Extensions.....	110,000.00	76,082.34
Rentals	1,000.00	880.94
Other Miscellaneous Receipts.....	11,100.00	11,981.55
Total.....	\$2,747,700.00	\$2,858,926.29

TABLE 42
SUMMARY OF ANNUAL WATER WORKS REVENUES
1930-1960

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

TABLE 43
STATEMENT OF WATER WORKS
DEPRECIATION AND EXTENSION FUND

	Investment	Cash	Due from Other Funds	Total
Balance Sept. 30, 1959.....	\$554,803.35	\$238,040.76	\$100,000.00	\$892,844.11
Disbursements During Year Ended Sept. 30, 1960 (Net)..	141,803.35	237,441.85	100,000.00	.....
Accounts Receivable Year End- ed Sept. 30, 1960.....	.....	.....	200,000.00	.....
Accounts Payable Year End- ed Sept. 30, 1960.....	.....	.....	66,000.00	.....
Balance Sept. 30, 1960.....	\$413,000.00	\$ 598.91	\$134,000.00	\$547,598.91

TABLE 44
STATEMENT OF WATER SUPPLY BOARD BONDS OUTSTANDING AND
SINKING FUND REQUIREMENTS ON A 3% BASIS
AS OF SEPTEMBER 30, 1960

Bonds Payable from Sinking Fund	Rate of Int. %	Year of		Bonds		Sinking Fund Requirements On a 3% Basis
		Issue	Maturity	Issued	Outstanding	
Water Supply.....	4½	1922	1962	\$1,000,000.00	\$1,000,000.00	\$ 935,563.28
" ".....	4	1922	1962	2,000,000.00	2,000,000.00	1,857,368.26
" ".....	4	1932	1962	1,000,000.00	1,000,000.00	909,144.04
" ".....	4	1922	1962	2,500,000.00	2,500,000.00	2,248,920.95
" ".....	4½	1924	1964	2,000,000.00	2,000,000.00	1,711,946.82
" ".....	4	1924	1964	1,500,000.00	1,500,000.00	1,238,890.86
" ".....	4	1925	1965	2,500,000.00	2,500,000.00	2,019,712.84
" ".....	4	1928	1968	1,500,000.00	1,500,000.00	1,067,788.42
Total Water Supply Debt and Sinking Fund Requirements.....						\$14,000,000.00
Sinking Fund Assets Allocated to Water Supply Debt per City Controller's Report on Sinking Fund Sept. 30, 1960 (Includes \$317,570.72 *Water Operating Balance for Year Ended Sept. 30, 1960 plus Prior Year Adjustments of \$116.31 or a total of \$317,687.03).....						\$12,040,916.01
Amount of Surplus of Requirements on 3% Basis.....						\$ 51,580.54

*Subject to change due to anticipated discounts on Outstanding Commitments, see Table No. 40.

TABLE 45

**A SUMMARY OF INVENTORIES OF PERSONAL PROPERTY
AT SEPTEMBER 30, 1960**

REMOVABLE PROPERTY INVENTORY.....		\$148,520.26
SOURCE OF SUPPLY:		
Hydro-Electric Station ..	\$ 6,723.06	
Purification Works	44,640.03	
Laboratory. . .	4,019.53	
General. . .	3,976.37	
		59,358.99
TRANSMISSION AND DISTRIBUTION:		
Pipe Lines	\$118,301.30	
Pumping Stations	250.59	
Garage. . .	5,725.59	
		124,277.48
METERING. . .		41,635.01
SUPPLIES. . .		4,788.50
Total Personal Property Inventory.....		\$378,580.24

TABLE 46

**STATEMENT OF STORES REVOLVING FUND
FOR THE YEAR ENDED SEPTEMBER 30, 1960**

Cash Balance Sept. 30, 1959.....		\$ 10,000.00
Outstanding Commitments Sept. 30, 1959.....		27,721.20
Receipts—Oct. 1, 1959 to Sept. 30, 1960.....		86,505.35
Total Available		\$124,226.55
Disbursements Sept. 30, 1960.....	\$73,503.70	
Outstanding Commitments Sept. 30, 1960.....	33,903.60	
Transferred as Income to General Fund.....	6,819.25	
Total Disbursements		\$114,226.55
Cash Balance Sept. 30, 1960.....		\$ 10,000.00

TABLE 47

RECONSTRUCTION OF OAKLAWN AVENUE

Transferred from Depreciation and Extension Fund January 13, 1960		\$15,000.00
Disbursements—Sept. 30, 1960.....	\$14,447.73	
Transferred to Depreciation and Extension Fund Sept. 30, 1960. . .	552.27	
Total Disbursements		15,000.00
Cash Balance Sept. 30, 1960 (Account Closed).....		\$ NIL

TABLE 48

STATEMENT OF THE MISCELLANEOUS WATER
MAIN EXTENSIONS ACCOUNT

FOR THE YEAR ENDED SEPTEMBER 30, 1960

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
Total Available	<u>\$125,000.00</u>
Disbursements Sept. 30, 1960.....	\$102,958.29
Outstanding Commitments Sept. 30, 1960.....	<u>NIL</u>
Total Disbursements	<u>102,958.29</u>
Cash Balance Sept. 30, 1960.....	<u>\$ 22,041.71</u>

TABLE 49

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
Total Available	<u>\$40,000.00</u>
Disbursements Sept. 30, 1960.....	\$35,088.93
Outstanding Commitments Sept. 30, 1960.....	<u>NIL</u>
Total Disbursements	<u>35,088.93</u>
Cash Balance Sept. 30, 1960.....	<u>\$ 4,911.07</u>

TABLE 50

STATEMENT—ALTERATIONS NEUTACONKANUT
PUMPING STATION ACCOUNT

Transferred from Depreciation and Extension Fund—March 13, 1958.....	\$65,000.00
Disbursements Sept. 30, 1960.....	\$50,509.00
Transferred to Depreciation and Extension Fund—Sept. 30, 1960.	<u>14,491.00</u>
Total Disbursements	<u>65,000.00</u>
Cash Balance Sept. 30, 1960 (Account Closed).....	<u>\$ NIL</u>

TABLE 51

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
Income from Deposits of Plans Not Returned.....	75.00
Total Available	\$1,950,075.00
Disbursements—Sept. 30, 1960—Acc't. 3-91.....	\$ 31,216.20
Outstanding Commitments—Sept. 30, 1960—Acc't. 3-91.....	1,040,904.52
Disbursements—Sept. 30, 1960—Acc't. 3-92.....	12,918.34
Outstanding Commitments—Sept. 30, 1960—Acc't 3-92.....	279,241.92
Disbursements—Sept. 30, 1960—Acc't. 3-93.....	170,100.72
Outstanding Commitments—Sept. 30, 1960—Acc't. 3-93.....	377,328.83
Total Disbursements	1,911,710.50
Unexpended Balance of Authorized Bond Issue.....	\$ 38,364.50

TABLE 52

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
Transferred from "Construction of New Aqueduct Reservoir Account" Closed Sept. 30, 1959.....	49,759.28
Income from Deposits for Plans Not Returned.....	150.00
Total Available	\$2,199,909.28
Disbursements Sept. 30, 1960.....	\$ 367,292.62
Outstanding Commitments—Sept. 30, 1960.....	1,456,970.80
Total Disbursements	1,824,263.42
Unexpended Balance of Authorized Bond Issue.....	\$ 375,645.86

TABLE 53

TAXES PAID TO VARIOUS CITIES AND TOWNS
(ASSESSED AS OF DECEMBER 31, 1958)

LOCATION OF PROPERTY	LAND AREA (ACRES)	ASSESSED VALUATIONS			TAX	
		Land	Bldgs. & Imp.	Total	Rate per \$100	Amount Paid
City of Warwick.....	0.06	\$ 160.00	\$ 0	\$ 160.00	\$2.90	\$ 9.28*
City of Cranston.....	110.19	26,540.00	0	967,540.00	3.40	32,896.36
Town of Foster.....	1,936.04	119,900.00	0	119,900.00	3.55	4,256.45
Town of Glocester.....	73.30	14,630.00	0	14,630.00	3.19	466.70
Town of Johnston.....	103.13	38,330.00	292,670.00	331,000.00	3.00	9,930.00
Town of No. Providence.....	8.58	19,920.00	155,080.00	175,000.00	3.55	6,212.60
Town of Scituate.....	13,182.24	607,000.00	6,183,000.00	6,790,000.00	3.90-	335,256.25**
					4.15	
Total Real Estate.....	15,413.54	\$826,480.00	\$7,571,750.00	\$8,398,230.00	.....	\$389,027.64***

*Two equal payments of \$4.64 were made due to an advance in tax collection dates.

**Four equal payments of \$66,202.50 were made (@ \$3.90 per \$100. tax rate). A fifth payment of \$70,446.25 (@ \$4.15 per \$100. tax rate) was made due to an advance in tax collection dates.

***In addition to this amount, \$13.23 was paid to the Harmony Fire District, and \$52.80 was paid to the West Glocester Fire District.

TABLE 54
SUMMARY OF STATISTICS
PROVIDENCE WATER SUPPLY BOARD
FOR THE YEAR ENDED SEPT. 30, 1960

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

GENERAL STATISTICS

Population of Providence (1960 Federal Census).....	207,498
Estimated population supplied in suburbs.....	175,636
Total population supplied.....	383,134
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.....	81.6% by gravity; 18.4% by pumping

STATISTICS OF CONSUMPTION OF WATER

1. Estimated population supplied	383,134
2. Total raw water influent for the year, gallons	17,672,360,000
3. Average daily raw water influent, gallons	48,290,000
4. Raw water consumption per capita, gallons daily	126.0
5. Total consumption for the year, gallons	15,859,026,000
6. Total registration on customers' meters, gallons	14,906,033,000
7. Percentage of consumption accounted for on customers' meters	93.99%
8. Average daily consumption, gallons	43,330,672
9. Per capita consumption, gallons daily	113.1
10. Gallons per day to each tap	716
11. Cost of supplying water, per million gallons, based on operating and maintenance expense	\$78.40
12. Cost of supplying water, per million gallons, based on operating and maintenance expense plus fixed charges.	\$126.95

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 Sod. Silicofluoride
5. Total water filtered during year, gallons	15,971,290,000
6. Average quantity filtered per day, gallons	43,637,000
7. Total filtered water delivered to the distribution system during the year, gallons	15,858,146,000

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

TABLE 54—Continued

SUMMARY OF STATISTICS
PROVIDENCE WATER SUPPLY BOARD

FOR THE YEAR ENDED SEPT. 30, 1960

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. Extended during year (net)	21,657.39 feet
4. Discontinued during year	3,178.16 feet
5. Total now in use	751.22 miles
6. Number of leaks per mile	0.10
7. Length of pipes less than 6 inches in diameter	0
8. Number of hydrants added during year	74
9. Number of hydrants now in use	4,330
10. Number of stop gates added during year	124
11. Number of stop gates now in use	10,257
12. Number of stop gates smaller than 6 inches	0
13. 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
Extended during year (net)	0 feet
Discontinued during year	0 feet
Total now in use	12.83 miles
Hydrants added during year	0
Hydrants now in use	161
Stop gates added	0
Stop gates now in use	129
Number of blow-offs	0
Range of pressure on mains	94 to 130 pounds

SERVICES

14. Kind of pipe	Lead, Copper and Cast Iron
15. Size	$\frac{1}{2}$ inch to 30 inches
16. Number of service taps added during year	978
17. Number now in use	60,519
18. Number of meters added	327
19. Number of meters now in use	60,113
20. Percentage of services metered	99.9

*Not including high pressure fire service.

