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THE METROPOLITAN WATER  
BOARD, JANUARY 1, 1896**

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JANUARY 1, 1896.

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## METROPOLITAN WATER BOARD.

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*To the Honorable the Senate and House of Representatives of the Commonwealth of Massachusetts in General Court Assembled.*

The Metropolitan Water Board, established under the provisions of chapter 488 of the Acts of the year 1895, respectfully presents its first annual report.

### I. ORGANIZATION.

The act establishing the Board was approved on June 5, 1895, and in July following Henry H. Sprague of Boston, Wilmot R. Evans of Everett and John R. Freeman of Winchester were, under the appointment of the Governor, qualified as members of the Board. Mr. Sprague was designated by the Governor as chairman.

The members of the Board met for organization on July 19, 1895, and at once proceeded upon the execution of their duties under the act.

William N. Davenport of Marlborough was appointed secretary and executive officer of the Board. Alfred F. Bridgman of Hyde Park was selected as auditor and accountant, and he was likewise designated to receive such necessary advances of money as should be made from time to time by the Treasurer of the Commonwealth, under the provisions of the act, for the purpose of making direct payment of pay rolls and petty bills.

### II. DUTIES OF THE BOARD.

The Legislature of last year directed that the Metropolitan Water Board should construct, maintain and operate a system of water works substantially in accordance with the plans and recommendations of the State Board of Health contained in their report to the Legislature, and should provide thereby a sufficient supply of pure water for the cities of Boston, Chelsea, Everett, Malden, Medford, Newton and

Somerville, and the towns of Belmont, Hyde Park, Melrose, Revere, Watertown and Winthrop, which cities and towns should constitute the 'Metropolitan Water District. It was further directed that other cities and towns within a radius of ten miles of the State House should, on application, be admitted into the district.

The plan of the State Board of Health provides for the additional requirements of the Metropolitan Water District by taking the waters of the south branch of the Nashua River at a point about one-half mile above the Lancaster Mills in the town of Clinton. These waters are to be combined with the supply now obtained by the city of Boston from the Sudbury and Cochituate systems, and conveyed, in connection with the Boston supply, to the various portions of the metropolitan district. It was calculated by that Board that the Nashua water-shed will yield, even in a series of very dry years, 105,000,000 gallons of water daily; so that, with the 68,000,000 gallons obtainable from the Sudbury and Cochituate systems, the metropolitan district will have, under the most unfavorable circumstances, a daily supply of 173,000,000 gallons of water, a supply double the capacity of all the sources now utilized for the entire district.

The principal features of the work to be performed in the near future by this Board, under the requirements of the act of 1895, are the following:—

*First.*— A dam is to be erected at Clinton, lands are to be acquired, and a storage reservoir is to be constructed upon the south branch of the Nashua River in the towns of Clinton, Boylston and West Boylston, this reservoir to have a capacity of about 63,000,000,000 gallons of water and to cover an area of about  $6\frac{1}{2}$  square miles.

*Second.*— An aqueduct 12 miles long, and capable of conveying 300,000,000 gallons of water daily, is to be built to convey the Nashua waters from the dam at Clinton to the head of the reservoir now in process of building by the city of Boston, in the town of Southborough and city of Marlborough, and known as Basin No. 5 of the Sudbury system. This aqueduct embraces: (1) a tunnel, principally through rock, 2 miles long; (2) a masonry aqueduct 7 miles long, with a bridge across the Assabet River; (3) an open channel



3 miles long, following the course of an existing brook into Basin No. 5.

*Third.*—The Basin No. 5 in Southborough and Marlborough, which is nearly half finished, is to be taken from the city of Boston for the Metropolitan Water Works and completed by the Board. This basin when completed will have a capacity of about 7,500,000,000 gallons and an area of nearly 2 square miles. From this basin the combined waters of the Nashua and the Sudbury Systems will be conveyed to the Chestnut Hill Reservoir through the present aqueducts of the city of Boston, which are also in the future, with other works, to be acquired for the Metropolitan Water Works.

*Fourth.*—Pumping stations, to elevate the water so that it may be supplied with sufficient pressure to all portions of the Metropolitan Water District without local pumping, are to be built at Chestnut Hill and in other parts of the metropolitan district.

*Fifth.*—Great main pipes are to be laid from the Chestnut Hill Reservoir to connect with the local water systems, in order to convey the mingled waters of the Nashua, the Sudbury and the Cochituate Systems to the various cities and towns of the metropolitan district.

### III. ENGINEERING DEPARTMENT.

Frederic P. Stearns, civil engineer, was appointed chief engineer of the Board. Mr. Stearns had had several years' service as the chief engineer of the State Board of Health, and, as its executive agent, had conducted the investigations which were made under chapter 459 of the Acts of 1893, directing the State Board of Health to investigate and report upon the question of a water supply for the city of Boston and its suburbs; and it was upon the recommendations contained in the report made by that Board, after an extended and careful examination, that the Metropolitan Water Board was created and its duties defined. Mr. Stearns had previously taken a responsible part in the construction of the Sudbury aqueduct and the main sewerage system of the city of Boston.

Dexter Brackett was appointed as engineer in charge of

the distribution department, including pumping stations, reservoirs and main pipes within the metropolitan district; and Thomas F. Richardson as engineer of the aqueduct department, having supervision of the construction of the aqueduct connecting the Nashua with the Sudbury system, and of the preliminary examinations for the dam and reservoir on the Nashua River. Mr. Brackett had had more than twenty years' experience as an engineer in the service of the city of Boston, largely in connection with the Boston water works; while Mr. Richardson, after extended service in construction work upon the Sudbury system, and likewise in important enterprises in the West, had been engaged under the State Board of Health as the principal assistant of Mr. Stearns upon the surveys and studies preliminary to the present undertaking. An engineering corps was organized as rapidly as was consistent with securing efficient assistants. The force now comprises sixty-seven men.

Joseph P. Davis, formerly city engineer of the city of Boston, and Alphonse Fteley, chief engineer of the new water supply of the city of New York, were selected as consulting engineers. Both these gentlemen had been connected with the earlier construction of the Boston water works.

#### IV. ROOMS OF THE COMMISSION.

The Board at first obtained place for the chief engineer and his assistants in rooms temporarily unoccupied at the State House, while its own meetings were held in the offices of its members. As permanent quarters could not be obtained in the State House, and it was found after diligent search that rooms containing sufficient space for its purposes could be rented in a convenient locality outside only at great expense, application was made for one of the buildings easterly of the State House, between Mt. Vernon Street and Bowdoin Street, which have been taken by the Commonwealth. The governor and council accordingly assigned for the use of the Board the building No. 3 Mt. Vernon Street. This the Board expects to occupy until the block of buildings belonging to the Commonwealth is taken down, after completion of the State House enlargement, when it is hoped that room may be found there for its necessities. Some

repairs and alterations, necessary efficiently to adapt the Mt. Vernon Street building to the service of the Board, were made, and it was occupied in the month of September, the lower portions being taken for administration purposes, and the upper stories for the central and draughting offices of the engineering department.

Branch offices for the use of the engineering forces engaged on the Nashua dam, reservoir and aqueduct have been opened in Clinton and West Boylston.

#### V. PROGRESS OF THE WORK.

The engineering corps in July last entered actively upon the surveys and investigations necessarily preceding the actual undertaking of construction, and has pursued this work, with constantly increasing numbers, to the present time.

It has been the aim of the Board to push forward with especial rapidity the building of the aqueduct from the proposed dam at Clinton to the new Basin No. 5 of the Sudbury system, the enlargement of the pumping station at Chestnut Hill, and the laying of main pipes from the Chestnut Hill pumping station to connect with the present Mystic system and Spot Pond.

The necessary surveys and investigations preliminary to entering upon the construction of the Nashua-Sudbury aqueduct have been substantially completed, the route definitely fixed, the specifications for the building of the tunnel (which will require the longest time for completion) have been prepared, and it is expected that proposals for constructing different sections of the tunnel will be called for in the month of January, and the building of the tunnel be begun in the succeeding month. Contracts for the masonry portions of the aqueduct will soon follow.

The surveys required for fixing a route for the main pipe line from the Chestnut Hill pumping station to Spot Pond and the Mystic system have been made, investigations made of the various streets and localities through which the pipe is to be laid, and contracts for furnishing 7 miles of iron pipe have just been awarded. The successful bidders were R. D. Wood & Co. of Philadelphia, whose proposals were to