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REPORT

OF

The Board of Water Commissioners

OF ALBANY,

IN RELATION TO THE ALBANY WATER SUPPLY,

TO

THE COMMON COUNCIL,

February 2, 1885.



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ALBANY, *February 2, 1885.*

*To the Honorable the Common Council
of the City of Albany:*

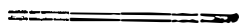
The Board of Water Commissioners of the city of Albany, pursuant to a resolution of your honorable body of November 17, 1884, requesting from this Board a full and detailed statement of all their information relating to the possible sources from which a water supply could be obtained for this city, and of their reasons for adopting the plan of pumping the water for this city from the Hudson river, instead of obtaining the same from other sources, respectfully report:

That this Board was created by chapter 235 of the Laws of 1850, and, as appears by their report to the Common Council of September twentieth, of that year, Mr. William J. McAlpine, an eminent civil engineer, "was directed to make a thorough examination of the different lakes, fountains and water courses in this vicinity, so as to enable him to ascertain the best source from which to obtain an abundant supply of pure and wholesome water for the use of the city. He was not restricted to any project heretofore submitted to the Common Council, but was requested to present estimates for different plans and to give his opinion as to which he thought the best and most feasible."

THE WATER SUPPLY FROM THE STREAMS WEST AND NORTH-WEST
OF THE CITY, IN THE SAND PLAIN DISTRICT.

The report made by Mr. McAlpine, under date of August 1, 1850, was very elaborate and complete, containing, among other things, the following results of observations and actual measurements as to the quantity of water which could be obtained for the city from the following sources. The mean supply obtainable was as follows:

	Gals. per day.
Patroons' creek (above Tivoli falls)	12,018, 831
Hungerkill, east branch	2,245, 274
Hungerkill, west branch	4,837, 192
Block house	584, 063



The results of certain other single trials of some smaller streams in this neighborhood were also given.

It would appear from this report that an ample quantity of water could be furnished to the city daily from these streams. It was further stated in such report that "the value of a stream of water for the purposes under consideration * * * may be greatly increased in volume if its surplus water, during the wet seasons and heavy rains, be stored in artificial reservoirs and served out as required for use."

After this report of Mr. McAlpine had been received the Board of Water Commissioners proceeded to perfect the following system of supplying the city of Albany with water. This system embraced the Patroon's creek, having a mean capacity of over 12,000,000 gallons a day, and the waters of the Maezlandt Kill and of the Middle creek, which were of very superior quality and had been used by the old Albany Water-Works Company, which had supplied the city with water prior to the creation of this Board :

RENSSELAER LAKE.

This is the principal retentive reservoir and is formed by an artificial dam. It is situated several miles west of the city and is upon sufficiently elevated ground to discharge its water by gravity into Bleecker reservoir.

BLEECKER RESERVOIR.

This is a receiving reservoir situated near the junction of Clinton and Central avenues, and is made partly by excavation and partly by embankment and was supplied from Rensselaer lake.

WATERVLIET OR TIVOLI LAKES.

These lakes constitute two bodies of water separated by an embankment or dam. They are situated on the line of the New York Central Railroad, between this city and West Albany. They receive their water directly from Patroon's creek.

MAEZLANDT KILL AND MIDDLE CREEK.

These constituted sources of supply for the old Water-Works Company before 1850. Their waters are brought into the city by

pipes running from a point north of the city and west of the Troy road, and are added to the water supply of the lower part of the city. The cost of constructing this system was in the neighborhood of \$850,000.

Had the streams, mentioned in Mr. McAlpine's report, continued to furnish the amount of water, which it was at that time contemplated that they would, it would not have been necessary to seek any further or other source of supply.

As early as July 10, 1855, the Common Council applied to the Water Commissioners for information as to the cause of impure and offensive water, and a report of a committee of that body stated that "as the evil continued, the apprehension of those receiving this supply increased, and an immediate investigation of the causes with a prompt application of the proposed remedies was demanded by the existing circumstances on the part of those specially intrusted with this department."

This impure condition of the water was temporarily remedied by emptying the reservoir. As time went on, from year to year, complaints were made by our citizens, not only of this water being impure and offensive, but of an insufficient supply of water. In referring to "the streams having failed to furnish an adequate supply to the upper service," the superintendent in his report for the year 1864, says: "I refer to this subject again because whenever the water becomes unpleasant to the taste, one of the remedies proposed and urged for adoption, is to empty the reservoir and lake and take the supply directly from the natural flow of the stream. Had this recommendation been followed, customers residing upon the more elevated portions of the city would at once have been deprived of a supply while many of our manufacturers would have been obliged to close their establishments."

The report of this year contains some fifteen pages devoted entirely to a discussion of the "Failure in the city supply and its cause."

It thus appears that more than twenty years ago these streams, estimated by Mr. McAlpine to have an ample flow of water, did not then furnish an adequate supply.

In the report for 1865, the commissioners state in answer to a resolution of the Common Council, "relative to procuring an additional supply of water," that examinations and surveys were in

progress, "but as yet no satisfactory result has been attended." In the report of the superintendent of that year in reference to "a recurrence of impurities in the waters of Rensselaer Lake and Bleecker Reservoir," it is said "there are two distinct causes (each imparting to the water an odor and taste peculiar to itself) that have affected our reservoirs at different periods during the past few years; the one giving to the water the odor and taste of fish; the other imparting to it a musty odor and taste, sometimes detected in dead wood."

"In the former it is extremely difficult to satisfy consumers that the impurities are not due solely to fish in the reservoirs; while in the latter they are equally confident that the reservoirs are little else than stagnant pools."

In 1866 an examination was made for this Board of the various creeks which had been referred to by Mr. McAlpine in his report, and were not then embraced in the water system of the city. From the report made upon this matter it appears that the amount of water which could then (1866) be obtained from these sources was very much less than Mr. McAlpine's estimates, and the expense of constructing works to bring it to the city was very great, and there was reason to believe that after it had been brought here, at great expense, the additional amount thus obtained would not supply the increased demand.

From this time until the system of pumping the water from the Hudson river was introduced, the reports of this Board are occupied very much with a discussion of the impurities in the water and the inadequate supply, and with statements that for certain hours of the day the water had to be cut off from certain sections of the city.

In 1869 this Board employed Mr. S. H. Sweet, a civil engineer, and obtained from him elaborate estimates and plans for furnishing the city with a supply of water from all sources then suggested.

HUNGERKILL AND KAIKOUT BY GRAVITY.

This plan required the making of three reservoirs and involved an expenditure of \$1,138,246. This did not include, however, the damages which would have to be paid for the injury to the water powers on the streams, which, it was believed, would be very heavy.

HUNGERKILL AND KAIKOUT BY PUMPING, AND THE NORMANSKILL
WHEN REQUIRED.

This required the construction of a subsiding reservoir, and cost exclusive of damages to mill and water rights, \$982,026.

MOHAWK RIVER.

This work was estimated to cost \$1,465,639, exclusive of the damages to the water powers used in the Cohoes factories for which the whole supply of the river is now insufficient.

This source of supply had been previously examined by Major D. B. Douglass in 1846, by direction of the city authorities, and he condemned the Mohawk as a source of supply for this city both on account of its great cost, and because its waters were inferior to those of the Hudson river and of Patroon's creek.

THOMPSON'S LAKE.

This source of supply was condemned by Mr. Sweet in the following words: "It has often been suggested that the waters of Thompson's lake could be brought into use. This project has been reviewed and found impracticable. The lake is located upon the Heilderberghs, and its waters are confined in and collected over limestone foundations, by which, from impregnation, they must be of an exceedingly hard quality and not desirable for domestic uses. The shortest length of pipe and conduit would be fifteen miles, and the head of water upon the pipe necessary to force the water over the depression at Normanskill and the valleys north would require a thickness of pipe the cost of which, exclusive of laying it, would exceed either of the foregoing plans, while its maximum supply is less than 3,000,000 gallons a day."

THE HUDSON RIVER.

The plan of getting the water from the Hudson river contemplated the construction of a subsiding reservoir north of Bleecker reservoir, and was estimated to cost \$901,615. None of these plans were adopted, as the Water Commissioners were not authorized to expend, in getting an additional supply of water, any sum in excess of \$500,000.

The report of Mr. Sweet presented to this Board two practicable

sources of supply — one the Hungerkill and Kaikout streams, the other the Hudson river. The Water Commissioners after their experience of the failure of the system adopted under the plan of Mr. McAlpine and the complaints which for years, indeed ever since 1850, have been made and still are made about the disagreeable smell and taste of water which is impounded and stored in reservoirs as the Hungerkill and Kaikout waters would have to be, did not feel justified in recommending the adoption of the former plan, especially in view of what they understood to be the opinion of that eminent geologist, Prof. James Hall (in confirmation of the surveys and observations made by the direction of this Board in 1866, and above referred to), that these streams would not furnish a permanent supply of water for this city.

May 27, 1872, the Water Commissioners submitted for the consideration of the Common Council, in addition to the reports, surveys and estimates theretofore presented, a report of James P. Kirkwood, Esq., a civil engineer, in reference to procuring an additional supply of water from the Hudson river, and the report of an eminent chemist, Prof. C. F. Chandler, made, after its careful and thorough analysis and examination by him as to its wholesomeness.

On June 9, 1873, the Common Council passed a resolution ratifying and approving the plans, and directing the Water Commissioners to carry them into effect. This resolution was passed by a vote of twelve to four, after this subject had been under very serious consideration and animated discussion, both by our citizens and our city authorities, since May 24, 1872 — for over a year.

SOURCES OF SUPPLY SUGGESTED — SAND PLAINS.

It has been suggested that by driving pipes into the ground water can be obtained from below the surface of the sand plains, west of the city. Prof. James Hall has been asked to give his opinion to this Board as to whether the geological formation is such as to afford a probable supply — whether, if so, that supply can be brought to the surface by this plan, and whether it is likely to be a permanent supply. The opinion, when received, will be transmitted to your honorable body.

THE LAKES EAST OF THE HUDSON.

The project of obtaining water from the other side of the river has not, so far as the Board of Water Commissioners is advised of the conditions of that supply, seemed feasible to it. The two outlets of that supply in this direction are at Burden's Mills and the Red Mill. At both places the supply at times is insufficient to run those mills. Possibly streams running now into Columbia county could be cut off, but the cost of carrying out this plan appears to be very great, independent of the by no means inconsiderable damages to be paid for injuries to riparian owners and mill sites, and would involve the necessity of impounding or storing the water, which has caused so much complaint in the case of Rensselaer lake.

THE HUDSON RIVER AT GLENS FALLS.

Another project suggested is to take the water from the Hudson River at Glens Falls. The expense which would attend this work would be probably more than the city could pay, and, besides, the question of cost, if the Water Commissioners are correctly advised, the flow of the stream at Glens Falls is not, during summer droughts, which frequently occur, sufficient even for milling purposes, and could not therefore be relied upon for a permanent supply.

If either of the two last-mentioned projects were adopted, it would be necessary to institute legal proceedings to condemn the riparian rights of a great number of owners of land abutting on the streams and to compensate those owning mill sites thereon. This, if any contest arose, which is more than probable, would occupy several years before the construction of these works could be begun; and it will, first of all, require careful investigation, which will occupy considerable time, before either of these projects should even be decided upon.

In the judgment of this Board it is unwise for the city to expose itself for the next four or five years to the serious peril of a water famine, which would result not simply in the annoyance of not having water to drink and to use for domestic purposes, but in the destruction by fire of, it is impossible to say, how considerable a portion of the city.

This disaster is now liable to happen any day by the pumping

engine, which is now substantially the only source of supply for the upper part of the city, becoming disabled.

In confirmation of the facts above stated this Board presents herewith for your examination the original reports, maps, plans and estimates above referred to. Of these papers this Board has in most cases only either the original or a single copy. It therefore does not feel at liberty to file them permanently with your clerk. They are, however, always to be found at the office of the Water Commissioners, where the superintendent and his clerks have been instructed at all times to produce them for inspection and examination by any alderman, city officer or citizen of this city interested in this matter, and to give all explanations in their power in the premises.

In conclusion, your attention is called to the fact that in 1850 and again in 1869 very elaborate and costly surveys of the entire region lying around this city were made by eminent engineers, in addition to a partial survey made by direction of this Board in 1866; that these surveys, together with estimates of the cost of obtaining a supply from the Hudson river and an opinion of an eminent chemist as to the healthfulness of the Hudson river water, were submitted to the Common Council for its consideration in May, 1872, and after over a year of discussion, in which the same arguments were used in favor of and against the use of the river water as are now presented, the Common Council, after mature deliberation, by a vote of three-fourths of its members, decided to adopt the river water; that notwithstanding the prophecies of the disease and deaths which would result from the use of the river water the uniform good health of the city for the past ten years has vindicated the decision of the Common Council in selecting this water; that the health of our citizens in that part of the city to which the Hudson river water has been supplied is as good as the health of those who drink the water from Patroon's creek; that the complaints of our citizens that the city water has an offensive smell and bad taste, existed before any water was taken from the river, and since the river supply was adopted such complaints, it is found almost without exception, have been made at times when the portion of the city where these complaints have originated has been supplied from Rensselaer lake and not from the river; that the river water has not only successfully stood the test

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of ten years' experience, but has the high authority of Dr. C. F. Chandler in favor of its healthfulness, while thus far no man who can say that he has studied the subject can be found who will take the responsibility of saying that it is unhealthy.

This Board has no prejudice in favor of the river water or against any other source of supply, and if it can be shown that a better source of supply exists it will gladly take all practicable measures within its power to secure it. It can only say now, that in the light of the past experience of this city, and of the scientific tests and examinations of the river water, it is not aware of any better attainable source for a water supply for this city.

This Board is deeply sensible of the very great and serious responsibility which rests upon it in this matter, and it is determined that the conduct of the affairs of this important department, confided to its members by the people of this city, shall be guided by reason, after a careful examination and intelligent comprehension of the subject, and not by conjecture or popular prejudice.

By order of the Board.

H. D. KELLER,
Secretary.

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Report of the Board of Water Commissioners of Albany [electronic resource] in relation to the Albany water supply, to the Common Council, February 2, 1885.

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