

REPORT

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Newark Aqueduct Board

OF THE

CITY OF NEWARK,

PRESENTED DECEMBER 1, 1974.

NEWARK, N. J.

PRINTED BY THE BOARD OF WATER SUPPLY.

1975.

REPORT

OF THE

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NEWARK, N. J.

PRINTED AT THE CITY OF NEWARK OFFICE.

1875.

REPORT.

To the River's Authority Board :

Gentlemen :—The following report of the condition and operation of the Water Works for the past year is submitted :

The statement hereto appended, marked A, shows the work of the pumping engines for the year ending December 1st. The number of horse work of the engines was 8,077½, and the quantity of water pumped 1,781,895,040 gallons, with a consumption of 4,864,856 lbs. or 2,077.5 tons of coal. The average daily quantity pumped was 4,792,719 gallons, an excess of 253,714 over that of the previous year, or about six per cent.

The average daily consumption during the summer months was 5,864,856 gallons and during the winter months 4,643,047 gallons.

The cost of raising the water per million gallons was £12.18; per thousand gallons, £1.218½; cost of one million gallons raised one foot, £7,442.

The duty of the engines for the year, expressed in lbs. of water raised one foot with one hundred pounds of coal was 84,171,895. This duty includes the coal consumed in banking and raising steam; deducting this gives a duty of 87,781,078.

This duty is highly satisfactory, and it is doubtful if any pumping engine in the country can show a better continuous duty.

I have to report the same successful operation of the pumping machinery and the same immunity from accident that have heretofore attended its use. It has cost us nothing for repairs beyond the natural and inevitable wear, and this is hardly appreciable.

A contract for a third engine, of the same description as those now in use, was entered into with H. H. Worthington in April last. It is nearly completed and but little now remains to be done except making the connections with the boiler and pump valve. It will probably be ready for operation soon after January 1st. This engine has a capacity of upwards of eight million gallons in twenty-four hours, those now in use being of five millions capacity. In many of the details of construction important improvements have been introduced, which will render it one of the most perfect engines yet erected by Mr. Worthington.

To accommodate the boiler of the new engine, which required a larger steam capacity than was originally designed, an enlargement of the boiler house was necessary. This was done by removing the south wall of the building, and extending it about nine feet.

The engine and boiler house are in good condition, with the exception of the floor of the latter, some parts of which need repair. The floor of the cellar under the engine room should be paved as soon as the new engine is completed, in order to give that part of the building a neat and cleanly appearance.

The boiler and work along the river, as well as the tenement houses occupied by the employees, are in good order. It is probable that in the spring the masts of the scows may need some slight repairs, the top of the masts having been damaged to some extent by the ice, and some of the dwellings will need repainting.

The Receiving Reservoir is in its usual good condition. The care that has been bestowed on the grounds for the past few years has made it a very attractive spot. Until recently the means of access to this reservoir have been so poor that comparatively few persons have visited it, as were aware of the beauty of its location; but the grading of Washington avenue and the laying of Telford Parsonet by the Road Board, furnishes a fine road by which it can be reached with ease and comfort.

Our telegraph communication between the Reservoir and Engine House, has lately been arranged so as to dispense with an operator at the reservoir end. A float on the surface of the water, by connection with the wire, is made to indicate to those at the engine house at any desired time, the exact height of the water.

In the spring it was necessary to lower the twenty-four inch pipe in Lincoln's avenue, for a distance of upwards of fifteen hundred feet, the grade of the avenue having been cut down to that in some places the pipe was uncovered. This was done successfully without shutting off the water. Soon after this work was finished the most serious break of the year occurred on this line by the bursting of one of the pipes. The pipe was split longitudinally for a distance of upwards of five feet. It caused no other damage than flooding the street for a short time and washing the surface for a considerable distance.

The Low Service Reservoir, which, by the last report, was stated to have given considerable trouble, is not yet in condition to be used. The repairs which were deemed necessary were continued in the spring. Water was let into it in the latter part of June, in order to test the value of what had been done. With a depth of ten feet of water it was found to be still leaking badly. When the water was drawn off it

was apparent that the leak occurred precisely on the line between the old work and the new, or just when the repairing left off, appearing to indicate the necessity of extending the same treatment around the whole east and northeast sides.

The Committee of the Board to whom the matter was referred, after considering the subject, reported a plan for repairing which has not been adopted by the Board.

The plan proposed by the Committee is to remove the whole interior of the reservoir down to the rock, and puddle it in with other material. The plan on which the work already done has been prosecuted, is to make a tight dam around the foot of the slope, down to the rock, leaving the rest of the interior as it is.

The work has been further delayed by the inability of the Board to reach a decision as to the responsibility of the contractor, and their unwillingness to order any specific work until this question is settled. This is now in course of settlement, but no work can be done till spring.

A contract for a new pumping engine for the high service was made in the summer. It is now being built. Plans for an engine house for this service have been prepared, but the building has not been commenced. The engine is of the duplex form, differing from those in use at Belleville in the manner of using steam, one pump being operated by the high pressure and the other by low pressure cylinders. The construction is more simple than the original form, and is expected to give results quite as good. The pumps will have a capacity of three million gallons in twenty-four hours.

The steel pipe for the upper level, the necessity of which was alluded to in the last report, has not been built during the year as expected. The most convenient arrangement for

it, in the center of the high service reservoir, requires that reservoir to be drawn off, and as, during the time it is empty, the upper level will have to be supplied by pumping directly into the pipes, the work has been deferred till the erection of the new engine, when this mode of supply will be much more safe than at present. Some slight repairs will be needed to this reservoir when it is drawn down.

The amount of pipe laid during the past year, as shown by the table annexed, is 45,803 feet, of which 19,143 feet were in streets previously laid with smaller pipes.

The relaying of these streets was a work, the necessity of which has long been felt, and has greatly improved the distribution. Place street, formerly supplied with a three inch pipe, has been relaid with ten inch, to which thirteen new fire hydrants are attached. This pipe, though ordinarily supplied by the twenty-four inch main from the lower level, may at any time be connected with the intermediate and upper levels by opening the gates at the cross streets on the west side of Place street, and thus obtaining the increased volume and pressure to be derived from either of those levels in case of extensive conflagrations. By the relaying of Wellington, Blaney, Centre, Fair, Green, Franklin, and a part of Lawrence and Hamilton, a thickly populated section of the city has received a greatly improved supply, especially needed for fire purposes. This work has necessarily been expensive, as it required connections with all the cross streets, as well as the house services to be changed from the old to the new pipes.

On account of changes in the grade of streets, 4,550 feet of pipe have been lowered. The total amount of pipe connected with the works is 114 miles 85 feet, not including that which has been abandoned by the laying of new pipes. Most of this latter has been left in the ground, as it would not pay

for the cost of servicing. Connected with the works are 561 fire hydrants.

The supply of water for the past year has been abundant, and of general good quality. The project of obtaining a supply for Newark and Jersey City from the lakes and streams in the northern part of the State, which has been agitated for the past two years, seems not likely (in the case of Newark at least) to be entered into at present. Whatever may be the condition of the water supply at Jersey City, there seems to be no such necessity here from the failure of our present source, either in quantity or quality, as to warrant so large an expenditure as the execution of this scheme would involve. At present we are not ready, and there seems to be no pressing need of it.

It is incumbent on us, however, to adopt every means to secure the water of the river from pollution. I would urge the Board to consider into this matter carefully, and if further legislation is necessary for the proper protection of our water supply, trust that it will at once be obtained.

The system of measuring the water of large consumers has been continued with very satisfactory results. There are now in use 75 meters, of which 49 are Worthington, 17 Goss meters, and 1 Warner meter. In all the tests that have been made they have been found accurate, and have more than paid for their cost by the increased water rents. The general use of meters would doubtless swell the receipts and at the same time reduce the consumption. By no other means can a just and equitable tariff for water consumed be established.

The amount received from water rents for the past year was \$158,217.18, an increase over the previous year of \$25,100.82, or about 15 per cent., whilst the increase in consumption of water was six per cent.

I would call your attention to the reasoning adopted in past years to show the necessity of an increase of the water rates, or the adoption of some means of securing payment from all classes benefited by a water supply, some of which now pay no direct water tax.

Our revenue from the works is insufficient to meet the interest on the bonds. It is true the deficiency is levied in the general tax, but an amount equal to this ought to appear in our returns, as the proper and legitimate revenue from the works.

Looking to the increase of our water rates as the means of increasing our revenue, the following statement, similar in character to that contained in the last report, will show the amount realized for the quantity of water furnished, and then by comparison with what will be acknowledged as a moderate rate, show what would be the increase in amount. The quantity of water furnished to consumers during the year, after deducting from the amount pumped 20 per cent. for waste and losses, and water used for fire purposes was 1,381,515,770 gallons. The income for the year was \$158,617.15; yield per 1,000 gallons, .59,84¢.

The rate fixed for measured water is 15¢ per thousand gallons, a rate lower than most cities in the country are paying. If our rates were raised so as to yield this, we should receive a revenue for the amount of water furnished this year of \$207,600.25.

The expediency of raising the rates to any such extent may may well be doubted, but there is no question that the general use of meters would so reduce the consumption of water as to make the receipts some much nearer to reaching 15¢ per thousand gallons than they now do.

The last passed two years ago and afterwards repealed, assessing all property in front of which water pipes are laid,

seems a very just and proper one, and some such law should be enacted. The labor of assessing and collecting the tax should, however be thrown on the Aqueduct Board, instead of the Board of Assessment of Taxes, and the receipts should appear on the books of the office in the same manner as those for water consumed. A moderate tax on all property having the means of obtaining a water supply, would, with the rates for water remaining as they now are, produce sufficient revenue to pay the interest and all expenses.

I would suggest also that the water for fire purposes should be a matter of annual charge to the city, instead of charging the cost of hydrants as at present, and receiving no income for water.

Respectfully submitted,

G. H. BAILEY, *Engineer*.

Newark, December 1st, 1871.

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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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	1870	1880	1890	1900
Chatham st. from Hancock ave. to Brill st.	100	75	1	1
Clinton st. from Eighth ave. to Orange st.	400	50	1	1
Deland's ave. from entrance to Lincoln ave.	100	100		
Dexter st. from Barclay to Chatham st.	100	50		
Clinton st. from Barclay to Waverly Place.	100	50	50	1
From above, from Springfield ave. to Waverly Place.	100	50	50	1
Lyons st. from Fourth st. to Eighth st.	100	50	50	1
Clinton st. from Eighth st. to St. Vincent ave.	100	50		
Dexter st. from Orange to Seventh ave.	100	50	50	1
Springfield av. from Springfield ave. to Ninth st.	100	50	50	1
Clinton st. from Ninth to Waverly Place.	100	50	50	1
Lincoln ave. from Avenue to Lincoln st.	100	50	50	1
Lincoln ave. from Lincoln ave. to South Fifth st.	100	50	50	1
Clinton st. from Third Avenue to South Orange ave.	100	50	50	1
Barry st. from South Orange ave. to West Side st.	100	50	50	1
Clinton st. from Bedford ave. to Madison ave.	100	50	50	1
Madison ave. from Bedford ave. to Henry st.	100	50	50	1
Henry st. from Bedford ave. to South Third st.	100	50	50	1
Waverly Place, from Springfield ave. south.	100	50	50	1
Springfield ave. from Bedford to Madison st.	100	50	50	1
Clark st. from above to St. Vincent.	100	50	50	1
Clinton st. from Clark st. to South ave.	100	50	50	1
Barry st. from Third Ave. to Henry.	100	50	50	1
Henry st. from Madison ave. to Lincoln.	100	50	50	1
Springfield av. from West Orange to Greenwich ave.	100	50	50	1
Madison st. Clinton ave. and West Street.	100	50	50	1
Washington ave.	100	50	50	1
Greenwich ave. from Madison ave. to Clark st.	100	50	50	1
Clark st. from Clark st. to South ave.	100	50	50	1
Madison st. from Springfield ave. to Madison ave.	100	50	50	1
Henry st. from Bedford's Factory to Clinton ave.	100	50	50	1
Clark st. from above to Bedford st.	100	50	50	1
Clark st. from Bedford to Clinton st.	100	50	50	1
Clinton ave. from Clinton to Clark st.	100	50	50	1
Clark st. and all pipe to Bedford ave.	100	50	50	1
Clinton ave. from Clark to Bedford.	100	50	50	1
Madison st. from Bedford to Clark.	100	50	50	1
Springfield av. from Waverly Place to Madison ave.	100	50	50	1
Waverly Place, from Bedford to Madison.	100	50	50	1
Clinton st. from above to Waverly Place.	100	50	50	1
Springfield av. from Orange to Madison.	100	50	50	1
Lincoln ave. from Clark, from Clark st.	100	50	50	1
Clinton ave. from Clinton ave. to West Street.	100	50	50	1
Clark st.	100	50	50	1
Greenwich st. from Clark to Madison ave.	100	50	50	1
Clark st. from Bedford to Bedford.	100	50	50	1



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