NEW JERSEY COURT OF ERRORS AND APPEALS.

Burlington Sewerage Company, *Respondent*, vs. The City of Burlington, *Appellant*.	}	On Appeal.

BRIEF FOR APPELLANT.

The first question raised by the prosecutor is:

> "Has the Board of Public Utility Commissioners authority to approve rates for sewer companies in excess of the schedule of maximum rates contained in the municipal consent to the incorporation of such companies under Chapter 210 of the Laws of 1898?"

The answer of this respondent is in the negative. Subdivision F of the ordinance granting consent and permission to the prosecutor to incorporate (see Exhibit P7 of the printed book, page 294), provides "that the Burlington Sewerage Company, its successors and assigns, are hereby authorized to charge not in excess of the following annual rates for sewerage service, which rates may be collected semi-annually in advance, provided that said company shall not be compelled to establish a lower rate for a single building of less than six dollars." Thereafter follows a schedule of maximum rates which may be charged by said company in the City of Burlington.

If unsupported by anything but a general authority to consent to the establishment of rates there seems to be no doubt of the power of the Board of Public Utility Commissioners to change or alter such rates and substitute just and reasonable rates, if the case should require any change or alteration in order to make such rates just and reasonable, either by the increase or decrease thereof. This general proposition seems to have been established by the Public Service Railway Case (85 N. J. L. 123) and the Phillipsburg Case (85 N. J. L. 141), cited by the prosecutor on page 4 of its brief.

The present case however rests upon an entirely different foundation from either of the cases above referred to. The prosecutor was incorporated under the above-mentioned Act of 1898, which provides in Section 2 for the manner in which the certificates of incorporation shall be made up and then states as follows:

> "Such certificate shall be filed in the office of the Secretary of State *together with the consent in writing of and the terms and condition or conditions upon which the consent has been granted by the corporate authorities, if any, of the municipality in which such sewer system is to be constructed.*"

Section 12 of the act, after providing that the corporate authorities of the municipality may exact payments of money for or in consideration of the consent of such municipality, provides:

"*The said corporate authorities shall annex to said consent the maximum prices or rents that may be charged property owners or others for the use of such sewerage system and any further or other terms or conditions upon which said consent is granted;* if the certificate referred to in Section 2 be filed, there shall be annexed thereto and filed therewith a copy of the terms and condition or conditions upon which said consent is granted, *and such filing shall be conclusive evidence that said corporation has assented to said terms and condition or conditions, and the same shall be deemed and taken to be binding and operative upon the said corporation, its successors and assigns.*"

Section 14 of the act provides:

"Said company may contract with property owners and others for the use of said system of sewerage for such price or prices, or quarterly or annual rents, and such restrictions as said company may think proper; *provided that the same shall in no case exceed the maximum rates which may be named in the terms and condition or conditions on which the consent of the corporate authorities shall have been obtained.*"

Thus it will be seen that the provision in the ordinance granting consent and permission to the prosecutor, as above set forth, was made in pursuance of the express and explicit directions of the statute under which the prosecutor company was formed. It was just as much a condition of the incorporation of the prosecutor that said maximum rates should be fixed by said consent as that the incorporators of said company should not be less than seven in number, as the statute referred to left no discretion in the municipal authorities granting said consent as to whether or not said maximum rates should be fixed. Other conditions were left in the discretion of the corporate authorities as to whether or not same should be imposed,—as for instance the payment of money in consideration of said consent, but the condition fixing maximum rates is made compulsory by the statute.

The franchise and the conditions upon which the consent of the local authorities was obtained are inseparable, the very right of the sewer company depends upon its compliance with the obligations to keep such conditions; see *N. Y. E. Lines Co. vs. Empire City Subway Co.*, 201 N. Y. 321, 329. 94 N. E. 1056, affirmed 235 U. S. 179.

We contend that this statute has not been repealed, but is still in force. It is our contention that it was not repealed, either expressly or by implication, by the Act of 1911 known as the "Utility Act," P. L. 1911, p. 374, and that any regulation of rates by the board must be within the maximum limits expressed by the said consent; that the said "Sewerage Act" of 1898 and the said "Utility Act" of 1911 should be read together, so as not to conflict, if possible, in accordance with the rule of statutory construction, and that upon reading same together it appears that it was the intention of the Legislature to give to the Utility Board authority to regulate rates of corporations under the said "Sewerage Act" of 1898, keeping always however within the limits of said maximum schedule fixed by the express directions of the statute and to be taken as a part of or condition upon which said corporation was formed, and that said maximum rates, which are the rates now exacted by and paid to said Burlington Sewerage Company, cannot be considered "to be unjust, unreasonable, insufficient or unjustly discriminatory or preferential" within the meaning of Subdivision C of said "Utility Act" of 1911, in view of the fact that said maximum rates were fixed by the express direction of said "Sewerage Act" of 1898 as one of the conditions upon which the necessary consent to the formation of said company was granted.

Upon this point the Court of Appeals of New York in the recent case of *Quimby vs. Public Service Com.,* 119 N. E. Rep., page 433, says:

In regulating rates three courses were open to the Legislature: (1) To prescribe rates itself; (2) to delegate the power to the commission; (3) to leave the matter to agreement between the street railway company and the local authorities. It has constitutionally conferred on the public service commission certain functions (*Matter of Trustees of Village of Saratoga Springs vs. Saratoga Gas,* E. L. & P. Co., 191 N. Y. 123, 83 N. E. 693, 18 L. R. A. (N. S.) 713), which plainly include the power to regulate rates fixed by statute; and while it may be said that it has undertaken to delegate to the public service commission "the same power" that it has to regulate rates of fare (Railroad Law, 181), it is impossible to find a word in the statutes which discloses the legislative intent to deal with the matter of rates fixed by agreement with local authorities. As it has often been held in connections other than that of legislative power over them that such agreements are valid, it may well be inferred that the Legislature excluded them from consideration by failure to mention them, and that it has made no attempt to turn them over to the public service commission for revision. "Statutes should be read according to the natural and most obvious import of the language, without resorting to artificial or forced constructions, for the purpose of either limiting or extending their operation." *Matter of N. Y. & Brooklyn Bridge,* 72 N. Y. 527, 529; *Heerwagen vs. Crosstown St. Ry. Co. of Buffalo,* 179 N. Y. 99, 71 N. E. 729. "A thing which is within the letter of the statute is not within the statute, unless it be within the intention of the makers." *Riggs vs. Palmer,* 115 N. Y. 506, 509, 22 N. E. 188, 189 (5 L. R. A. 340, 12 Am. St. Rep. 819); *McDowall vs. Sheehan,* 129 N. Y. 200, 206, 29 N. E. 299. The authority of the commission to regulate rates in such cases, and thus to extinguish an undoubted power of the local authorities, should fairly appear before it is assumed to exist.

We further contend that the express direction given by the said "Sewerage Act" of 1898 to a municipality acting thereunder to attach to its consent, if any, said schedule of maximum rates, did create between the municipality and said sewerage company a contract within the protection of the State and Federal Constitution, because the said "Sewerage Act" of 1898 shows a clear and positive intention on the part of the State to authorize the municipality to bind it to said established maximum rates by reason of the express direction given in said statute to said municipality to annex the condition fixing maximum rates, and that the State did not reserve to itself any power to regulate rates in the case of the Burlington Sewerage Company if in said regulation said rates would be raised so as to be in excess of said schedule fixing the maximum.

The State intended to part with its power to interfere in fixing the rates to be charged by this company, excepting up to said maximum. If this had not been the intention there would have been no reason for making such a provision in the statute and in giving specific directions as to fixing maximum rates and the effect of the same when fixed.

The State had authority to do this provided the intention of the Legislature to do so clearly appears, and as to whether such was the intention of the Legislature depends upon the facts in each case.

See:

Home Telephone Co. vs. Los Angeles, 211 U. S. 265;

Detroit Railway Co. vs. Michigan, 242 U. S. 238;

Quimby vs. New York Pub. Ser. Com., Ibid.

The prosecutor further contends that the restrictions fixing the schedule of maximum rates could not constitute an inviolable contract between the municipality and the company because it lacks the necessary and essential elements of a contract.

In the first place, the prosecutor says that it is indefinite in regard to time. In answer to this we say that the said schedule of maximum rates was by the statute an essential part or element necessary for the incorporation of said prosecutor and that it would necessarily exist so long as the prosecutor exists.

The prosecutor again contends that the consenting ordinance did not constitute an inviolable contract because under it the company was not under obligation to continue to furnish service. Our answer is that it was bound to carry out the purposes of its incorporation during the period of its existence, and that it was bound to carry them out in accordance with the act under which it was incorporated; that the purpose of its incorporation was and is to furnish sewer service to all properties upon its line upon compliance with its reasonable regulations and payment of its rates not in excess of the established maximum; that it is under obligation to continue to furnish service during the period of its existence.

It is respectfully submitted that this case presents a situation which is new in this State, and that it has no parallel in any of the cases cited in the brief of the prosecutor.

ERNEST WATTS,
V. CLAUDE PALMER,
Attorneys for and of Counsel with Appellant.

INDEX

WRIT OF CERTIORARI.

NEW JERSEY SUPREME COURT.

BURLINGTON SEWERAGE COMPANY, *Prosecutor*, vs. BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY, AND CITY OF BURLINGTON, *Respondents*.	WRIT OF CERTIORARI.

NEW JERSEY, to wit:

The State of New Jersey, to the Board of Public Utility Commissioners of the State of New Jersey, and the City of Burlington, GREETING:

We being willing for certain reasons to be certified of and concerning a certain determination and judgment rendered on the fourth day of April, A. D. one thousand nine hundred and seventeen, by the Honorable Board of Public Utility Commissioners of the State of New Jersey, in the matter of the application of the Burlington Sewerage Company for the approval of a new schedule of rates to be charged by said company for service rendered to its customers, We do command you that the said determination and judgment together with all proceedings for the making of the same and all things touching and concerning the same, as fully and entirely as before you they remain or are in your custody and control, you do certify and send, together with this writ, to our Justices of our Supreme Court of Judicature, at Trenton, on the seventh day of May, A. D. one thousand nine hundred and seventeen, that therein may be caused to be done what of right and according to law ought to be done.

Witness, the Honorable William S. Gummere, Chief Justice of the Supreme Court of New Jersey, at Trenton, this 26th day of April, A. D. 1917.

Clerk.

Attorneys for Prosecutor.

[ENDORSED]

Issued Apr. 26, 1917.
Returnable May 7, 1917.
This writ is allowed. Let it be sealed.
Samuel Kalisch,
Justice of the Supreme Court.
Dated April 26, 1917.

REASONS.

NEW JERSEY SUPREME COURT.

BURLINGTON SEWERAGE COMPANY, *Prosecutor,* vs. THE BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY, AND THE CITY OF BURLINGTON, *Respondents.*	ON CERTIORARI. REASONS.

The prosecutor, by J. Fithian Tatem, its attorney, comes and prays that the order of the Board of Public Utility Commissioners of the State of New Jersey, dated April 4th, 1917, which order dismissed the petition of the prosecutor for the approval of an increased schedule of rates, may be set aside, reversed and for nothing holden, for the following reasons:

1st. Because the commission erred in its method of determining the value of the property used by the prosecutor in rendering service to its customers and the public.

2nd. Because the commission erred in determining the value of prosecutor's property by failing to make any allowance for intangibles, development cost, working capital or other proper items.

3rd. Because the commission erred in limiting the value of the prosecutor's property to its reproduction cost less accrued depreciation.

4th. Because the valuation placed by the commission on prosecutor's property is less than the true value thereof.

5th. Because the commission erred in determining that the prosecutor was earning over 2 per cent. per annum upon the value of its property, whereas in fact it was earning less than 1 per cent. per annum on such value.

6th. Because the commission erred in finding that the return which the prosecutor received under its present schedule of rates is not so inadequate as to prevent the rendering of safe, adequate and proper service.

7th. Because the commission erred in finding that the rates now in force are not confiscatory.

8th. Because the commission erred in refusing to grant its approval of rates in excess of the maximum rates set forth in the consent of the municipality to the incorporation of the prosecutor.

9th. Because the act entitled, "An act for the construction, maintenance and operation of systems of sewerage in any municipality in this state," approved June 13th, 1898, is unconstitutional in that it attempts to delegate to municipalities the rate making power over sewerage companies, without any limitation as to time.

10th. Because the schedule of rates attached to said consent do not constitute a continuing contract to furnish service at said rates.

11th. Because the commission is in duty bound to approve and fix such rates as shall enable the prosecutor to render safe, adequate and proper service.

12th. Because the prosecutor is unable to render safe, adequate and proper service under its existing rates which are the maximum rates set forth in the consent mentioned above.

13th. Because the finding of the commission is unjust and oppressive.

14th. Because the result of the finding of the commission is to confiscate prosecutor's property.

15th. Because the result of the finding of the commission is to take prosecutor's property for public use without just compensation.

J. Fithian Tatem,
Attorney for Prosecutor.

TESTIMONY.

BOARD OF PUBLIC UTILITY COMMISSIONERS.

Trenton, N. J., Tuesday, October 6, 1914.

Burlington Sewerage Company, in re rates.

Before the following commissioners:
R. W. E. Donges, Esq.
T. J. Hillery, Esq.

For the petitioner appears J. Fithian Tatem, Esq.
For the city of Burlington appears E. Watts, Esq. and V. C. Palmer, Esq.

Mr. Tatem: I appear again before your Honors this afternoon in a case very similar to the one in which we went into at such length at Camden last week, and my position today is the same as it was then, and the reason we are here is exactly the same as it was then. This is an application on behalf of the Burlington Sewerage Company for the approval of a new schedule of rates. The proposed schedule is substantially higher than the schedule under which the company has been operating for a number of years past. The company was incorporated in 1901 and in the ordinance giving it permission certain rates were established. It has been operating since that time on those rates. I might call your Honors' attention to this fact and I think this rather than any special detail will show the necessity for the application today; there are three sewer companies in the state of New Jersey which have a revenue (eliminating one or two very small ones), three sewer companies of reasonably good size that have a revenue per connection of less than $11.50 per connection. Those are the Burlington Sewerage Company, which is here before your Honors today; the Collingswood Sewerage Company, which was before your Honors last week, and another company which I have the honor to represent and for which I suppose I will have to present the same kind of petition in the very near future.

Commissioner Donges: The Ocean City Company?

Mr. Tatem: The Ocean City Company.

Commissioner Donges: Isn't that true of the Atlantic City Company, too?

Mr. Tatem: I would probably think so. Atlantic City is $11.86 which is really less than the average, but Burlington is $1.50 lower than any other company in the state. It has the lowest sewerage rate in the state. Its average rate per connection is only $7.01 as shown by the statement which Mr. Betts read into the record at Camden, you will remember, last week.

Commissioner Donges: Are the rates fixed by ordinance?

Mr. Tatem: The rates were fixed by ordinance. The explanation of their rates is this; the great majority of their customers are small, the owners and occupiers are small private dwellings. The minimum rate fixed by ordinance is $6 and to show you how very near—how many houses must be on the minimum, you can see the average rate is only $7.01 or very slightly above the minimum. That places, I think, in a concrete form, our position. We have the lowest rate of any sewerage company in the state. Without taking into consideration any depreciation or any value for intangibles, taking only the actual value of the physical property of the company and operating it in a most economical manner the entire net earning, without any allowance for depreciation or intangibles, the entire net earnings for three years past have only been six and a half per cent. or two per cent. a year. In other words, we have earned two per cent. a year for the last three years on the actual physical value of the property, making no allowance for depreciation and placing no value on intangibles, and that is the reason we are here today.

Commissioner Donges: How long has the company been in operation?

Mr. Tatem: In operation since about 1902. The ordinance was passed in 1901. The company has at the present time 1248 active accounts. The number has not been increasing rapidly. I might say in 1910 the number of our accounts was 1095; in 1911, 1155; in 1912, 1205; in 1913, 1246, at the present time 1248. Another reason why the company is unprofitable, as we will show by our testimony, is, that while we have along the lines of our mains about 1240 or 1250 connections, there are also along those mains some 500 or 600 houses which are not connected with the sewer. That, of course, means that we have to maintain that length of mileage of pipe and it means that the number of connections per mile of pipe is just that much reduced. Without going into the matter any further at present, I will simply state it is my intention to present to the commission in as brief and succinct a form as possible, our engineer's estimate, based not on a cursory examination of the plant, but we will produce the engineer who has been familiar with this plant from the beginning, who drew the plans for the plant originally and we will show by him the value of the physical property of the plant and then from the books of the company we will show the earnings and the operating expenses. In other words, I want to say this, not through any—as I am sure these gentlemen realize—any animosity toward the people of Burlington and not because we desire to take any unfair advantage of any one, but simply because we believe it is unfair to ask us to operate a plant which yields us a return of two per cent. on our money without any allowance for depreciation and no allowance for intangibles. I might say that the new schedule of rates, the principal change made in the new schedule of rates—it amounts to an increase of about sixty per cent.

Commissioner Donges: In revenue?

Mr. Tatem: Yes. The minimum is raised from $6 to $10. You can see that applies to most of the people, because our average rate is only $7, the average rate which we receive now. Under our ordinance in which the consent of the municipal authorities was given it is provided that we shall furnish all the city buildings, school houses, fire houses and so on with sewer service without charge. That we have been doing ever since the company was organized and started to give service, and that we are willing to continue to do provided we are allowed to place our rates at such a point as with the utmost economy in operation will make it possible for us to receive a return on the investment.

William H. Boardman, sworn on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. What is your profession, Mr. Boardman?
A. Civil, hydraulic and sanitary engineer.
Q. You have been engaged in that business for how long?
A. Thirty years.
Q. You have given special attention to sewerage and sanitary engineering, have you not?
A. Yes, sir.
Q. Are you familiar with the plant of the Burlington Sewerage Company, at Burlington, New Jersey?
A. Thoroughly.
Q. How long have you been familiar with that plant?
A. Since its installation.
Q. Have you made a recent examination of the plant?
A. I have.

Q. Referring to the summary of your total appraisement which appears on the last page of the same, page 12, which I desire to take up with you, will you kindly explain that in such detail as the commission and those interested will understand how you have arrived at the figures shown on that summary?

A. We divide the plant into two parts, one the collecting system the other the disposal plant. Item one is real estate valued at $1620. The collecting system, that includes pipes, Y branches, manholes and so on is $62,641.37. The pump well $960; pumping station, $1750; pumps, engines and accessories in pumping station, $2752.20; septic tank $3165.18; broad surface irrigation plant, $4613.45; resurfacing streets, $2478.48; materials and equipment on hand, $415.84; tools on hand, $223.55; office equipment, $273.50; barn, farming implements and so forth, $832.25, a total for collecting system of $65,119.85, and the disposal plant $16,606.27. Adding to that the cost of engineering, seven per cent., makes the collecting system $69,678.24, disposal plant $17,768.71. The organization expenses we figured at six per cent. and the interest during construction, one year, average of six months, at six per cent. amounts to; collecting system $76,074.70, and the disposal plant $19,399.88, a total of $95,474.58. On the financial proposition, we figured those bonds were sold at 85-1/3. That would make the discount on bonds, $11,002.50, making a total of $106,477.08. Depreciation we take from that amount, $6,393.36, leaving a net balance of $100,083.72. Added to that is the cost of developing the business. This I obtained from the books of the company, to December 31st, 1913, as per tabulated statement thereof furnished by the Burlington Sewerage Company, $92,203.71; making a grand total of $192,-287.43.

Q. On the basis then, as I understand your summary, on the basis of bonds having been sold at 85-1/3, the replacement value or the reproduction value is $106,477?

A. And eight cents. That is without depreciation.

Q. And deducting the depreciation it leaves the present value at, in round figures, $100,000?

A. Yes, sir.

Q. The other item of the developing the business is simply a figure which you obtained from the company as their books, their profit and loss account shows they had lost that much?

A. Yes, sir.

By Commissioner Donges:

Q. And you took the statement of the company as to the average price of bonds?

A. Yes, sir; the average price of the bonds. At the same time this plant was being built, there was another sewerage plant which I was familiar with and their bonds sold at that price 85-1/3. What these bonds were sold at, I don't know. At that time that was the price on sewerage bonds.

Q. How have you figured depreciation?

A. I took it on the various items. You will find it in detail on page 11. Collecting system was built 1902 to 1914, an average time of six years. I deducted one per cent. for the six years, one per cent. a year, $3,758.48. On the pump well we take twelve per cent., $115.20. On the pumping station we deducted twelve per cent., $210.

By Mr. Tatem:

Q. By pumping station you refer to the building?

A. The building itself, yes, sir.

Q. The brick building.

A. The pumps, engines and accessories in pumping station we deducted fifty per cent., making $1376.25. The septic tank we deducted twelve per cent., $379.82. The board surface irrigation plant we deducted twelve per cent., $553.61, making a total of $6,393.36.

Q. There are certain other items in your summary that I want to briefly call your attention to. You have placed the value of the real estate at $1620; what was your basis of valuation in regard to that?

A. The area of the tract is 16.2 acres. We took it at $100 an acre, which I understand is the price actually paid for it by the company.

Q. This tract is in the city limits of the city of Burlington?

A. Yes, sir, on the western boundary of the city of Burlington.

Q. The item which you have included for resurfacing streets, $2478.48; does that include anything except the streets which were actually resurfaced by the company?

A. They are streets actually dug up and resurfaced by the company.

Q. That is an accurate statement?

A. That is an accurate statement.

Q. The item which you have added for engineering, seven per cent.; in your experience and judgment on an engineering proposition of this size that is a fair allowance for engineering?

A. That is the usual percentage, yes, sir.

Q. And the allowance made for organization expenses, in your judgment and experience, is that about a fair allowance?

A. I think that is a fair allowance, six per cent.

Q. As a matter of fact, you were furnished with no detail and have no knowledge as to what the actual organization expenses in this company were?

A. Not in this company, no.

Q. That is simply an estimate or allowance based on your experience?

A. Based on my experience, yes, sir.

Q. The allowance which is made for interest during construction, you have allowed for an average period of six months on the assumption the plant could be completed within a year which would make an average period of investment six months?

A. That is correct.

Q. That is a fair allowance of time in your judgment, for a plant of that size?

A. Yes, sir.

By Commissioner Donges:

Q. That, however, is estimated upon the entire cost of the physical plant as it now exists?

A. As it now exists.

Q. What was the expenditure represented by the plant after it was originally installed?

A. Since the first installation of the plant there has been about thirteen thousand dollars spent in extensions and so on.

By Mr. Tatem:

Q. About thirteen thousand dollars spent since?

A. About thirteen thousand, I think.

Q. From your experience in a plant of this size, would you say that a total operating expense of from $5400 to $6400 per year, that operating expense to include fuel for pumping, wages, office expenses, taxes, insurance and all which can properly be classified as operating expense; would you say that was a low or high operating charge?

A. I would think it was a low charge.

Cross-examination.

By Mr. Watts:

Q. Are you acquainted with the value of real estate in Burlington?

A. No, sir.

Q. Then your only information as to the value of the real estate stated is what you got from the company?

A. I asked the company what they paid for it and they told me one hundred dollars an acre.

Q. That is the only information you had which caused you to put this item in here of sixteen hundred and twenty dollars?

A. It is.

Q. The collecting system you have put at $62,-641.37?

A. Yes, sir.

Q. Where did you get the figures annexed to the items making up that amount?

A. I took the plans of the sewerage company, took off the cuts, and by personal observation and surveys and from my intimate knowledge of the original construction of it.

Q. Where did you get the prices which you put at the end of each item as being the value of that item?

A. From my general knowledge of the value of that kind of work in that particular territory.

Q. Those prices were based upon what time?

A. That is the reproduction cost.

Q. What is that?

A. The plant could be reproduced for that money today.

Q. Today?

A. Today.

Q. Then the prices which you have mentioned here for these various items are market prices today for those items, is that right?

A. Today, plus the contractor's profit.

By Commissioner Donges:

Q. For the pipe laid in the ground?

A. The pipe laid complete, as a whole, including contractor's profit.

Q. How much did you allow for contractor's profit?

A. Fifteen per cent.

By Mr. Watts:

Q. You have added to the market price fifteen per cent. on each of these items or on the sum total for a contractor's profit?

A. In that total contract the contractor would make about fifteen per cent.

Q. And you included that in the $62,641.37?

A. Yes, sir.

Q. Is that the usual percentage of profit for a contractor for this work?

A. It is.

Q. You have here an item of nine hundred and sixty dollars for pump well, page three it is; what you have said as to contract price in reference to the previous items referred also to these items?

A. Refers to all the items in the estimate.

Q. All the items in the estimate?

A. Everything.

Q. When were you first connected with the Burlington Sewerage Company?

A. I think about 1901, 1902, somewhere there.

Q. Were you one of the incorporators of it?

A. I think I was.

Q. You still hold stock in the company?

A. I think I had one share originally and think that I transferred that to Samuel L. Kent.

Q. When was that?

A. Some years ago, I think.

Q. Then at the present time you have no connection with the company except as engineer?

A. I have no connection with the company.

Q. This item, number eight, resurfacing of streets, $2,478.48; you stated, I think, that that is the actual amount of money expended by this company for that purpose.

A. I said that was the actual street surfaces that we destroyed and replaced.

Q. Do you speak from your knowledge?

A. Yes, sir.

Q. Where were those streets?

A. 12570 square feet of asphalt blocks, 7,680 square feet of shale bricks, 10,323 square feet of macadam and 657 square feet of cobble.

Q. Where was the 12,570 square feet of asphalt blocks, what location?

A. The asphalt block is on Pearl Street from Tatham to Main and Union Street, Tatham to Main.

Q. And that cost the company $1508.40 to replace that?

A. I figured that out twelve cents a square foot which is a low figure; 12,570 square feet of it.

Q. Is that what the company paid for it?

A. I don't know what the company paid.

Q. You don't know what the company paid?

A. No.

By Commissioner Donges:

Q. That includes the cost of all material?

A. Includes the cost of the purchase of new block to make up what is destroyed and put in the foundation, for laying the block, and laying, complete.

Q. New blocks for the entire surface?

A. No; use what blocks we can. Asphalt blocks are destroyed more or less and that includes what new ones you would have to buy to replace the broken ones.

By Mr. Watts:

Q. You said that included the resurfacing of Pearl Street west of High?

A. From Tatham to Main and Union, Tatham to Main.

Q. It don't include anything then west of High Street?

A. That is my recollection.

Q. High Street and Main Street being the same?

A. That is all I included on asphalt block, to the best of my recollection.

Q. That, as I understand it, is what you figure it cost the company to replace the blocks in that street or in those streets at the time they laid the sewer pipes there?

A. I think so, yes. I think it could be done for that money today. What it cost them I don't know, I haven't any access to the books or the contractor's books.

Q. You are figuring on new material when you put that figure in there?

A. Twelve cents a square foot?

Q. Yes.

A. No; that is relaying the block, taking up the block and save what we can, relay those; you destroy some, which would include the purchase of new ones.

Q. And using all of the old ones you could use?

A. You could possibly use, yes.

Q. That is an estimate which you have made as an engineer, which is not based upon any actual knowledge which you have as to just what the cost was?

A. I know just about what it cost; it cost about that amount of money.

Q. Do you know that as an engineer or from your connection with the sewer company?

A. I know that as an engineer and from actually laying the blocks.

Q. You actually laid them?

A. I had charge of it.

Q. The shale brick you speak about in the next item, 7,680 feet, where were they laid?

A. The shale brick we had, I think, from Main to Reed on Pearl.

Q. Where is Reed Street?

A. It runs off near Pearl Street. I have a map here that will show you.

Q. Were the sewer pipes laid in Reed Street, which you speak about?

A. Laid on Pearl Street.

Q. You said to Reed Street.

A. Main to Reed, on Pearl.

Q. The same you said as to item one applies to item two, as to the manner in which you arrived at that calculation?

A. Yes, sir.

Q. The next item is 10,323 feet of macadam, where was that laid?

A. The macadam was laid on Main from Delaware to Wetherill and Broad from Main to Wood.

Q. At the time the sewer plant was built and these pipes were put in, was Main Street macadamized?

A. It was macadamized on it.

Q. When was it macadamized?

A. They had been doing some of it off and on for some time.

Q. Do you know what year?

A. I don't know; it was there when we laid the sewer pipe. I don't know when it commenced.

Q. Six hundred and fifty-seven square feet of cobble.

A. On Broad Street from Main to Locust.

Q. Was the pipe laid back of the Pennsylvania Station?

A. Yes, sir.

Q. The organization expenses are mentioned as $4180.69; how do you make that up?

A. I took six per cent. on the actual cost of the work.

Q. You don't actually know what the organization expenses were as to this company?

A. Not exactly, no, sir.

Q. What do you include in that item?

A. Legal expenses, preliminary plans, preliminary estimates, advertising and so on, traveling and hotel expenses.

Q. By legal expenses, do you mean attorneys' fees?

A. Attorneys' fees.

Q. Expenses of litigation?

A. I don't think any litigation, attorneys' fees.

Q. In the organization of the company?

A. In the organization of the company.

Q. What advertising do you include in that item?

A. Advertising the ordinance and so on.

Q. How much of the $4180 have you allowed for that?

A. I did not make any separate item. I just took a basis of six per cent. because that is about usual.

Q. You cannot tell how, in what proportions, you made that up?

A. No, sir.

Q. Mr. Boardman, is six per cent. a usual charge for organization expenses in corporations of this character?

A. I think it is about fair; some will run higher and some will run lower.

Q. Does the size of the corporation have any bearing on that?

A. Oh, yes. A corporation of this size, I think that ought to cover it.

Q. If it was twice as large, it would be about what?

A. Twice as large? It would not run twice as high, I don't think but for a corporation of this size, $100,000, I think it ought to cover.

Q. Suppose the corporation was half the size, would you say then——

A. Your legal expenses for a plant half the size would be as large as for this one.

Q. And you would allow six per cent. for one half the size?

A. Would cover less territory, the disposal plant would not go into so much detail, and so on.

Q. When this plant was originally built, was there a disposal plant then?

A. The original intention was to run it right into the Delaware River but the State Health Department refused permission to construct it on that basis and we had to put in a sewerage disposal plant.

Q. Where was the plant to be located under that plan of operation?

A. If allowed to run direct to the river it would run down to the nearest outfall and into the river, but the State Health Department would not approve any such plan and compelled us to instal a purification plant.

Q. Didn't you at that time change the plans of location for this plant?

A. The original idea was to locate it alongside the drainage pumping station and have the drainage pumps to do the pumping but that was all abandoned and the plant was built on the other side of the railroad.

Q. You have inspected this plant recently?

A. Yes, sir.

Q. How many times?

A. I go over it quite frequently; I was there last week.

Q. And before last week when were you there?

A. I don't know exactly, possibly three or four months ago, longer.

Q. How many times have you been there in the last year?

A. Possibly two or three times. I have no business to take me there.

Q. Not over three times?

A. I don't think so. I have no business to take me there; I have nothing to do with the plant any more.

Q. You have had no connection with the plant from the time you gave up your stock and got out of it until you were called in as engineer on this job?

A. No, sir, nothing.

Q. When you were there, did you notice or detect any bad odor around the plant and in the vicinity of the plant?

A. There was some little odor there last week. The plant looked in good shape, very well kept, but there was some little odor there.

Q. Could you smell that at any great distance from the plant?

A. I didn't notice it until I got across the city line ditch.

Q. That is right next to the plant?

A. Right at the plant, yes, sir.

Q. You have here an item of one per cent. on sixty-two thousand six hundred and forty-one dollars and thirty-seven cents for six years depreciation of collecting system; how do you arrive at that?

A. I figure that the pipes are all salt glazed vitrified pipes and the manholes concrete and brick, cast iron manhole covers, the depreciation I don't think would be over one per cent. a year. Take that for six years, would make six per cent. on the cost of installation.

Q. Why do you take it on the basis of six years?

A. Because you start to build the plant in 1902 and now it is 1914, or twelve years, and installed from time to time; I took it just for six years as an average time.

Q. What proportion of the plant was built within the first year?

A. The first year—I think we were two years building it at the original installation.

Q. The first two years?

A. The first two years I think we put in about between eight or nine miles of sewer.

Q. Then you virtually finished the plant at that time?

A. No, there is over eleven miles there now.

Q. That brought you to 1903, didn't it?

A. 1903 or 1904, I don't remember exactly.

Q. And since that time there have been how many miles of pipe laid?

A. I think you have laid about two miles, something like that, about two miles, a mile and a half or two miles.

Q. In ten years time?

A. I think so.

Q. Then, do you think that is a fair average?

A. You usually take one per cent. on the whole business, but I would rather separate it into items. I take off fifty per cent. on the machinery. It has only been in use twelve years. I figure the life of machinery of that kind is about twenty-five years, so I took fifty per cent. off.

Q. Speaking now of the collecting system?

A. Yes.

Q. You think that is a fair estimate?

A. I think so, yes, sir.

Q. How do you calculate it is?

A. Because the plant is practically indestructable so far as the collecting system; it is nothing but cast iron, salt glazed pipe, concrete and bricks.

Q. Why do you figure on an average of six years; why don't you make an average for depreciation of so much percentage each year rather than take six years?

A. The percentage for each year?

Q. Yes.

A. I would take one per cent. for each year, figuring the life of the collecting system would be one hundred years.

Q. You have not taken one per cent. for each year here, have you?

A. Practically, yes; just averaged it one per cent. for the six years.

Q. It has been in operation for twelve years, hasn't it?

A. I don't know when it was put in operation. I think the construction started about 1902 or 1901 and I think you were about two years putting it in.

Q. Under the item on the same page marked disposal plant, you have pump wells, cost $960, and you have taken twelve years there for depreciation at twelve per cent.

A. That is one per cent. a year, yes, sir, the same thing, built of the same kind of material, brick and concrete.

Q. Why do you say it is the same thing?

A. About one per cent. a year.

Q. For the collecting system you have figured one-half of one per cent. a year, didn't you?

A. No, I figured one per cent.

Q. But took only six years, didn't you?

A. Yes, because it all was not installed at one time. The pump well was the first thing built and has been in for the full twelve years; the first thing built, and been there that length of time, twelve years, no extensions to it.

Q. The collecting system has been there for that length of time, too, hasn't it?

A. Only a portion of it.

Q. All but two miles of it.

A. You could not separate one hundred feet, and take depreciation for a mile and a half, or so; I took one per cent. a year, figuring a life of one hundred years.

By Commissioner Donges:

Q. About eighty per cent. went in originally?
A. I judge it did, yes, sir.
Q. And that had been in about eleven or twelve years?
A. About eleven years, but the last laid has not been in a year, some laid within the last year.

By Mr. Watts:

Q. You are virtually then figuring on that item, on the collecting system, one-half per cent. for each year, aren't you?
A. No. You see, some of it has been laid recently, laid within the last year or so.
Q. A very small proportion?
A. I don't know what the proportion is.
Q. You stated that only two miles was constructed since the time the plant was built, didn't you?
A. I think we put in between eight and nine miles when the plant was originally built and I think there are eleven there now.
Q. What would you call the period of adolescence referring to a sewerage plant?
A. Referring to the sewerage plant? I have not figured in anything as the period of adolescence on this plant. Explain yourself, what do you mean by adolescence?

(Question read.)

Witness: What do you mean by the period of adolescence?

Q. Do you know of such a term in connection with plants of this kind?

A. I have heard periods of adolescence and going values and all kinds of values figured in these things.

Q. What do you understand by the period of adolescence?

A. In this proposition, I don't understand it comes into it at all.

Q. In any public utility proposition, what do you understand that to mean?

A. In this proposition I say we have not figured it, don't consider it.

(Question read.)

Witness: What do I understand it to mean? Obsolescence or adolescence? Explain yourself and I will see if I can answer the question.

Q. I think you got the question.

A. You mean development cost?

Q. Yes.

Commissioner Donges: That was not the question. The question was what you regarded as the period of adolescence.

Witness: It goes into different heads; some class it going value.

By Commissioner Donges:

Q. Have you heard the term in connection with——

A. Yes, sir.

Q. What do you understand it to mean?

A. The development of the business, going value.

Q. The development period before it has reached maturity?

A. Exactly, yes, sir.

By Mr. Watts:

Q. Coming back to the original proposition; how long do you understand that period to be in the case of a sewerage company?

A. It ought to be in about four or five years. It depends on the rates, whether the rates are fair, and your upkeep and so on. It ought to be four or five years.

By Commissioner Donges:

Q. That is the period over which the development charge ordinarily——

A. Ordinarily would run if the rates are fair, it ought to be on its feet at that time.

By Mr. Watts:

Q. You don't agree with the proposition that that period should cease when the plant is finally finished and in running operation?

A. No, there ought to be a sum set aside there for the development of the business, that is, the going value of it.

Q. Will you define going value?

A. Going value is the value of an accredited income. In other words, you might build a plant—take $100,000 in this plant; you have it buried in that, that is physically sunk if you don't do any business, if you don't get some connections to it, or in the case of water works if you don't get some taps on it. When you begin to do business and sell water or sell sewerage service, then you become a going proposition and the value of the plant then depends on how much business you can do and that is largely up to the men back of the gun managing the business for you.

By Commissioner Donges:

Q. Your idea is as soon as customers are attached it has a going value?

A. It has absolutely.

By Mr. Watts:

Q. In the case of a sewerage company, do you think that the public should bear the loss which occurs during that period of development you speak about?

A. I think the cost in developing the business is part of your investment and the rates ought to be sufficient to help carry that investment.

Q. You think that is true notwithstanding the fact that the company cannot force anyone to connect with it and has not that fact at the time it builds the plant.

A. I think so, yes.

Q. You don't think it ought to depend upon its own business-getting ability rather than place upon the connectors a charge for something which actually they do not get?

A. No, it depends considerably on the business-getting. When they do that and find notwithstanding the most economical management and best business ability the plant don't pay, the rates are too low, then they are certainly entitled to a fair rate.

Q. Suppose a sewerage company makes no particular effort to secure persons to connect with it, then, during that development period, of course, that would be longer than if you did make efforts; who should then bear the loss occasioned?

A. I think they would need a new general manager, new superintendent.

Q. Then you think such loss ought to fall on the sewerage company?

A. Exactly. If they don't run the business, it is up to them.

Q. You think, in order to place the loss occasioned during that development period, upon the connectors that it should appear that that loss was no greater than was absolutely necessary and it should appear that the company has done all in its power in order to secure connectors.

A. The business should be brought up to the highest efficiency at the earliest possible moment and any public utility corporation will do that if they know their business and are in there to make money.

By Commissioner Donges:

Q. Suppose that period should extend over eleven or twelve years, what would be your judgment then?

A. It would mean that either the business is bad or the rates are too low.

Q. Might it not mean that the company was not making proper efforts to attach business?

A. It might not mean that, no.

Q. Might it mean that?

A. It might mean that too, yes, sir.

By Mr. Watts:

Q. Suppose that a sewerage company had during the first year only one hundred connections in a place where it was possible to have twelve hundred connections and that situation continued for a course of years; do you think that the few who had connected with the company should pay for all the additional investment which was necessary to make that plant so that it would furnish the whole community?

A. I happen to know this plant during the first year——

Commissioner Donges: Just answer the question.

Witness: I don't think they should. I happen to know in this company where they——

Q. Where, Mr. Boardman, is the dividing line then?

A. In this instance, I know the company's policy was to put in all connections free of charge the first year for anybody that would connect, but as you say it only got one hundred. I don't know whether that figure is right or not. I know that was the policy of the company at that time, to put in all connections without cost to the consumer or property holder.

(Question read.)

Witness: I don't know where you can draw any direct dividing line. I don't know there is a dividing line.

Commissioner Donges: I take it Mr. Watts means, when do you arrive at the point where the development period ceases and the company is presumed to have attached all it would expect or anticipate after the completion of the plant?

Witness: I would think the development would cease when you got all the connections you can possibly get, notwithstanding all the efforts you can make, unless you could get some resolution by the board of health or somebody that would compel connections, which they have not done in Burlington.

By Mr. Watts:

Q. Then you think the development period does not cease until everybody has connected who is on the line of the sewers?

A. No. If the rates are fair, it should cease as soon as the property becomes a paying proposition and carrying itself.

By Commissioner Donges:

Q. That quite regardless of the size of the plant and the number of consumers?

A. Yes, sir.

Q. They have no relation to each other?

A. I don't think so.

By Mr. Watts:

Q. When ought that to be, in the ordinary course?

A. In the ordinary course it would be about four or five years.

By Commissioner Donges:

Q. Those two factors have no relation to the rates?

A. I don't think so.

By Mr. Watts:

Q. Applying that to the Burlington Sewerage Company, has its development period ceased?

A. You have twelve hundred; I think the development period has ceased at Burlington.

Q. When do you think it ceased?

A. I don't know just how you have been putting on connections. I think it ceased in Burlington sometime ago.

Q. When, Mr. Boardman, in your opinion, did it cease?

A. How many were put on in recent years, I don't know.

Q. Applying to it the rule which you have just stated, when did it cease?

A. Certain houses won't connect no matter how long you run that plant. In Burlington those connections are, as I understand, about eight hundred that would not connect regardless of any rate.

(Question read.)

Witness: I suppose it ceased several years ago. I know the company has made every effort to get connections and they seemed to be coming very slowly now.

Q. When did the company start to do business?

A. I think about 1903 or somewhere in there.

Q. When it was incorporated?

A. I think about 1901 or 1900.

Q. You allowed one year to build it, didn't you?

A We allowed one year in figuring this estimate, but we were part of two years building it.

Q. It was completed in 1903, wasn't it?

A. About 1903, I think.

Q. Then adding to that your rule, the number of years spoken of in your rule, would bring it to when?

A. With fair rates, that ought to have been on its feet by 1907 or 1908, with fair rates.

Q. Then, in your opinion, its development period ceased at that time, is that right?

A. I would think so. It ought to be on a paying basis if the rates are fair, at that time.

Q. Have you given on this statement a showing as to where these pipes are laid in Burlington?

A. The plan shows them there, the plan I just submitted to you. On those plans you will find an elevation that shows the flow line at each intersection and also the elevation of the street corner at each intersection.

Q. Are there any pipes laid on Union Street west of High?

A. Union Street west of High? No, in that block there is not, no, sir. West of High, do you mean?

Q. Yes, sir.

A. West of Main, you mean, don't you?

Q. Yes, sir, the same street.

A. No pipes in that block.

Q. Are there any houses in that block connected with the system?

A. Yes, sir, we run up the back alley, up Ellis Alley and took them in from the rear end instead of breaking up the improved pavement in that block. That is the block the mayor lived in, if I remember rightly. We went up the rear alley.

Q. Was the mayor connected with the company at that time?

A. I don't think so, I don't know anything about it.

Q. When you ran up Ellis Alley you connected with the houses on the south side of Union Street on that block?

A. Yes, sir.

Q. Where did you run to connect with the houses on the north side of Union Street?

A. We went up Harmony Avenue.

Q. How many feet of pipe did you include in your estimate there as being embraced in that territory?

A. I think there is five hundred and ninety-two and three-tenths on Ellis Alley and I think 390 on Harmers Alley.

Q. Who paid for putting that up there, the sewer company?

A. I don't know; we got paid for putting it in. I don't know whether the sewer company paid for it or not; the contractor was paid; I don't know where the money came from.

Q. Do you know who paid you for putting it in?

A. The Landsdown Construction Company.

Q. Do you know who paid the Landsdown Construction Company?

A. No, that is the financial end of it I know nothing about.

Q. What was the value of that pipe laid?

A. What was the value of it?

Q. Yes.

A. Laid?

Q. Laid in those two places I mention.

A. In sewer work you are paid according to the depths of the cut. You are paid first, from 0 to 6 feet deep. Take eight-inch pipe, you get very little for 0 to 6 feet; a higher price if 6 to 8 feet and still a higher price from 8 to 10 feet.

By Commissioner Donges:

Q. How much did you get for this pipe?

A. I don't know what the contractor got for it by the foot.

By Mr. Watts:

Q. You included that in your estimate, didn't you?

A. Sure. We figured it in; it is eight-inch pipe, we figured it in at fifty-two cents a foot. That includes the pipe, the hauling and unloading from the cars, the distribution, the excavation, the laying of the pipe, the jute, the gasket, the timber for shoring the ditch, refilling, and hauling away the debris.

Q. How much would that be for that territory which you mention?

A. I figured in that class it comes in in 0 to 6 feet, which would be fifty-two cents on my estimate.

Q. What would be the aggregate amount?

A. Fifty-two times that number of lineal feet.

Q. Will you calculate it and tell us please?

A. You mean Ellis Alley?

Q. Ellis Alley and Harmer Alley.

A. I think the distance there is 592 feet. That would be $307.80, if I did not make a mistake.

Q. And in Harmers Alley, how much?

A. That would be $202.80.

Q. That would be something between five hundred and six hundred dollars altogether?

A. Yes, sir.

Q. If that was not paid for by the sewerage company but was paid for by private individuals, that should come off of your estimate, shouldn't it?

A. No, sir. The contractor was all paid for it. I don't know where the money came from. The contractor was paid for his whole work measured by every month, a monthly estimate rendered and paid for the amount of work done that month. We withheld eighty per cent. and when the job was all finished and accepted we paid the balance of twenty per cent.

Q. But if private connectors paid the amount which you have just spoken of there, then the sewer company did not have to pay it?

A. I don't know about any private connections. If any private arrangements were made they were made with the sewer company and not the contractor.

(Question read.)

Witness: I don't know anything about it.

Commissioner Donges: No——

Witness: Of course not, if what you say is true.

Q. The Burlington Silk Mills is connected with the system, is it not?

A. I don't know; I don't know who the connectors are.

Q. Did you figure in the sewer pipes from the line on Federal Street out to Mott Avenue and out to Salem Road?

A. We figured in everything that was the property of the sewerage company; no lateral connections.

Q. You are not answering my question.

A. I don't know where the property is.

Q. Do you know where the bridge known as London Bridge is in Burlington?

A. Very well.

Q. The road that passes over that bridge goes out to what is known as Farmers——

A. You mean from the corner of Federal and Conroy out to Mott Avenue and Camden Road and then out Mott Avenue. That is all figured in my estimate, that is eight-inch pipe, part cast iron.

Q. Then from Mott out to Salem Road and up to the Burlington Silk Mill.

A. That is all included in my estimate.

Q. How much did you figure in for that?

A. It was figured in at that price, and the distance, per foot.

Q. Give us the price and the distance.

Mr. Tatem: The map is drawn to scale, isn't it?

Witness: Yes, it is drawn to scale.

Mr. Tatem: Then why not offer the map? We make an offer then that the map to which Mr. Boardman has been referring be offered in evidence.

Commissioner Donges: It will be admitted and marked.

(Map entitled "Map of the City of Burlington, New Jersey," received and marked Ex. P1.)

Commissioner Donges: At what price have you estimated that pipe?

Witness: In the 0 to 6 feet. It is eight-inch pipe, fifty-two cents a lineal foot and 6 to 8——

By Commissioner Donges:

Q. No, this pipe, this particular pipe; in what class does it fall?
A. Part of it is in 0 to 6 feet and part 6 to 8 feet. You mean from Mott Avenue to Camden Road?

By Mr. Watts:

Q. And then from Camden Road out Mott Avenue to Salem Road and up Salem Road to the silk mill.
A. Mott Avenue, Camden Road to the dead end, that is the end of the sewer, 874 feet.
Q. Does that include up Salem Road to the silk mill?
A. I don't know where the silk mill is.
Q. Have you Salem Road marked on the map?
A. Salem Road is marked on here. Mott Avenue,

the one you just talked about, from Camden Road to the dead end, that is up toward Wood Street.

Q. I don't want Mott Avenue. I want across from Mott Avenue on the Camden Pike to Salem Road and up Salem Road to the silk mill.

A. On Camden Road, Mott Avenue from Camden Road to the dead end is 874 feet in the 0 to 6 class '52 Y branches, and on Salem Road from Camden Road to the dead end is 460 feet in the 0 to 6 class, 17 Y branches.

Q. What was the cost of the pipe laid in the area which you just mentioned?

A. Just as I say, it would be 0 to 6, 52 cents a foot.

Q. Will you calculate the total cost?

A. Will I calculate the total cost?

Q. Yes.

Commissioner Donges: I am afraid that for the purposes of the record it would be better for you to ask the question embodying in the question the street area that you desire to have covered and just what is included, whether the Y's or just the length of pipe and not including the Y's.

A. I can give you the detail of the whole thing, it is all here and I can have copies struck off for you if you want. It is all in pencil and I can have typewritten copies made of it, that is, the extensions since the original plant was built; I have it here in detail.

Q. Mr. Boardman, what was the total cost to the sewerage company of laying the pipe from Mott Avenue on the Camden Road to the Salem Road and thence down the Salem Road to the Burlington Silk Mills or the dead end as shown on that map?

Commissioner Donges: You mean the number of feet and the cost?

Mr. Watts: He has already given the number of feet.

A. On Camden Road from Salem Road toward Beverly.
Q. From Mott Avenue on the Camden Road to the Salem Road?
A. Stop right there; that is a distance of two hundred and ten feet of 0 to 6 foot cutting at fifty-two cents a foot and there are seven Y branches in there.

By Commissioner Donges:

Q. And you estimate that to cost how much?
A. That would be $109.20 for the straight pipe.
Q. And you have allowed sixty-six cents for the Y's?
A. Seven Y branches at sixty-six cents, that would be $4.62 more.
Q. And on the Salem Road from the Camden Pike to the dead end?
A. That is 249 feet long at fifty-two cents, $129.48 and there are five Y branches, $132.78.
Q. Are there any manholes?
A. Yes, the manholes would come in as an extra price.
Q. How many manholes are there?
A. On Mott Avenue there are three, on Salem Avenue there is one and on Camden Road there are twelve.
Q. Twelve from Mott Avenue to Salem Road on the Camden Pike?

A. Not from Mott Avenue out to Salem Road; there would be four.

Q. From Mott Avenue on Camden Road to Salem Road and Salem Road from Camden Road to the end there are seven altogether?

A. All shown on the map there; there are nine altogether in that territory.

Q. You figured those at how much each?

A. We figured those at forty-five dollars.

Q. How much?

A. I will tell you in a moment.

Commissioner Donges: Why wouldn't it be better if Mr. Boardman offers to tabulate——

Mr. Watts: I am through with him as soon as I get his next answer.

Commissioner Donges: The question as it appears to me as to whether in the state of this testimony it would be any service to the Board. If it has any value, you want the Board to know the cost of these extensions and in order to ascertain that all of the factors would be necessary, manholes, the number of manholes, the cost of them, as well as the Y's and pipe, and everything that enters into the construction. I have some doubt whether that could be picked out of this testimony.

Mr. Watts: Anything that your Honor suggests about it.

Commissioner Donges: Mr. Boardman offered to submit in tabulated form the cost of these extensions, the one you particularly refer to. He says he has it and could put it in tabulated form and submit it in the form of a table.

Mr. Watts: That would be satisfactory.

Commissioner Donges: That is far more satisfactory if it is to have any value than to have it in this testimony in its present form. You will do that then, Mr. Boardman?

Witness: Yes, sir.

Q. Mr. Boardman, were you the engineer who was in charge of the construction of the Burlington Sewerage Company originally?

A. I was the engineer; I made all the preliminary plans for the original Burlington Sewerage Company and I was the engineer in charge of the construction of it for the contractor.

Q. Was there in the laying of the sewerage pipes a faulty construction in their connections?

A. Not to my knowledge.

Q. Have you ever heard of any leakage at the joints of the sewerage pipes?

A. Sewers laid in a formation like Burlington is, there is always more or less leakage in it, infiltration, almost impossible to stop it.

Q. About how much should that be if the plant is properly constructed?

A. It is impossible to say; depends altogether on the formation of the ground, the kind of soil you are in, how open the soil is, how much of the system is under water, and so on.

Q. You know the formation in Burlington where this plant is built, don't you?

A. Yes, sir, a very wet one.

Q. What would be a fair percentage of allowance for filtration if the plant were properly constructed in Burlington?

A. That plant is properly constructed. What the leakage is I don't know, I have never measured it. I understand the sewerage company recently had a weir put in and measured it and found sixty thousand gallons. That would be exceptionally low, if it is as low as sixty thousand gallons, for a plant of that kind.

(Question read.)

Witness: There isn't any such thing as a fair percentage; it depends entirely on conditions.

Q. You know the conditions in Burlington, don't you?

A. Yes, sir.

Q. What, in your opinion, would be a fair percentage of allowance for infiltration?

A. If you held that at, in that formation, the quick sand and all, down to twenty-five thousand gallons a mile you would do very well; in a bottom as bad as the Burlington bottom is.

Q. A day do you mean?

A. Twenty-four hours.

Q. Putting that in percentage, what would you call it; that is the percentage of the amount pumped?

A. The trouble is your pumping varies. I understand it will vary from 400,000 a day to 1,000,000. The other day I was there they were saying they pumped between four hundred and five hundred thousand, with 1250 consumers, connections rather.

Q. Assuming that to be true, what would be, in your opinion, a fair percentage for infiltration?

A. As I say, twenty-five thousand gallons a mile; if you hold it as low as that you would do very well in that bad bottom.

By Commissioner Donges:

Q. That would be about five per cent.?

A. Of the pumpage that day. The pumpage varies, you know.

Q. You were basing it on that pumpage, weren't you?

A. On that pumpage, yes, sir.

Q. So it would be then about five per cent.?

A. Yes. Of course, the infiltration will vary with the dryness of the season. A wet season you will get more infiltration than in a dry season.

By Mr. Watts:

Q. Then, if it were as much as twenty per cent. would you say that the plant was faulty in its construction?

A. The utmost care was taken in the construction of the Burlington plant. I don't think it can be built any better.

Commissioner Donges: Answer the question.

Witness: I would not say it was faulty; it would depend altogether on conditions.

By Commissioner Donges:

Q. It would be a greater percentage than you would expect to find?

A. Greater than expected, but sometimes run as high as fifty per cent.

By Mr. Watts:

Q. Did you ever know it to run over fifty per cent.?
A. I have some data here——

Commissioner Donges: Answer the question.

Witness: Not in any plants I have ever built, but I have heard of it going as high as that.

Q. Have you heard of it going above fifty per cent.?
A. No.

By Commissioner Donges:

Q. Are the measurements taken, the quantities here taken from the map which is offered?
A. From the map which is offered, yes, sir.
Q. Are the unit prices which you have used on those quantities the unit prices such as you would use if you were bidding upon this work in competition?
A. Exactly, yes, sir.

By Mr. Tatem:

Q. In reply to Mr. Watts' question you said you had visited the Burlington plant two or three times in the past year. Has anyone in your employ or on your behalf made investigations upon your order?
A. One of my assistants was there.
Q. Has he been there frequently?
A. He has been there off and on. He lives at Riverside and naturally runs up there off and on to look it over. He is interested in sewerage disposal.

Q. What is his name?
A. John S. Roberts, Jr.
Q. I think the commission rather misunderstood your testimony in regard to the percentage of infiltration. I understood you to say that for a bottom such as Burlington a daily infiltration of 25,000 gallons a mile would not be unusual.
A. Would be low.
Q. And that on the eleven miles of pipe would make 275,000 gallons.
A. That is right.
Q. And if we take the average pumpage at midway between the low and high points which have been testified to at say 700,000 that would mean that the infiltration was about thirty-five per cent., thirty-three or thirty-five per cent.
A. Figuring on the basis of 750,000?
Q. Yes.
A. Yes.

By Commissioner Donges:

Q. Do I understand then that you would regard infiltration of thirty to thirty-five per cent. in the Burlington plant as being usual and to be expected?
A. That would be 275,000 gallons, that would be 25,000 gallons a mile. In a bad bottom like Burlington that is to be expected.

By Mr. Tatem:

Q. Just what is the condition, just what are the conditions in regard to bottom there, from your experience?
A. The twenty-four inch outfall sewer is laid in quicksand and all the large pipes are laid in run-

ning sand and all submerged. I suppose there is eighty per cent. of the Burlington plant submerged.

Q. And those physical conditions make for this very large amount of infiltration?

A. Yes, sir.

Q. If the pipes were laid in a different kind of soil where there was no quicksand and if the levels were higher so the pipes were not submerged, the infiltration would naturally be very much less?

A. Very much less; practically none in a dry formation.

By Mr. Watts:

Q. If the joints in the pipes were made tight, then the infiltration would be very much less, wouldn't it?

A. Those joints were all made——

Commissioner Donges: Answer the question.

Witness: If the joints were made absolutely tight, if possible to make them absolutely tight, it would be less, provided the plumbers made all their connections tight. All your house connections come in there, 1200 house connections, plumber's work.

Q. Speaking about the connections in the pipes, in the main pipes of the sewer, were they made as tight as was practical at the time when the sewer was built?

A. The main sewer was. As to the plumber's work, I don't know anything about it, but lots of them were put in there without any inspection.

Mr. Tatem: I am going to offer Mr. Boardman's report from which he has been testifying.

Commissioner Donges: You better make the offer now.

Mr. Tatem: I make the offer of Mr. Boardman's report in evidence and ask that it be marked.

Commissioner Donges: It will be admitted and marked.

(Report of Mr. Boardman entitled, "Burlington Sewerage Company, appraisal of the value of the plant, September, 1914", received and marked Ex. P2.)

Q. Mr. Boardman, you are acquainted with the water system in Burlington, aren't you?
A. Thoroughly, yes, sir.
Q. Do you know how much water is pumped, approximately, every day, in the area in which the sewerage system is laid?
A. I think about a million gallons. I am not positive of that, but I think it is about a million gallons.
Q. Have you made any calculation on that since you have been called into this case?
A. No, sir, I never had any occasion to.
Q. You mean every twenty-four hours there would be one million gallons distributed in that area?
A. I think that is the consumption at Burlington.

By Commissioner Hillery:

Q. What is the population?
A. About eight thousand.

By Commissioner Donges:

Q. Do I understand your plans were modified?

A. Yes, sir, originally it was the intention to run it into the river.

Q. When was that modification of plans made?

A. About 1901 or 1902.

Q. After the work had started?

A. Before the work started, but after the incorporation of the company.

Q. Before or after the franchise was granted?

A. After the franchise was granted. Before the franchise was granted the idea was to run it into the river.

Q. Subsequent to the passage of the ordinance, which was accepted by the company, granting the privilege to lay pipes in the streets, the plans were changed?

A. I think so. I think it was subsequent to the passing of the ordinance. I am not positive of that, but I think it was.

Q. You are not clear about that?

A. I am not clear about it. It has been so long.

By Mr. Watts:

Q. Mr. Boardman, what effect would the excessive infiltration have on the operation of the sewerage plant?

A. The excessive infiltration would merely convey underground through your sewers the amount of water that would naturally go to the city line ditch anyhow by percolation. The city line ditch is the main drainage in that whole of Burlington, practically ninety per cent. of Burlington. It would gradually percolate through the underground gravels into the city line ditch anyhow. We get some by way of the sewers now, but it would all go by way of city line ditch and would have to be pumped anyhow.

Q. What effect would that excessive water have on the efficiency of the disposal plant?

A. It would make a more dilute sewerage and it would be easier to treat it than it would a strong sewage. Of course, there is more of it to treat, but it would not be so strong.

Q. Would that be so if there were a very excessive flow of water into the pipes?

A. If you can get sufficient dilution you would not want any purification plant at all; it makes a weaker sewage to treat.

Q. Do I understand you to say that if a sufficient quantity of water was pumped into the sewerage pipes, you would not need any disposal plant at all?

A. That is one way of disposing of sewage, is by dilution. If you can get enough water or a big enough stream to dump it into, that is a good enough way of disposing of it.

Q. Then, according to that, in your opinion, there wasn't any necessity for building a sewer in Burlington?

A. Any sewer?

Q. A sewerage disposal plant, I should say, in Burlington.

A. Yes, sir. I am a believer in sewerage disposal plants. I am opposed to the polution of any stream regardless of the size of it. I am a thorough believer in sewerage purification plants and water purification plants.

Q. I thought I understood you to say that if there was sufficient water there would not be any polution?

A. That is one way of disposing of sewage where you can get sufficient dilution.

Q. What would be the objection then to pumping the sewage direct into the Delaware River?

A. The State Health Department would stop it.

Q. That is the only objection there is to it?

A. That is all.

Q. From the sewerage company's point of view?

A. From the sewerage company's point of view, yes.

Adjourned until Wednesday, October 7th, 1914, at the State House, Trenton, N. J., at 10.30 o'clock A. M.

Trenton, N. J., Wednesday, October 7th, 1914.

Before the following Commissioners:
R. W. E. Donges, Esq.
T. J. Hillery, Esq.

For the Petitioner appears J. Fithian Tatem, Esq.
For the city of Burlington appear E. Watts, Esq., and V. C. Palmer, Esq.

Mr. Watts: If it please your Honor, Mr. George W. Shinn, representing the board of health of Burlington, is compelled to leave shortly on a trip and I wish to call him now. He would like to make a statement to the board as to the board's view of the situation and some facts in relation to it.

Commissioner Donges: If there is no objection.

Mr. Tatem: No objection.

George W. Shinn, sworn on behalf of objectors.

Direct examination.

By Mr. Watts:

Commissioner Donges: This is to be taken as part of the objector's case?

Mr. Watts: Yes.

Q. Where do you reside, Mr. Shinn?
A. In Burlington.

Q. Are you an official of the city?

A. I am a member of the city board of health.

Q. How long have you been a member of that body?

A. For about six years.

Q. Have you a statement which you desire to make in behalf of the board in this matter?

A. I have.

Q. Will you kindly proceed to make that statement to the commissioner?

A. My purpose in being here is for the pure matter of sanitation of the city and my thought is this; that in Burlington we have an unusual number of small houses that have only one connection to the sewer which is the kitchen sink. The rate of ten dollars would be excessive for that kind of a connection and I am here to ask your board that in the consideration of this matter you will not change upward the minimum rate, but that you will divide between a one-fixture and a two or more fixture house. The present rate of ten dollars as proposed by the company will include three fixtures, I understand. While I cannot say this is absolutely true to the exact number, I understand there are 352 houses of this character.

By Commissioner Donges:

Q. With only a sink?

A. With only a sink.

Q. No other fixtures?

A. No other fixtures. The board of health don't want 352 more cesspools. I bring this matter to your attention because of the fact that, while I have no personal interest in the matter one way or the other and I am not discussing the merits of the case other than from that one standpoint, I ask your board in the consideration of the new rates whatever you may find it wise or fair or equitable to make, that you will keep this matter in mind.

By Mr. Watts:

Q. Has the board made or attempted to make any rules and regulations regarding the connecting with the sewerage system by the residents, the property holders?
A. Do I understand you to mean in the line of compulsory?
Q. Yes.
A. They have made inquiries and they find that compulsory sewer connections with a corporation is in conflict with the state law and they could make no such ordinance.

By Commissioner Donges:

Q. You have passed no rules or ordinances requiring connections?
A. No, because of the fact that we find it in conflict with the state law.
Q. Your thought is that to the householders with only the one fixture, the kitchen sink, a minimum charge of ten dollars would be prohibitive.
A. Yes, and I am sure it would be in very, very many instances.

By Mr. Watts:

Q. What would that then result in if such a minimum charge were made for a sink only?
A. In a very great number of three hundred and fifty-two returning to the cesspools, unquestionably.

By Commissioner Donges:

Q. You think they would disconnect?

A. Without any doubt at all, the great percentage of them. I would say eighty per cent. of those 352 would disconnect with the sewer.

By Mr. Watts:

Q. Would that or not be because they could not afford to pay that minimum?

A. Because the properties of the character that are connected would not warrant that expenditure.

By Commissioner Donges:

Q. They are small houses, you say?

A. They are small houses. I am not asking this because they are small houses or owned by poor people. In many instances they are owned by people abundantly able to pay so far as financial conditions are concerned, but the property itself will not warrant it.

By Mr. Watts:

Q. You are speaking about the rental value of the property?

A. The rental value of the property.

By Commissioner Donges:

Q. How many rooms would those houses have, generally speaking?

A. About five.

By Mr. Watts:

Q. Has the board any regulation in regard to sinks and wells?

A Yes.

Q. Has it made any rule or regulation attempting to prohibit people who have connected with the sewer from going back to sinks?

A. No. I might state, however, that we have always—it has always been the policy of the board to encourage connections with the sewers wherever we could possibly induce them to do it, for purely sanitary reasons.

Cross-examination.

By Mr. Tatem:

Q. Mr. Shinn, as I understand, you think it would be fairer to have the minimum where there was only the one fixture lower than ten dollars and then to charge on a fixture basis or some other basis for the additional service?

A. Yes, sir. I don't think it would be fairer particularly, but I believe it would be judicious and wise for both the sanitary condition of Burlington and your company.

Q. In other words, the interests of the board of health and the interests of the sewer company are really both the same in that it would be undesirable from both points of view to have these people disconnect?

A. Sure.

Q. And in your judgment a minimum of ten dollars for such properties as that would result in a very large number of disconnections?

A. That is my view exactly.

Q. Which, of course, would reduce the revenue of the sewer company rather than increase it?

William H. Boardman, resumes the stand for further cross-examination.

Cross-examination.

By Mr. Watts (continuing):

Q. Mr. Boardman, referring to the tabulation which has just been handed in by you; do you recall in your testimony of yesterday you were in error, were you not, when you said on the Camden Road from Mott to Salem Avenue and from Salem Avenue to the dead end or from Camden Road to the dead end on Salem Avenue there were nine manholes?

A. I took the whole Camden Road, the whole length when I said nine manholes. I took the whole length of the Camden Road. Counting them from the map there are eight.

Q. Then in the areas which I have mentioned to you, how many manholes are there?

A. Sir?

Q. In the areas which I have mentioned to you in my question yesterday which embrace on the Camden Road from Mott Avenue to Salem Avenue and Salem Avenue from the Camden Road to the dead end, how many manholes?

A. On Camden Road, from Federal to Mott?

Q. From Mott to Salem.

A. One intersection manhole and on Salem Avenue from Camden Road to the dead end there is one plain manhole.

Q. That makes two manholes.

A. In those two streets, those two sections.

Q. Mr. Boardman, do you know anything about the original cost of this sewerage plant?

A. The original cost?

Q. Yes, sir.

A. No, sir.

Q. You were a member of the company at that time, weren't you, when it was built?

A. A member of the company? I don't think so, never had anything to do with it so far as company arrangements were concerned.

Q. You represented the contractor in building it?

A. I represented the contractor in building it.

Q. Do you know what the contractor's price was for building it?

A. I think the contract price was originally $58,000. Then they allowed Senator Pfeiffer $4,900 for extra work and he lost about $9,000 on the job. He furnished no engineering services or organization expenses or anything of that kind.

Q. What other expenditure, if any, went into that original cost?

A. The organization expenses, the engineering, the real estate and the interest during construction.

Q. Do you know how much those various items amounted to?

A. I do not, no, sir; never did.

By Commissioner Donges:

Q. Did I understand you to say the contract was $58,000?

A. The original contract was $58,000 and they allowed him $4,900 more and he lost about $9,000 on the job.

Q. According to your estimate of the actual cost of the original construction it amounted to about $71,000.

A. Without real estate or organization expenses or interest and so on.

By Mr. Watts:

Q. Would you calculate those items upon the same percentage basis that you mentioned yesterday in reference to the production cost?

A. I think so. Of course, then you would add the extensions that have been made to the plant since.

Q. Do you know what they have cost?

A. Between twelve and thirteen thousand dollars.

Q. Mr. Boardman, the weather, whether it is dry or wet, would affect the infiltration to a great extent, wouldn't it?

A. That is what I said yesterday; decidedly.

Q. So the infiltration recently by reason of its having been very dry would be very light compared with what it ordinarily would be; is that right?

A. Not so much in Burlington, because so much of it is below sea level, really submerged at all times, a large percentage of it.

Q. It would make a marked difference?

A. It would, in the upper levels where the sewers are laid, where the ground is dry, during the dry season, but below high water that is always submerged.

Q. You were originally a director of this company, weren't you, when it was first formed?

A. I was originally put in as one of the incorporators and I was put in as a director. I think I never attended a meeting, I know I did not. Senator Pfeiffer and myself, three or four other gentlemen, were in it originally.

Q. You advertised yourself as a director at that time, didn't you?

A. I never did, no, sir.

Q. Somebody did it for you then?

A. Somebody did it for me if it is in there. I had one share of stock, I think they gave me as a charter share.

Q. You were a director at that time?

A. I never attended a meeting of it and never got any dividends.

Q. You have looked over the proposed schedule of this company, have you, or rates?

A. I have read it over, yes, sir.

Q. Did you assist in making it up?

A. I did not, no, sir.

Q. Have you had any experience in making up schedules for sewer companies?

A. Not much.

Q. Any companies?

A. I don't think I have, no.

Q. Would you say that a five dollar annual rate for a kitchen sink is fair in connection with a rate of two dollars and fifty cents for a water closet?

A. It depends on the size of the plant, installation, cost of installation, cost of operation and so on. The rate ought to be sufficient——

Q. Taking the plant at Burlington, would you say that the one bears a proper relation to the other?

A. The rate ought to be sufficient——

Commissioner Donges: Answer the question, if you are able to.

(Question read.)

Witness: I don't know.

Q. You are not sufficiently informed about the fairness of sewerage rates or public utility rates in general to form any idea about that?

A. As I understand, most of the sewerage rates are fixed by fixtures.

Q. In this case are the rates fixed by fixtures?

A. In your new schedule, I think it is a fixture rate.

Q. Is that in your opinion a fair method of fixing sewerage rates?

A. It is not, but if it was possible to measure by meter that would be the right rate, but there is no other way of doing it. In fact my impression is the right way would be—for instance—there is the whole installation costing upward of $100,000 and the fixed charges and operating expenses are charged up to say 1250 connections. There are eight hundred or nine hundred houses there, I think, and lots, empty lots. These lots have been improved in value by the installation of the sewerage system. The selling price is higher but still they pay nothing whatever towards the maintenance of the plant or the installation of it. There ought to be some way of making everybody pay something toward the maintenance of the plant or installation.

Q. Whether they use the sewer or not?

A. Yes, they get the benefit of it and it increases the price of lots accordingly.

By Commissioner Donges:

Q. Your thought is, the mere fact that the sewer is there and available, increases the value of the lot?

A. Undoubtedly.

Q. Not because there is any service rendered?

A. No, sir; the fact that it is there.

By Mr. Watts:

Q. You say you think the proper method of arriving at sewerage rates is to base those rates upon the amount of water used in the sewerage area?

A. If you could possibly ascertain it, yes.

By Commissioner Donges:

Q. You mean the amount of water consumed, or do you mean the amount of sewerage treated?

A. There would be about a fixed relation between the water consumed and the amount of sewerage. The trouble is to get at it.

By Mr. Watts:

Q. Why do you say it is not practical?

A. Particularly in Burlington, where there are no meters.

Q. What proportion of the water that comes from the water tap or runs into the kitchen sink goes into the sewer?

A. That would depend on the house, whether they had hoppers and bath tubs and so on. There is no fixed relation.

By Commissioner Donges:

Q. Generally speaking, would you say that the soil from the kitchen sink, waste water, would be difficult to treat or otherwise?

A. It is difficult to treat.

Q. It is difficult?

A. Yes, sir.

Q. Why?

A. On account of the greases.

By Mr. Watts:

Q. Why do you say you cannot practically get at that in order to ascertain what proportion of water would go into the sewer?

A. There is no relation between the amount of water that is taken through a kitchen sink—they might have a hydrant in the yard, might fill a bucket in the yard or in the sink and if they have no bath tub there take the water from the sink and carry it upstairs and have a portable bath, something of that kind. There is no way of fixing it unless you have a meter in. For instance, you might draw water and throw it out on the lawn with a bucket or use it for washing the pavement, half a dozen or a dozen uses you might put it to.

Q. Would it be possible to meter the sewerage as it passes from the dwelling house?

A. No, sir. There is no meter I know of that would do it that would not clog up.

Q. Then the most approved practical method that you know of to fix sewer rates is based on fixtures?

A. Fixture charges, yes.

Q. But the charge, of course, is an arbitrary charge?

A. An arbitrary charge. It ought to be fixed so as to pay the interest on the cost of installation and other fixed charges, the cost of operation and a fair amount set aside for renewals.

Q. So far as the service rendered is concerned it is an arbitrary charge?

A. Yes, sir.

Q. And the fixing of the various charges for various connections is entirely arbitrary?

A. Yes, sir.

Q. They do not bear any relation one to the other which is arrived at by any method of calculation?

A. No, sir.

Q. Nor any relation to the service that each connection renders, that is, fixture I should say?

A. You mean the relation between the sink and the bath tub for instance?

Q. Yes.

A. I don't think there is any relation.

Q. Mr. Boardman, would you say, as an expert, that if a disposal plant was not properly working, did not properly dispose of the sewerage a connector should pay a rate which would be the same as if the disposal plant were properly disposing of the sewerage?

A. I don't see as the connector has anything to do with it. That would be a question between the sewerage company and the State Department of Health.

Q. Then, in your opinion, the sewerage company is under no obligation to perform the service which it undertakes so far as the connector is concerned?

A. They are obligated to convey that sewerage from that building in the most rapid way possible without creating a nuisance on those premises.

Q. And when they get the sewerage off the connector's premises their entire duty to that connector has been performed.

A. I think so.

Q. In your opinion, there is no obligation on the part of the sewerage company to the connector to dispose of that sewerage in a proper and sanitary way?

A. It is to the whole community at large, to dispose of it in a proper and sanitary way, but it has no relation to rates unless they maintain a nuisance on the premises. It is a question between the State Health Department and the sewerage company then.

Mr. Tatem: I wish to offer in evidence the additional sheet, tabulating the cost of certain extensions to the system which are set forth on that sheet.

Commissioner Donges: It will be admitted and marked.

(Same is received and marked Exhibit P-3.)

By Mr. Tatem:

Q. Mr. Boardman, in estimating the cost of the specific extensions you have taken as the basis the reproduction cost the same as you did in your appraisal of the physical property of the company which you offered in evidence yesterday.

A. That is, the same figures are included in that statement. It is not in addition thereto. It is taken from it and included therein.

By Commissioner Donges:

Q. It is simply taken out of your inventories the cost of extensions on these streets?

A. Yes, sir.

By Mr. Tatem:

Q. In your appraisal made yesterday, after arriving at the reproduction cost of the collection system, you added an item of seven per cent. for engineering?

A. Yes, sir.

Q. Has that been added to this valuation of this special——

A. No, sir.

Q. Then a similar allowance of seven per cent. for engineering should be added to this?

A. Should be added together with the organization expenses in the same relation.

Q. Also there should be added the six per cent. which is its share of the organization expenses?

A. Yes, sir.

Q. And a small item for interest during the period of construction?

A. Yes, sir.

By Commissioner Donges:

Q. That organization expense and engineering would be deducted from your general inventory?

A. Would be deducted.

Q. And added to the cost of this extension?

A. It is all included in this inventory.

Q. It would not be in addition to——

A. Nothing in addition to this; it is all in here.

By Mr. Tatem:

Q. Figuring this extension then—in round figures figuring this extension on the same basis as your original estimate, that is, including seven per cent. for engineering, six per cent. for organization expenses and three per cent. for interest during construction, that would amount in round figures to $433 additional, making the total cost of these particular extensions, $3326; that is approximately correct, is it not?

A. Correct, yes, sir.

Q. In reply to cross-examination, in cross-examination, Mr. Boardman, you stated that your recollection was that the contract price for the original installation of that portion of the system which was put in at that time was $58,000?

A. Fifty-eight thousand dollars.

Q. That there was allowed to the contractor afterwards for additional work $4900?

A. Forty-nine hundred dollars, between $4900 and $5000; I think about $4950.

Q. And that as a matter of fact the contractor lost $9,000 on the installation?

A. Yes, sir.

Q. Was that loss probably, a good deal of it, due to the character of the soil?

A. Entirely so.

Q. In other words, the fact that there were quicksands and the fact that this pipe was, a great deal of it, submerged, that is, below the water levels, made it an unusually expensive installation?

A. Yes, sir.

Q. You also testified that there was added in additions after the additional plant was installed about $13,000 worth of extensions?

A. Yes, sir.

Q. The total of the amount paid the contractor, his extra allowance and the amount which he lost is in round figures $72,000.

A. Yes, sir.

Q. To that should be added a seven per cent. engineering cost which amounts on that sum to $5,040?

A. Yes, sir.

Q. To that should also be added the share of the organization expenses at six per cent. which amounts to $4,620?

A. Yes, sir.

Q. To that should also be added the appraised value of the real estate which amounts to $1,620?

A. Yes, sir.

Q. To that should also be added the interest during construction as computed in your appraisal made yesterday or $2,498?

A. Yes, sir.

Q. To that should also be added the extensions which have been made since the plant was originally installed, approximately $13,000?

A. Yes, that is correct.

Q. The total of those figures, Mr. Boardman, is $98,778? May I ask you to refer to your appraisal as offered yesterday and let me know the amount of your reproduction, excluding the item of discount on bonds?

A. $95,474.58.

Q. As a matter of fact then the plant actually cost about $3300 more to install, according to those figures, than your reproduction estimate?

A. I think so, yes, sir.

By Mr. Watts:

Q. But the cost to the company, Mr. Boardman, was $9,000 less, wasn't it?

A. Yes, Pfeiffer didn't get that $9,000.

Q. You stated yesterday, I think, that the rates now charged by the Burlington Sewerage Company are the lowest charged by any company in the state?

A. I don't think I said so.

Commissioner Donges: Mr. Tatem made that statement.

Witness: Mr. Tatem made the statement.

Q. As a matter of fact, do you know whether that is true or not?

A. I do not.

Q. Have you compared the rates charged by this company with the rates charged by other sewerage companies?

A. No, sir.

W. H. Roth, sworn on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Mr. Roth, what is your official connection with the Burlington Sewerage Company?
A. Assistant secretary.
Q. You have charge of the books, records, and accounts of that company, do you not?
A. Yes, sir.
Q. During what period of time have you been identified with the company in that capacity?
A. Since 1908.
Q. As taken from the books of the company, I am going to ask you from 1908 to give the number of customers which the company has had according to its records each year.
A. On December 31st, 1908, there were 936 customers. December 31st, 1909, 1018; 1910, 1095; 1911, 1155; 1912, 1205; 1913, 1246; and June 27th, 1914, when this statement was prepared there were 1248.
Q. When does your fiscal year in Burlington begin?
A. It begins on January 1st and ends on December 31st.
Q. And when do you send out your bills for sewer rents; when does your rental year begin and end?
A. The sewer rent year begins on August 1st and ends on July 31st.
Q. Have any bills been rendered by your company as yet for the year beginning August 1st, 1914?
A. No, sir.

Q. The reason for not rendering any bills was, of course, the pendency of this application relative to the increase in rates?

A. It was.

Q. Notice of this application was given to your customers and to the municipal authorities of the city, as I understand it?

A. Yes, sir.

Q. Mr. Roth, referring to the books of the company, will you kindly let me know what, according to the books, has been the cost of plant as now installed?

A. The cost of the plant on December 31st, 1913, was $96,317.10.

Q. So far as the items which make up that total since 1908, you are personally familiar with them, are you not?

A. Yes, sir.

Q. So far as the items prior to 1909, they are taken from the books and records of the company?

A. That is correct.

Q. Have you prepared a detail statement showing the income and operating expenses of the company for the years 1909 to 1913, inclusive?

A. I have. That is, it was prepared under my supervision; I did not actually prepare it.

Q. You directed its preparation and it is taken from the books of the company?

A. Yes, sir.

Mr. Tatem: I would like to offer that in evidence and ask that it be marked and then I would like to take up the parts of it a little more in detail.

Commissioner Hillery: It will be so marked.

("Burlington Sewerage Company, statement of income and expenses, 1909 to 1913, inclusive," received and marked Ex. P-4.)

Q. Referring to that statement, what was the income from sewer rents in the year 1909?

A. Six thousand eight hundred and ten dollars and forty cents.

Q. In 1910?

A. $7,064.73.

Q. In 1911?

A. $8,022.35.

Q. In 1912?

A. $8,356.31.

Q. In 1913?

A. $8,667.87.

Q. In addition to the sewer rents there were certain small items of income each year, were there not?

A. Yes, sir.

Q. Will you then kindly give the total earnings for each of the years from 1909 to 1913, inclusive?

A. The total earnings in 1909, $6,904.05; 1910, $7,137.08; 1911, $8,127.88; 1912, $8,442.07; 1913, $8,668.83.

Q. In those years from 1909 to 1913, inclusive, will you kindly give the total of the operating expenses including taxes?

A. In 1909 the operating expenses were $5,215.12; 1910, $5,403.17; 1911, $6,274.91; 1912, $5,877.90; 1913, $6,450.26.

Q. From these figures then after paying the operating expenses how much was there in each year of net earnings which the company would have had to apply upon interest on investment and depreciation?

A. In 1909 the balance applicable to interest and depreciation was $1688.93; 1910, $1733.91; 1911, $1852.97; 1912, $2,564.17; 1913, $2,218.57.

Q. How many bonds are there outstanding against the plant?

A. $75,000.

Q. What rate of interest do they bear?

A. Five per cent.

Q. When were those bonds issued, if you have that data?

A. They were issued all at one time, I think, about 1902.

Q. Do you know when they mature?

A. I haven't that information here, no, sir. I may have that. Those bonds mature on August 1st, 1921. They are a twenty year bond and the date of the issue was August 7th, 1901, but the bonds were not actually issued until sometime after that, presumably in 1902.

Q. They mature August 1st, 1921?

A. That is correct.

Q. The bond interest then on the issue, the annual bond interest would be five per cent. on $75,000 or $3750?

A. Yes, that is correct.

Q. As a matter of fact, this company owes other money in addition to that represented by its bonds, does it owe money on notes and open accounts?

A. Both.

Q. Adding to the bond interest the amount which the company owed as interest on notes or loans in each year and then deducting from that the balance which was applicable to interest out of its net earnings; was there a deficit or a surplus arising out of the operation of the plant in each of these five years?

A. A deficit.

Q. Will you give from your statement what that deficit amounted to in each year from 1909 to 1913?

A. In 1909 the deficit, exclusive of depreciation, was \$2,910.55; 1910, \$3,194.29; 1911, \$3,164.10; 1912, \$2,548.59; in 1913, \$2,861.40. This is on the basis of five per cent.

Q. That is figured on the basis of five per cent. interest on bonds and five per cent. interest also on notes and open accounts.

A. Yes, sir.

Q. Is there any allowance for depreciation in that?

A. None.

Q. In that estimate have you allowed any interest on any element which might represent intangible or going value?

A. No.

Q. That is simply the interest on the cost of the plant, the cost of the physical plant?

A. Yes, sir.

Commissioner Hillery: Is that quite true? Interest on cost of plant as represented by bonds and outstanding obligations in the way of notes.

Mr. Tatem: As a matter of fact the book cost of the plant equals the par value of the bonds plus the money which they actually have borrowed on notes and open account amounting to \$96,000 or \$97,000.

Witness: And the reason they have not borrowed more is because the interest on the bonds has never been paid. The floating debt would be much larger had they capitalized those deficits.

Q. I wish to call your attention to the operating expenses during these five years. The operating expenses have been from $5200 to $6400 a year. From your experience in the operation of a plant of this size and located as this is, do you consider that economical operation?

Mr. Watts: I object to that. Mr. Roth has not qualified as an expert to give any such opinion.

Q. Mr. Roth, you are acquainted with the operation of other sewerage plants, are you not?

A. Yes, sir.

Q. And of water plants and other utilities where the questions of wages and fuel and the different items that go to make up operating cost figure?

A. Yes, sir.

Commissioner Hillery: The testimony will be received.

(Question objected to read.)

Witness: I do.

Q. If the plant was losing money all the time there would be every inducement to operate it as cheaply as possible?

A. That inducement has always existed. There is no charge in these operating expenses for administration. There are no charges made for any expenditures other than those actually incurred in Burlington for labor actually performed in the operation of the plant. All accounting is done in Philadelphia without charge to the sewerage company. All the officers' services are rendered free of cost to the Burlington Sewerage Company, so that these expenses are not a reasonable charge against the plant but the lowest possible amount at which that plant can be operated. You will note that the fluctuation in the expenses from year to year is largely due to the cost of gasoline and taxes.

Q. The reason of that fluctuation is because the market price of gasoline has fluctuated so violently in the last few years?

A. Yes, sir.

Q. Have you made a calculation as to what would be the income of the company on the proposed new schedule provided the number of connections remained the same as it now is?

A. I have.

Q. What would be that income?

A. If all of the connections now on the sewer mains remained on and all of the fixtures which are now drained into the sewer remain in use the gross income at the new schedule will be $15,398.50.

Q. As a matter of fact, it is probable that if the new schedule were adopted that some of the smaller customers would disconnect, would they not?

A. I have been told they would.

Q. Of course, it is not the desire of the company to make a schedule that would lead to decreased business rather than increased business?

A. Hardly.

Q. In regard to the rate suggested by the company; it is not a matter of concern to the company as to whether the exact fixture charge or the exact minimum there suggested is approved, provided the revenue which the company will derive by operating is not reduced.

A. That is our position exactly.

Q. In other words, in your judgment, there cannot be a definite relation between the cost of different fixtures based upon the use which those special fixtures make of the sewer?

A. I don't think that is possible in any flat rate schedule. Rates, in my judgment, are only averages and while one fixture may bear more than its fair share of the burden some other fixture is not bearing its fair share and in the end they are only averages.

Q. I might say then in submitting the proposed new schedule of rates the thought of the company was to obtain such a revenue as would enable it to operate its plant without loss.

A. That is the exact object.

Q. Mr. Roth, do the books of the company show that during the entire period of this company's operation since 1901 or 1902 it has been operating at a loss?

A. The books do show that, yes, sir.

Q. Have you prepared a statement showing just what that loss has been and how much the company has received less than the interest on its investment and a reasonable allowance for depreciation?

A. Yes, sir.

Mr. Tatem: I offer that in evidence.

Commissioner Hillery: It will be received and marked.

(Statement entitled, "Burlington Sewerage Company, investment including cost of developing business to December 31st, 1913," received and marked Ex. P-5.)

Q. Mr. Roth, will you explain briefly just how you have figured this statement which you have offered in evidence?

A. This is a statement showing the company's investment including the cost of developing the business to December 31st, 1913. The first column shows the various years. The second column, the investment at the end of each year, in which is included additions to plant and deficits. The third column shows the interest at the rate of six per cent. per annum and the rate of three per cent. per annum for additions each year, I assuming an average investment on the additions of six months. The fourth column shows the total interest. The fifth column shows the depreciation at the rate of one per cent. per year and one-half of one per cent. for the additions to plant, I assuming a six months installation on the additions. The next column shows the total depreciation; the next the operating expenses, taxes and insurance; the next shows the total expense, which includes interest, depreciation and operating expenses; the next column shows the gross income; and the last column the deficit. I might add that the depreciation is calculated only on the physical cost.

Q. And is calculated at a flat one per cent. per annum?

A. Yes, sir.

Q. Although the depreciation on such portions of the plant as the machinery would be very much greater than one per cent.?

A. Yes, I took an average of one per cent. assuming that to be about fair.

Q. And you have taken an interest return of six per cent.?

A. Yes, sir.

Q. What does this tabulation then show to have been the total deficit due to the operation of the plant?

A. From the beginning of operations to December 31st, 1913, the total deficits amounted to $92,203.71.

Q. You would say then that has been the actual amount of interest which the company has failed to earn, interest and depreciation which the company has failed to earn tabulated on a six per cent. basis while it has been developing the business during these twelve years?

A. Yes, sir.

Q. What efforts has the company made to obtain new business or to increase the number of its customers?

A. Prior to my connection with the company the books show that the company contributed toward the cost of service pipes in order to induce people to connect with the sewer nearly twelve thousand dollars. Since my connection with the company we have put in new services to the amount of over twelve hundred dollars. After the contribution toward the cost of new services ceased the company continued to give a tap on the main free of cost and kept that up until this year. In addition to that occasionally an advertisement would be put in the newspaper and our superintendent canvassed numerous properties now unconnected with a view of having them connect with the sewer. I think every effort was made to get people to connect

Q. Mr. Roth, in Mr. Boardman's estimate of reproduction cost the real estate of the company is valued at one hundred dollars an acre. Do you know whether the company has sold any land similarly located recently at or about that price?

A. We sold seven and eight-tenths acres in 1913 off the same tract, part of those seven and eight-tenths acres being swamp land. We got one hundred dollars per acre for those seven and eight-tenth acres. At the time the land was originally purchased the company paid one hundred dollars per acre for the entire tract.

Cross-examination.

By Mr. Watts:

Q. Mr. Roth, can you tell why it is that up to 1907 the income as shown on this statement increased, up to 1908 increased; the deficits also increased?

A. Yes, I can. That is due to the fact that the deficits have been compounded and the gross income did not keep pace with the additional fixed charge due to the past losses.

Q. Does that same thing maintain after 1908?

A. After 1908 the deficits were smaller than prior to 1908.

Q. And the income of the company continued to increase?

A. Yes.

Q. Mr. Roth, do you know what, if any, personal efforts were made by employees of the sewerage company to induce people to connect?

A. Do you mean prior or after 1908?

Q. I mean after the time when you became cognizant of what the company was doing.

A. There were personal efforts made.

Q. Did you yourself make any?

A. Personally, no, but they were made under my instructions.

Q. But as to just what was done your testimony is hearsay on that point, is it not?

A. You might say that, yes; although our superintendent reported to me from time to time what efforts he was making and the result of his efforts.

Q. In your experience with public utlities and particularly with sewerage plants, what, in your opinion, is the period of adolescence, or the development period?

A. The period of development in my judgment does not cease until the earnings of the company are sufficient to pay a fair return on the capital invested.

Q. Then it has not ceased with the Burlington Sewerage Company yet?

A. I don't think so.

Q. But if this new schedule is adopted it will then have ceased?

A. Not on the basis of our investment, no, but we would be satisfied with the income that that schedule would produce.

Q. Why do you say not on the basis of the investment?

A. Because on the basis of the new schedule assuming that we get the entire amount of earnings which that schedule will produce from the present customers and all fixtures now connected, would show on a six per cent. basis with an allowance of one per cent. for depreciation a deficit of $3,345.29 using the investment as $188,793.76 to which I previously testified.

By Commissioner Hillery:

Q. At what rate is the return figured to produce that?

A. Six per cent.

By Mr. Watts:

Q. In that figure, Mr. Roth, you as I understand it capitalize the deficits?

A. Yes, sir.

Q. You stated, Mr. Roth, that all the expenses of administration were borne by the Philadelphia office and are not included in this statement?

A. Since 1908 that is true.

Q. Whose office in Philadelphia?

A. The office of the American pipe and construction company, the controlling stockholder.

Q. I note here an item of salaries running from seven hundred to eight hundred dollars, what is that item for?

A. That is the proportion of the superintendent's salary, chargeable to salary account. The balance of his salary is charged to miscellaneous wages, representing that portion of his time devoted to work outside of the office and on miscellaneous work; a portion of this time is charged to pumping station wages for supervision but all of his time is devoted to the business of the Burlington Sewerage Company.

Q. And in that time he could keep all the accounts of the Burlington Sewerage Company?

A. No, he could not.

Q. Why not?

A. In the first place he would not have the time. We don't even have a clerk in Burlington. The superintendent keeps the customer's ledgers now.

Q. You mean to say the accounts of the Burlington Sewerage Company are so volumnious that one man acting as superintendent of the company could not keep those accounts and attend to his other duties?

A. I mean to say, Mr. Watts, that generally speaking, superintendents are not accountants.

Q. But if the superintendent of the Burlington Sewerage Company were an accountant, it would be possible, would it not, for him to keep all the accounts as well as to attend to the duties to which he now attends?

A. I think it would with this exception; some of his time now devoted to outside work would probably have to be delegated to someone else at increased expense, besides he could not attend to the duties of the officers which is in addition to the accounting done in the Philadelphia office.

Q. You refer to the duties performed by the directors and president and secretary?

A. Yes, all the executive officers of the company.

Q. What other employees are there of the company in addition to the superintendent?

A. There are three others regularly employed; a day and night engineer and a laborer who works on the filter beds.

Q. Is it necessary, Mr. Roth, to have an engineer always present at the pumping station?

A. Yes, sir.

Q. Do his duties consist simply of watching the engine and keeping it oiled?

A. His duties consist of operating that pumping station. He does everything that is necessary while he is on, starts the pumps, watches them while they are in operation, sees that the pumps are run at the proper number of revolutions to keep the pumping well down and generally has charge of the disposal works while he is on duty.

Q. So far as that is concerned he acts as superintendent while he is on duty?

A. No, he has direct charge while he is there. The superintendent has general supervision of the disposal works as well as the collection system and the collection of sewer bills.

Q. Do you consider gasoline engines as a means of power are the cheapest as applied to the Burlington Sewerage Company plant?

A. I am not an engineer, Mr. Watts; I don't care to answer that question.

Q. How long have you had gasoline engines in there?

A. I think since the plant has been built.

Q. Never operated with steam engines?

A. Never. Recently, however, the Public Service Gas Company extended its main to our pumping station and when the price of gasoline was high we used gas for fuel. Now that the price of gasoline has been reduced we have gone back to gasoline. In other words, the pumping cost is being carefully watched and advantage being taken of the fluctuations in the cost of gasoline. We should have had gas in long ago had we been able to get it. We were not able to get it until approximately a year ago.

Q. Do you know who holds the bonds outstanding against this company?

A. I know who owns a portion of them.

Q. Who?

A. The American Pipe & Construction Company.

Q. How many bonds does the American Pipe & Construction Company own?

A. $70,000, I think, is the correct number.

Q. Who owns the other five thousand?

A. They are in the hands of the public.

Q. How did they get in the hands of the public?

A. Through the Landsdown Construction Company, which company financed the Burlington Sewerage Company when it was built.

Q. How did the American Pipe & Construction Company get the bonds which it has?

A. It had some transactions with the Landsdown Construction Company and in closing those transactions acquired these bonds.

Q. Do you know who furnished the pipe to the Landsdown Construction Company with which to build the plant?

A. No, I do not. I think Senator Pfeiffer, the contractor, purchased that himself under his contract with the company.

Q. Who owns the stock of this company now?

A. The majority of the stock is owned by the American Pipe & Construction Company.

Q. How did that company get the majority of the stock?

A. Through the Landsdown Construction Company.

Q. In the same manner as to the bonds?

A. Yes, sir.

Q. Mr. Roth, I think you gave the cost of the plant December 31st, 1913, as $96, 314.10; of what item was that made up?

A. That starts off with the original cost of construction paid for in bonds, $75,000. I have no details, but that is what the plant cost originally. That is that portion of the plant that was constructed at that time.

By Mr. Palmer:

Q. You mean you are taking the par value of the bonds as that figure?

A. Yes, because they were not issued at a discount. The contractor built the plant for $75,000 of bonds and some stock. I had eliminated the stock assuming it to be of no value.

Q. That is what was given to the contractor for his work, $75,000?

A. Yes, sir; that was given to the Landsdown Construction Company, who financed the contract. Since then there has been expended for new services $13,134.95 and for extensions, and miscellaneous improvements of which I have not all the details, $9,661.59. That makes a total cost of $97,796.54 from which we deducted a small piece of land sold in 1903, $500, seven and eight-tenths acres of land sold in 1913, $780, and for some other adjustments, $199.44, making a total of $1479.44 deducted from the cost of plant, leaving a net cost of $96,317.10.

By Mr. Watts:

Q. In that you figured no depreciation?
A. No depreciation.
Q. Do you know who made up the proposed schedule of rates?
A. I do.
Q. Who did?
A. I did.
Q. How did you arrive at the various charges made for various services mentioned on the schedule?
A. I assumed those charges because they were reasonably low as compared with other charges made by sewerage companies in the state of New Jersey and because the total income which might be derived from the schedule based on those charges would not afford the company more than a fair return on its investment; in fact, not a fair return.
Q. In what manner did you ascertain that they were fair rates in their relation one to the other?
A. I didn't attempt to ascertain that.
Q. Then, so far as that is concerned, they are entirely arbitrary charges?
A. Absolutely, yes, sir, as all flat rates are.
Q. In what manner did you arrive at the charge of one dollar for each employee for a factory connection?
A. I had no particular method except this; I assumed that if a dwelling house should pay a minimum charge of ten dollars per year and the average number of persons in a dwelling were five it

would be about two dollars per capita of the houses supplied and I assumed that about half a man's time or employee's time would be spent in a factory if he worked in one and during that time there would be more water in a factory than there would be in a house if he were home.

Q. Per capita?

A. Per capita, so I assumed one dollar per employee as a fair way of arriving at the charge for a factory. We know from experience that toilets and other fixtures waste considerable more water in a factory than they do in a home and in addition we have to take care of the boiler waste and other waste from the factory. I know of no other way to arrive at a factory price. A flat rate must be fixed, whether it is so much for the factory or so much for the employee, I don't know which is the best way, but that is the way that I assumed would be about right.

Q. Then, that was entirely an assumption on your part both in its premise and in its result?

A. Yes, I assumed that would be a fair charge.

By Mr. Palmer:

Q. In figuring your income on the new schedule of rates that figures, does it not, on a minimum charge of ten dollars?

A. No, that is taking the factories and all the charges which the fixtures might amount to regardless of the minimum charge. It assumes, however, not less than ten dollars for every connection.

Q. That is based, practically based on a minimum charge of ten dollars?

A. That is the minimum included in that estimate.

Q. Assuming that your minimum was left at six dollars and the rest of the schedule of rates should be made as you have filed it, could you tell the amount of your income?

A. Not without going into an elaborate calculation taking each account and calculating it as was done to arrive at the figure I have mentioned.

Q. How many accounts have you at the present time which pay just the minimum charge; have you any idea?

A. I don't know. I haven't that detail with me; I only have the results here.

Q. Can you approximate it?

A. I wouldn't like to. I could get it, but I haven't it here.

Q. Haven't you the details of each connection here showing what it is?

A. Not here, no, sir; it is quite a number of sheets and I didn't bring them because I didn't know it would be needed.

By Mr. Watts:

Q. Don't you know how many houses are connected for sinks only?

A. I have the record, Mr. Watts, but I haven't it here and I don't recall the exact number.

Mr. Watts: I desire it produced.

Witness: We will be glad to produce it.

Mr. Watts: The records and showing the connections, the number of connections and class of connections.

Commissioner Hillery: Classified?

Mr. Watts: Yes.

Witness: We will produce a statement showing the number of houses at the various rates which the new schedule contemplates. Is that what is wanted?

Commissioner Hillery: This classification is to be according to the new schedule?

Mr. Watts: And the old. I think both should be in evidence.

Commissioner Hillery: A classification under the old charges and under the proposed charges?

Witness: All right, sir. It will take a few days to get that up, but I presume that will be all right.

Mr. Watts: Yes.

Mr. Tatem: It means days of work.

Witness: We have gone all over it and have memoranda of all of it, but to put it in such shape as to make it so anybody else would understand it it would have to be typewritten and remodelled and that takes some time.

Q. You stated, I think that there was, according to the books, twelve thousand dollars spent or contributed toward connections?

A. Contributed and spent, yes, sir.

Q. Before the time you were connected with the company and later twelve hundred dollars?

A. Yes, sir.

Q. Is that amount capitalized?

A. That amount is included in the cost of the plant, $96,317.10.

Q. Just exactly what do you mean by that, that is to say, what was done; in what manner was that contributed?

A. In order to get property owners to connect with the sewer the company, instead of actually installing the service pipe from the main to the house, in a great many instances contributed fifteen dollars toward the cost and in some instances more, in order to induce the people to take the service.

Q. In what manner was that done, by the payment of cash?

A. Cash, yes.

Q. Wasn't it done by giving two and a half years service?

A. That had nothing to do with this. There were quite a number of connections taken on by deferring the charge for sewerage service until a later date. In other words, giving them a certain length of time free of charge.

Q. How many connectors were given two and a half years service, or some other term of service, in that way?

A. I don't know, Mr. Watts.

Q. The books will show, won't they?

A. I think we could ascertain that if we went into details.

By Commissioner Hillery:

Q. Is the amount included in this amount?

A. No, it is not.

By Mr. Watts:

Q. That is not included?

A. That is not included in this.

Q. Not included in the capitalization?

A. No, sir, nothing in here except actual cash expenditures.

Mr. Watts: It seems to me it ought to be considered as part of the earnings.

Commissioner Hillery: What is that?

Mr. Watts: It ought to be considered in the calculation of the earnings. If the company saw fit to give away part of the service the public should not have to stand for that.

Commissioner Hillery: On the other hand, if the company denied itself the income they were giving to a customer or spending that much money on plant, if they have not capitalized it it don't seem to me the plant is done any injustice in that respect. As I understand it, they put in free services or contributed a certain amount toward the cost of these services which if it was money spent on the plant they might be entitled to capitalize, which they have not done.

Witness: We have not capitalized those that Mr. Watts refers to. For instance, we might get a connection on September 1st under an arrangement that we won't start the sewerage service until the next spring, something of that sort. Mr. Watts' contention, as I understand it, is that from September 1st until next spring that portion of our earnings which we practically gave away should have been added to our earnings, but if we had added them to our earnings we would have had to charge something and therefore charge to capital account.

Q. This $13,200 you say was actually paid in cash?

A. Cash, yes, sir.

Q. And to whom was that paid for service pipes or in what manner was it paid?

A. I was not connected with the company when the $11,861.49 was spent. That was prior to 1908, but my understanding is that the company contributed to the customer toward the cost of his service pipe and installing it in some instances fifteen dollars, in others twenty dollars, in others various amounts depending on the length of line and conditions.

Q. In other words, paying the money to the plumber?

A. I don't know whether it was given to the plumber or the customer, but it was paid to somebody in the interest of securing new business.

By Mr. Tatem:

Q. Mr. Boardman was asked yesterday if he knew who paid for what was known as the extension to the silk mills. Can you explain the circumstances under which that extension was put in?

A. Yes, sir. The Burlington Silk Mills desired sewerage service and there were no mains close to the plant. We entered into an agreement with the silk mills under which an extension was installed and under which the Burlington Silk Mills paid three years sewerage rent in advance. The advance payment was credited to the account of the silk mills and as the charges for the sewer rent accrued their account was charged and at the end of three years the account was balanced. Commencing in 1914 they were then charged with sewer rent in advance as all other customers are.

Q. The cost of putting in that extension was borne by the sewerage company, was it not?

A. Absolutely. The silk mills contributed nothing toward the cost of that extension.

By Mr. Watts:

Q. How much money did the silk mills pay for that service?

A. For three years?

Q. Yes.

A. Twelve hundred dollars, $400 per year was the minimum charge agreed upon. The agreement was made between myself and an officer of the silk mills. A regular contract was entered into which is on file with the company and the silk mills has a copy.

Q. Was that based on the number of employees?

A. It was. It assumed a certain number which they said they would have, but the four hundred dollars, I might say, was a flat charge for which the company agreed to serve the property if there were no more than three hundred employees. If there were more than three hundred employees they agreed to pay an additional rate per employee to the extent of I think, $1.33 per employee.

Q. That was at a greater rate than one dollar per employee?

A. It was.

Q. What will be your charge to the Burlington Silk Mills under the new schedule?

A. One dollar per year per employee depending on how many they employ.

Q. Then you abrogate that contract?

A. Yes, sir; they would be treated just like all other customers.

Mr. Tatem: I think, your Honor, that is our case.

Recess from 12.30 to 1.30 P. M.

THOMAS S. MOONEY, sworn on behalf of objectors.

Direct examination.

By Mr. Palmer:

Q. Where do you live?
A. Burlington, N. J.
Q. Were you ever connected with the Burlington Sewerage Company?
A. I was.
Q. When?
A. From its inception until about 1904 or 1905, I cannot just recall the date.
Q. In what capacity?
A. I first solicited the consents necessary for the getting of the franchise and then I continued on with them in that capacity until the plant was completed and then I was made its superintendent.
Q. You were connected with them during the construction of the plant?
A. Yes, sir.
Q. Did you make any observations of the construction of the plant during its progress, of the collecting system?
A. Of the which?
Q. Of the collecting system, the pipes?
A. Yes.
Q. Do you know anything about the manner of the construction of those pipes?
A. Only in a general way as a layman.
Q. Did you make any examination of the joints as they were laid in and fastened?
A. Not particularly, no.
Q. Do you have any knowledge of the amount of money that was expended by the sewerage company

during your connection with it, advanced to connectors?

A. Yes, sir.

Q. How much was that?

A. I couldn't tell that without referring to data that I have.

Q. Refer to your data and tell us what it is.

Commissioner Hillery: Won't you fix the period?

A. Yes, I will have to tell the period. This is taken from the statement taken from the books by myself and Mr. Harmer, now deceased, on March 1, 1905.

By Commissioner Hillery:

Q. Taken from the books of the company?

A. Yes, sir.

Q. You had access to the books?

A. I had the books, kept the books. At that time there were these allotments made to various plumbers. One was to James O'Neil for $4877.41, to George W. Groves, $1022.00, to George C. Warmsley, $701.00, to Eli Lawrence, Jr., $360.00 to E. C. Woerl, who was of Moorestown, $20, to F. B. Randolph, who was not a plumber but connected the parsonage of the Presbyterian Church and was paid on account of that $17.50, making a total as I have it of $6997.91.

By Mr. Palmer:

Q. You said allotments were made to those people, meaning what?

A. The plumbers would solicit business and a canvasser of the company as well would solicit business together with myself and if the only objection was the cost of the connection we were authorized to say to them that the company would pay toward that connection $20.

Q. And these various amounts are payments that were made by the company for those purposes?

A. Yes, sir.

Q. That was up to March 1, 1905?

A. 1905, yes, sir.

Q. Mr. Mooney, did you see any of the sewer pipes laid?

A. Yes, sir, saw them all.

Q. Did you see the manner in which the pipes were put together and the manner in which they were joined?

A. Yes, sir.

Q. Will you tell us what you know of that situation.

A. From my point of the layman, yes. They were laid usually in cement, that is a cement mixture was made and wiped around the joint by the hand of the pipe layer.

Q. Have you ever had any experience or made any observation of the proper manner of constructing sewer drains?

A. Not other than this.

Q. What would you say as to the manner of this construction; was it faulty or otherwise?

Mr. Tatem: I object. The witness has expressly said he was disqualified.

Commissioner Hillery: Yes, not other than this, he said.

Q. Were the joints made tight?
A. No.
Q. Were those joints tight, Mr. Mooney, water tight?
A. No.
Q. Would they permit great quantities of water to come in through the joints?
A. Yes.
Q. Mr. Mooney, during the time that you were superintendent was there any difficulty in making connections when new connections were ordered, by reason of the quantity of water in the sewer pipes?
A. Yes.
Q. What was necessary to be done at those times?
A. Get the engineer down and run the pump night and day so that the water might be lowered in the well or in the pipe to such an extent that they would be able to make the connection.
Q. Was that frequently true?
A. Yes, in the lower places, in the deeper cuts.
Q. That large quantity of water was due to infiltration?
A. In my opinion that was the case, yes.
Q. The normal flow of sewage would not cause any such condition as that?
A. At that time we did not have ten consumers on the line.
Q. And how full would the pipes be of water?
A. Sometimes they would be full to the top.
Q. Was that condition practically the same during the entire time of your superintendency?
A. Particularly in wet weather.
Q. Have you visited the disposal plant recently?
A. I walk around there every once in a while.
Q. And have occasionally ever since its construction up to the present time?

A. Yes, sir.

Q. Ever notice any odors from the disposal plant?

A. I notice that from my house several blocks away.

Q. How far from the disposal plant?

A. I should judge, taking it by blocks that I am—this is in a certain direction of the wind. The wind must be in my direction and then only infrequently, because ——

Mr. Tatem: I don't wish to be technical, but I thought we were discussing before the utility commission the question as to the cost of this plant and so on, not the question, the purely sanitary question, whether odors could be detected from this plant one block or six blocks away. It would seem to me that cannot in any way enter into this consideration but must be a question to be determined by the authorities, the particular authorities of the state that might have that matter in charge.

Mr. Watts: We take a different view of that situation and contend that if the disposal plant is properly working then these odors could not arise at the distance which has just been testified to and that therefore the sewerage company is not performing the duty which in law it must perform, therefore it is not entitled to have the rates which otherwise it would be entitled to collect.

Commissioner Hillery: This board has permitted testimony to be taken relating to the service rendered by a plant in a rate case. Just how far it is pertinent to this particular situation I don't know. However, we will permit the testimony for the present and will give it such value as the board thinks should be given.

Mr. Tatem: Your Honor will bear in mind there is no complaint, in regard to the service, made in this case.

Commissioner Hillery: I understand that, yes.

Q. Give me your house number and street, Mr. Mooney?

A. 217 West Union Street.

Q. Is that a thickly settled locality where you live?

A. No, sparsely settled.

Q. How many dwelling houses in the square in which you live?

A. Forty-three.

Q. How many vacant lots, approximately?

A. There is a great deal of ground around several of the houses, not called vacant lots but they are building lots, it is true. There are building lots there. I can tell you exactly; twelve.

Q. The condition that you speak of, has that been true for a long period of years, as to the odors of the plant?

A. As to the odors?

Q. Yes.

A. For the last four or five years in summer time when the houses are open.

Q. That has been true since the number of subscribers or users of the sewer has got up to a considerable amount or somewhere in the neighborhood of what it is at the present time?

A. You might say that, I haven't thought that way.

Q. Is there a schoolhouse in the neighborhood in which you live?

A. There is, yes, sir.

Q. How close to your residence?

A. Five hundred feet.

Q. Nearer the sewerage disposal plant?

A. Nearer.

Q. And that accommodates a large number of children?

A. Usually it is crowded.

Commissioner Hillery: Is it to be your contention that there is an inherent weakness in the plant as such or that the plant is not properly managed?

Mr. Palmer: It may be due to the construction of the plant, that is, the character of the plant which produces this situation but I think that the situation could be remedied by proper and efficient management of it as well. In other words, this plant is not the modern plant, not the approved plant at the present time. However, I am advised that the situation as it exists could be materially improved by the proper management of the disposal works.

Commissioner Hillery: Then I should think rather than take testimony of the character that you are giving now in this particular proceeding it would be better to make a complaint concerning the service and how that service improved.

Mr. Palmer: That is true, but that is just our answer to their asking for a raise of rates, that they have not furnished us with the service. It is not up to us on this proposition, or unless we choose to move on any proposition to ask for improvement of service but these people come and ask for an increase of rates, and we say they are not entitled to the increase of rates because they are not giving us the service to which we are entitled even under present rates.

Commissioner Hillery: It is not your point, as I stated before, that there is an inherent weakness in the plant and that poor service which you allege is due to that, therefore the plant has depreciated or the value which is claimed by the proponents is not in the plant?

Mr. Palmer: Yes, there is an inherent weakness and deficiency in the plant to produce the situation. If that were not true this situation would not be true.

Commissioner Hillery: Proceed. It seems to me a mere complaint about service which might be remedied by a little better management or something of that kind would hardly be pertinent to this particular issue.

Mr. Palmer: It may not be a controlling factor but it is certainly an element in this commission's deciding how much rates they are entitled to charge, the character of service they are rendering, not what they may promise to render or what another plant they might build might render but what they have actually and are rendering to this community. It certainly is a pertinent issue when they ask the community to bear an additional burden, an increase in rates.

Commissioner Hillery: The board has power to order any company to better its service by doing specific things and the service could be remedied in that manner by a complaint.

Mr. Palmer: But we are presenting the thing as a defense against their asking for an increase in rates, why they are not entitled to it.

Commissioner Hillery: You may proceed and the testimony will be taken for its value.

Q. What direction from your home is the disposal plant, in a general way?

A. Southwest.

Q. And to what extent do these odors come to your house when the wind is blowing from the southwest in summer time? Just describe the condition as it exists at your house at that time.

A. At times it is necessary to close the windows.

Q. Possible for you to sit out of doors?

A. Oh, no, you cannot do that. You can sometimes. I don't mean—there are times when you can, there have been times when you could not very well.

Q. When the wind is blowing in the direction of the disposal plant and in summer time?

A. There are times when you cannot. You could by punishing yourself but you don't want to sit there and take it all in.

Q. The odor is very strong?

A. It is strong, it is a peculiar odor.

Q. Peculiar to sewerage disposal plants?

Mr. Tatem: Objected to, unless the witness knows. He says he does not know anything about sewer plants, except this one.

Mr. Palmer: I will withdraw the question.

Q. Can you describe the odor or characterize it?

A. No,—the only thing, the character of the smell is more like carrion or something of that kind, like a decomposed body of an animal, or something of that kind. I cannot tell you of course because I am not versed in those things. I know it is anything but pleasant, that is all.

Cross-examination.

By Mr. Tatem:

Q. How do you know these odors come from the sewer disposal plant?

A. Simply from the reason that there is nothing else.

Q. How about when they are unloading manure and fertilizer on the railroad?

A. That is done in the spring of the year between the two times, not done at that time. The railroad cross siding is just the other side of it, but that has been eliminated by the local board of health. They cannot unload it there and have not been able to unload it there for years.

Q. How was it that these odors began just after you ceased to be the superintendent of the plant?

A. No, these odors did not cease just after or did not commence just after and have not commenced for some time after. It is only within the last couple of years that I know.

Q. Of course, while you were superintendent there were no odors?

A. We hadn't any sewerage.

Q. If you had no sewerage in 1905, when you ceased to be superintendent, how was it you collected for sewer rentals that year over $4500?

A. We did; that was collected in advance for that year.

Q. How about the fact that in 1904 you collected $3500, was that for no service whatever?

A. There was but little sewage at that time. There were factories and larger buildings like the Budd Shoe Factory, and the larger consumers paid larger rentals.

Q. As a matter of fact the records show that in 1904 the company had about 500 connections?

A. Close to that, very close to that.

Q. Yet you say you handled no sewage up until 1905, when you left the superintendency?

A. You spoke about the earlier stages of the sewerage. I said even at that time I did not notice it, have not noticed it until the last couple of years.

Q. Have not noticed it until since you ceased to be connected with the company?

A. Several years since and then only at times as I stated.

Q. Do you know whether most of the sewerage pipe in the collecting system is laid below water level or above it?

A. The majority of the trunk is below. Laid in quicksand under difficulties and along the line from Federal Street all the way down is laid on planking, had to be.

Q. The items which you testified to having been paid to plumbers in round figures $7,000, that was up to 1905, as I understand?

A. Yes.

Q. To March 1, 1905?

A. Up to March 1st. I took this statement from the books.

Q. And the purpose of making those allowances and those payments was in order to induce people to connect with the sewer and take the service?

A. Yes, sir; where there was objection made by a person solicited. For instance, you might say their connection would cost $100 and the sewer company through Mr. Kent authorized me to say to them that they would pay $20 on account of their bill which was done by him, always in cash.

Q. As to any payments for the same purpose made after March 1, 1905, of course, you have no personal knowledge?

A. No, sir.

Re-direct examination.

By Mr. Watts:

Q. Mr. Mooney, about how long was it after the plant was finished and before you started to have connections with consumers, about how long a time elapsed before you had no connections?

A. I was virtually connected with them all the time.

Q. You did not understand my question. About how long a time elapsed after the plant was finished before those who are connected started to connect with the plant?

A. Well, there was one who was really waiting for the plant to be finished to connect.

Q. And did connect right after the plant was finished?

A. And did connect, really connected before it was finished.

Q. Then how rapidly did they connect?

A. I regret to say not very rapidly. Some eight or ten probably in the first two or three months.

Q. During that period when you had that connection did you or not have to do any pumping?

A. Yes, we had to pump all the time.

Q. When you say all the time, what do you mean by that?

A. I mean that we pumped every day, one engine and one pump was run every day.

Q. Even before there were any connections to the system?

A. Yes, because the receiving well was more than full every day.

Q. And that water was infiltrated into the system, was it; it did not come from the connectors?

A. It could not come from the connectors because we had it there when we only had one person who was the first person to ever connect on the sewer and we had to have young Lewis down there, he was the first engineer to run every day, and he ran from morning to night. He ran one engine. There were two engines and two pumps and he ran them alternatively, first one day one and then the other.

Q. At that time by reason of the water infiltrating into the system you had to keep pumping all the time?

A. Yes, sir; that was my direction, to keep the well down if possible.

Re-cross examination.

By Mr. Tatem:

Q. These main sewer pipes were laid below water level, were they not?

A. Yes, sir.

Q. And this collecting well was below the water level.

A. The receiving well? I think that is what we used to call it. I believe you are right.

Q. Do you know of any method that has ever been devised to make terra cotta pipe laid below the water level absolutely tight?

A. I am not in a position—I would have to answer that from the standpoint of the layman, this one case, from my observation of this one plant and my familiarity with this one condition.

Q. Mr. Mooney, the books of the company show that in the year 1902 was received as sewer rentals $470, that in 1903 it received $1700, in 1904, $3500, in 1905, $4600; those figures approximately show the amount of service that was rendered and the rate at which the people connected, do they not?

A. I believe that to be pretty near correct, if my memory would serve me, yes, sir. The first year practically nothing; we started in July.

Q. It only shows their total income for the year was $470?

A. Practically nothing, could not get the people to connect.

Eli Lawrence, sworn on behalf of objectors.

Direct examination.

By Mr. Palmer:

Q. Mr. Lawrence, what is your business?

A. Plumber and steam fitter.

Q. Have you ever had occasion to make connections with the pipes of the Burlington Sewerage Company?

A. Yes, sir; several times.

Q. And how soon after the completion of the plant?

A. Just as soon as the takers begin to fall in line we begin to get our share and go ahead and connect them.

Q. That has been during all the time up to the present?

A. Yes, sir.

Q. What did you observe as to the amount of water in the pipes when you made connections, in the pipes of the sewerage company?

A. Some of them in some places were very near clean, other places they were half full and we have struck places where they were full and we could not make the connection until they were pumped out by the pump at the plant.

Q. Was that true in the first year's of the connections you made?

A. Yes, sir, more so then than now.

Q. And has been more or less true all the time?

A. Yes, sir.

Q. Did you observe the sewer pipes as they were being laid?

A. I saw them when they were laying them.

Q. Did you see the joints that were being made?

A. Yes, sir.

Q. Will you describe the character of joint that was made?

A. It was supposed to be made, at least they were endeavoring to do, with oakum and cement and in some places, in one particular place on High Street where a gasoline engine and pump was connected at the corner of High and Federal Street, and the pipes at that time were being laid in water and they were endeavoring to cork with oakum and tar cement but in several places no cement was put on the bottom. That I can swear to, because I was working in the trench at the time.

Q. No cement put there at all?

A. Not at the bottom of some of them.

Q. What would be the result as to that manner of construction, as to the infiltration of water?

A. I don't see anything else but water coming into the pipe.

Q. And in large quantities?

A. Yes, sir.

Q. Did you observe the manner of construction of these joints at any other point than the one you spoke of?

A. Yes, sir. I was hired by the Burlington Sewerage Company right after Mr. Mooney's time. The plant then was under the direction of Samuel Shaw and they hired us to repair their plant on Federal Street and in digging down to the pipe, which was twenty-four inch pipe, we found after we got to the pipe that it was laid in quicksand without anything under the pipe at all. The consequence was the pipe had settled and split from bell to bell and we took out seventeen lengths of it and left some in there under the direction of Mr. Shaw and it is in there today if someone has not taken them out.

Q. The broken pipe?

A. Yes, sir. And in another case on High Street the same year, we dug down to the main and we found there—after we had found it, that someone had thrown a stone in there which was too large for any two men to get out of the trench and it had fallen down and mashed the pipe entirely.

Q. That had been put in in filling up?

A. Yes, sir.

Q. Any other instances?

A. No, that is the only two times I ever dug it out.

Cross-examination.

By Mr. Tatem:

Q. How would you make the joints in that sewer pipe, Mr. Lawrence, if you were making them?
A. You were using the proper stuff if it had been put on properly.

(Question read.)

Witness: Make it with sand, cement and tar.

Q. Just explain the detail of making of a proper joint.
A. What do you mean, a terra cotta joint?
Q. Yes
A. The circumstances would alter cases; whether in water or in dry soil.
Q. Explain how it should be made if it is submerged.
A. You would make it with oakum, tar, sand and cement.
Q. You mean you would make it with rope or oakum?
A. Oakum.
Q. What did the sewer company use?
A. Oakum, sand, tar and cement.
Q. And your only knowledge in regard to the condition of these specific instances you have testified to is from what you found when you were hired by the sewer company to repair these breaks?
A. Pardon me, but we are speaking of the time when the Burlington Sewerage was doing it; I was not working for the Burlington Sewerage Company at that time.

Q. You testified these breaks which you referred to were found by you when in the employ of the sewer company four cr five years after the pipe had been installed?

A. In this case you are speaking of, no, sir.

Q. I refer to the Federal Street incident that you told about the pipe being broken.

A. That is a different job entirely that you were speaking of. I did not say those joints were made defective there.

Q. In the observation that you made while the plant was being installed was the tar put in the joints hot or cold?

A. Cold.

Q. How would it be possible to work tar cold, particularly in submerged joints?

A. Heat your tar and mix your sand cement and tar in ball form and put it in the same as putty, which they did.

Q. It would be hot and not cold because you said you would have to heat it?

A. No, I did not say so.

Q. I asked him if the tar was put in hot or cold.

A. Put in where, in the pipe or cement?

Q. Put in the joint?

A. It was put in cold.

Q. The fact that a pipe in a part of a sewer plant should be broken five years after it was put in is no proof that it was not properly put in, is it?

A. In this instance it is because the same job had been repaired three or four different times before.

Q. That was probably due to the quicksand or the unusual conditions, wasn't it?

A. Yes, I will admit that.

Q. So the question as to the kind of construction which would best answer that purpose could be found out only by experiment; that is so, isn't it?

A. It strikes me there ought to have been something under it. I know when I repaired them I put something under them.

Q. Do you know whether even after you repaired these in the proper way it had to be subsequently repaired?

A. Not since, no, sir.

Franklin S. Carter, sworn on behalf of objectors.

Direct examination.

By Mr. Palmer:

Q. Mr. Carter, you live in Burlington?

A. Yes, sir.

Q. And are a member of the board of health of the City of Burlington?

A. Yes, sir.

Q. And have been for a number of years?

A. Yes, sir.

Q. You were such at the time of the construction of the Burlington Sewerage Company?

A. No, sir.

Q. Did you know of the construction of that plant? You were living in Burlington at that time?

A. I was, yes, sir.

Q. Since your connection with the board of health have you had occasion to examine the disposal works of the Burlington Sewerage Company?

A. Yes, sir.

Q. About how long ago did your examination of those works begin?

A. As connected with the board of health or as a private individual?

Q. Both, either one; your first examination of it?

A. As soon as they were under way, during construction.

Q. Have you made any particular study of matters of sanitation?

A. Yes, sir, in connection with my duties in the board of health.

Q. Will you tell the commission what the situation is with regard to the sewerage disposal works, their character and efficiency, beginning with your first knowledge of them?

A. There was a considerable difference between the condition of the plant in its incipiency and its condition today. When it was first constructed there was little or no sludge or solid matter on the beds; that had run into the sewer and the condition was entirely different from what it is today when those beds, up to the time they had plowed them, were deep in sludge, sludge all over everything.

Q. What do you mean by sludge?

A. I mean the solid part of the sewage that should have been retained in the so-called septic tank. The septic tank did not have a capacity sufficient to enable that to lodge there and it flowed into the beds. It all passed over directly as it was pumped from the well, passing through the septic tank, sludge and all.

Q. And no septic action took place, practically none?

A. Practically none.

Mr. Tatem: I object. It is purely a scientific question. No reason why the witness should not testify that his observation was that during recent years more solid matter seemed to be on the top of these beds, but to attempt to put into the witness' mouth the point that the septic tank was not efficient and the sewage passed out of it in the same condition that it passed in, is absolutely impossible.

Mr. Palmer: I think the criticism is justified and was not intentional on my part.

Q. Tell us the situation as it is at the present time.
A. The whole of the disposal plant is under the jurisdiction of the state board and it is not up to our board of health to criticize their actions and we are not in a position to assume any duties excepting what the law allows us to exercise in relation to the plant. We rely entirely upon the decision of the state board and their action in relation to the disposal plant. We are subservient in that respect to the state board.
Q. Tell us the condition of the disposal plant as it is at the present time.

Commissioner Hillery: Are you familiar with the condition?

Witness: Yes, sir, I am familiar with the condition. The condition is as I stated before, that the septic tank does not perform its function and necessarily what should be retaind there, the sludge, flows out over the beds and is retained on those beds and the fluid matter, the clear water flowing over that lodges in pools or lakes formed at the bottom of these beds by the retaining bank put there by the sewer company to retain this large amount of effluent giving it a chance for purification before it is discharged into the ditch which runs from that into the city ditch. This sludge has been accumulating for years. Recently they have plowed these beds, turning under this sludge which has effected a considerable—has been very beneficial so far as I can see, and the state board, to the condition of the plant. It renders it more efficient.

Q. What has been the result so far as the sanitary conditions of that part of the city are concerned from dumping all this sludge on the beds, as to odors or health or any other sanitary result?

A. There should be less odor from the sludge being turned under than there was while it was laying exposed to the sun and elements.

Commissioner Hillery: He is inquiring what the effect is, not what it should be, but what is the effect, the actual fact.

Witness: Of the plowing of those beds and so forth?

Q. Yes.

A. It has been beneficial.

Q. What is the effect of allowing this sludge to remain on the surface for a long length of time?

A. It putrifies and gives off very offensive odors.

Q. Have any complaints ever been made by your board to the state board of health with reference to the condition of this disposal work?

A. Innumerable.

Q. Have any means been taken by the sewerage company as a result of those complaints to remedy any of the defects?

A. Some, yes, sir.

Q. To what extent has it remedied them?

A. To a very unappreciable extent.

Q. Do you know anything of the construction of this collecting system at the time it was put in?

A. Of the what?

Q. Of the collecting system, of the pipes?

A. I observed it, yes, sir.

Q. Do you know anything as to the quantity of infiltration with reference to this sewerage disposal plant, the collecting system?

A. I do.

Q. What do you know about that?

A. I know that before any connections were made in Burlington there was a very large discharge of water into the sunk well, clear water.

Q. And that could be caused how only?

A. By infiltration.

Q. Has that continued from that time?

A. On surface water that got into the sewer.

Q. Has that continued from that time of the construction of the plant up to the present time?

A. It is presumed it has.

Q. Do you know anything as to the quantity of sewage that is pumped by this company?

A. Judging by the capacity of the centrifugal pumps and the number of hours pumped, I can furnish somewhat of an estimate, yes, sir.

Q. What is that estimate?

A. It varies different times of the year, from sometimes, I should judge 800,000 to 950,000 gallons and sometimes may be more than that, per day.

Q. You mean every twenty-four hours?

A. Every twenty-four hours.

Q. Do you know anything about the quantity of water that is pumped into the water mains of the city of Burlington in the sewerage area, per day?

A. No. We pump for the whole city which includes East Burlington and that is not the radius of the sewer pipes. No sewerage pipes there at all, no sewer connections.

Q. Can you form any estimate as to the quantity of water that is pumped by the water company that goes into the sewerage area?

A. It would be a very hard question to answer because if we are pumping, we generally pump about one million gallons in round figures a day, and that is used by the Pennsylvania railroad for locomotives, used in factories and for various other purposes. There would be no connection whatsoever with the sewer, and a large number of houses are not connected with the sewer.

Q. From your knowledge of those facts and that situation, can you form any estimate as to the quantity of water which goes into the sewerage area district?

A. I could give a rough estimate, yes.

Q. What would that be?

A. Somewhere in the neighborhood of 450,000 to 500,000 gallons.

Q. That quantity of water is used in the sewerage area?

A. About that, yes, sir. We have no meters and no way of ascertaining that.

Commissioner Hillery: First, you asked him what the amount of water was consumed and then after he answered you said now that is the amount of water that went into the pipes of the sewerage system.

Mr. Palmer: My question was the amount of water that was pumped by the water company into their pipes. I first asked him as to the amount of sewerage that was pumped at the disposal plant and I then asked him as to the amount of water by the waterworks pumped by that company into their pipes.

Commissioner Hillery: His answer of 450,000 or 500,000 gallons was in response to what question?

Mr. Palmer: In response to the question as to the amount of water pumped by the water company into its mains in the sewerage area.

Commissioner Hillery: Is that as you understand it?

Witness: Yes, sir.

Q. Have you made any estimate, Mr. Carter, as to the quantity of infiltration in the sewerage plant?

A. No, sir. Just a rough estimate; that is all. I have no means of ascertaining it and don't think there is any.

Q. What is that estimate?

Mr. Tatem: When a man says he has no means of ascertaining it and I don't think there is any; why should we ask him for figures? What good can his figures be?

Commissioner Hillery: That is merely his guess.

Mr. Palmer: It amounts to that, yes. I will withdraw the question.

Commissioner Hillery: I don't think it is proper; he laid no foundation for an estimate at all.

Cross-examination.

By Mr. Tatem:

Q. Mr. Carter, the question of the amount of pumpage in the sewer plant would vary at different times of the year, would it not?

A. Yes, sir.

Q. It would also be greater in wet weather than it would in dry?

A. Presumably it would be, yes, sir.

Q. In other words, in the section of the city covered by the sewerage, this sewer system, this line of terra cotta pipe of which the joints cannot be absolutely tight, must act as an underground drain for that section, does it not?

A. Yes, sir.

Q. And that carries the water into the pump well and then it ultimately goes down the city drain?

A. It goes into the sunk well and pumped up through the septic tank onto the beds and into the ditch, yes.

Q. During a rainy period if there were no sewer system there a good part, some of that water which infiltrates into the sewer pipes would undoubtedly go down in the surface drains, would it not?

A. Yes, sir. I would say I have every evidence; I live in a house and have three feet of water in the celler after the introduction of the sewer plant.

Q. So really the effect of putting this sewer pipe in which is below the water level has naturally been to lower that level and to make some cellars which formerly had water in them, now make them clear.

A. Yes.

Q. The city, I believe, uses the sewer for its public buildings, school houses and so forth, does it not?

A. Yes, sir.

Q. Under the arrangement with the sewer company as it is at present, no charge is made for that?

A. I believe so.

Q. Can you give me some idea as to what extent that free service furnished the city amounts to; what public buildings are there that are served in that way?

A. There are public schools, fire houses, city hall; I don't know of any others. We have no record in our water board, I am a water commissioner; we keep no record of the amount of water used, we use no meters and they use it as freely as they wish to.

Q. Is that true throughout; there are no meters on private consumers there?

A. No, sir.

Q. I notice from the sewer company's memorandum that for instance in the high school there are nine closets, three urinals, five stationary wash basins, and two drinking fountains; in the Lawrence school there are thirty-four water closets, nine urinals, fifteen wash basins and there is an automatic flushing system from which flushes eighty gallons about every five minutes; in the Boudinot school there are fourteen closets, five stand urinals and four stationary wash basins, and they also have automatic flushes; in the Fenimore school seven closets, four urinals and three wash basins with automatic flush tanks; in the Allen school there are six closets, one three stand urinal and two wash basins; and in the city hall there are thirteen closets, four sinks and one bath tub, and that in addition to that there are fixtures and services in the three fire houses. I don't ask you to verify every particular figure in regard to those, but that memorandum is substantially correct; isn't it?

A. I don't know. I have no knowledge of it. I know in a general way there is a large amount of water used there, but I don't know the specific number of fixtures.

Q. So far as you know there is no charge made by the sewer company for any of that service?

A. None I have ever heard of. I don't specifically know one way or the other about it.

Q. Your estimate that of the millon gallons of water pumped daily about four hundred thousand or five hundred thousand is distributed to the area embraced within the sewerage system is really only an approximate guess, is it not?

A. Yes, sir, that is all.

Q. There is no way without the use of meters or without a division in the water works pumpage of the water which goes to that section from the water which goes to other sections or is used for other purposes; there is no method of definitely determining that amount?

A. No, sir. During the summer the streets are sprinkled, the water is not charged for by the water board, no charge made for it. We keep no tab on those things whatsoever.

Re-direct examination.

By Mr. Palmer:

Q. Mr. Carter, did you observe the manner of joining the joints of the pipes when the sewer line was laid?

A. I did, sir.

Q. What can you tell us about that?

A. I observed them in four or five locations. There was no excavation made in any of the trenches that I saw to allow of the cementing of the lower portion of the bell. The pipes were thrown in the trenches and a man followed them up with a bowl of cement, just plastered the cement on top until his hands came to the bottom of the trench; he did not continue under it at all, leaving the bottom of the bell open and free.

Q. Do you know anything about the number of classification of sewer connections in Burlington?

A. Only what I have had from the sewerage company; they have been free and open and the account they gave me corresponds exactly with the amount we have. We have kept tab on those things as hard as we have because the board of health has done all we possibly could to induce people to go on the sewer.

Q. Have you that information with you? Can you give us that information as to the classification of these connections?

A. No, not so far as the classification goes. You mean bath tubs, toilets and so forth, do you not?

Q. Do you know how many six dollar connections there are?

A. I should judge, according to the statement, somewhere in the neighborhood of about—you mean the minimum or the ones that have merely the connection to the sink.

Q. No, where they make the minimum charge.

Mr. Tatem: The situation is this: no one, as I understand, knows anything about this except the sewer company, because they have had to make an inspection and we have offered to present in tabulated form a table showing just how many houses has simply the sink connection and what the fixtures are, in different groups. It seems to me that no layman's testimony would be of any value and I think we have offered to furnish my friend detailed and specific information on just that point.

Mr. Palmer: That is all right, but this witness said he knew from information furnished to him by the company. I will withdraw the question and take the information as furnished.

Re-cross examination.

By Mr. Tatem:

Q. As a matter of fact, did you notice whether there was any planking being laid under the sewers when they were laid?
A. Some, yes, sir.
Q. Did you notice what was used in the packing of the joints?
A. Casually, I did not go into that matter specifically.
Q. What was used?
A. In the pipes?
Q. Yes, in making the joints.
A. Other than the cement?
Q. Yes.
A. There was oakum and tar, as far as I could see. It was a difficult matter to get into those trenches, so much water there.
Q. And it was because of the water levels that a good deal of the system was really very difficult construction, wasn't it?
A. I presume so, yes, sir.
Q. As a matter of fact, in quite a good many places it is underlaid with quicksand?
A. Yes, sir.
Q. And in many places the sewer has to be below the water level in the river?
A. Pardon me, I think there was more expense gone to in laying the pipe in quicksand than was

necessary, because they dug long ditches, trenches, and did not put the pipe in as they should have done, at once. It filled up, had a heavy storm and all collapsed and went in.

Q. If the contractor were doing that for a certain sum that would be his loss?

A. That would be his loss. It was poor judgment.

Charles Scholey, sworn on behalf of objectors.

Direct examination.

By Mr. Palmer:

Q. You live in the city of Burlington, Mr. Scholey?

A. I do.

Q. Give us your street and house number.

A. 428 Lawrence.

Q. How close is that to the sewerage disposal plant of the Burlington Sewerage Company?

A. I should judge it is pretty close to a quarter of a mile from there.

Q. In what direction from your house is the disposal works?

A. It is more on a direct—towards west—west by southwest.

Q. Do you have any difficulty at your house with reference to odors from the sewerage disposal plant?

A. No, not up there; we don't smell it up there.

Q. Have you been down in the neighborhood of the sewerage disposal plant?

A. I have.

Q. Many times?

A. I generally go down that way most every Sunday, to the cemetery.

Q. Is there any odor coming from that sewerage disposal plant?

A. Yes.

Q. Can you characterize that odor or describe it?

A. It is a stink.

Q. Of what character?

A. It smells about like rotten manure.

Q. And at what distance from the disposal works is it noticeable?

A. I can generally catch it when the wind is blowing that way in going to the cemetery I can catch it generally when I strike about Salem Avenue.

Q. That is how far from the sewerage disposal plant?

A. I should judge that is about—it might be an eighth of a mile, might be a quarter.

Q. Are there any houses in that vicinity?

A. Yes.

Q. Are there houses from the point where you can first detect the odor toward the sewerage disposal works?

A. Yes.

Q. Hasn't that section of the town built up rapidly in the last two or three years?

A. Yes, take the Harmor tract, it has.

Q. What about the Plaza Park tract?

A. That built up very rapidly for a short time and then quit.

Q. Do you know why?

A. Because people could not borrow any money to put a house up.

Q. Why?

A. On account of the beds of the sewer plant.

Q. Being in the vicinity of the disposal works?

A. Yes.

Q. Are you a member of the city council of the city of Burlington?

A. I am.

Q. Have any complaints ever been made to the city council by owners of that property in that vicinity with reference—or to you as councilman—with reference to odors of the disposal works?

A. Not to me directly, no. Complaint was made to the other member of the committee on health and sanitation but not to me direct. I could not answer for him. He took charge of that himself personally.

Cross-examination.

By Mr. Tatem:

Q. What knowledge or experience have you in regard to the operation of sewer plants other than this one in Burlington?

A. Of course, I want you to understand I am not an engineer. The only plant outside of the city of Burlington that I ever saw was at Beverly and Belmar, New Jersey. Of course, that is entirely different, Beverly is gravity, I understand that is what you call gravity, don't use any engines to pump the sewerage, so I cannot answer that kind of question at all.

Q. As a matter of fact, those plants are an entirely different method of disposal and treatment than the one at Burlington, aren't they?

A. The one at Beverly I should say it was entirely different from the treatment at Burlington. Their septic tanks are entirely tight.

Q. As a matter of fact, from your interest in sewerage and sanitary matters you know there has been a great development and many changes in the plans of disposal and treating sewage in the last twelve or fifteen years, haven't there?

A. Yes.

Q. In other words, thirteen years ago when this plant was installed the methods of treating sewage so that it should not be injurious in its effect was practically in its infancy. As a matter of fact this Burlington plant was one of the early plants to be put in the state of New Jersey under the rulings of the state board of health which at that time forbade the discharging of untreated sewage into the streams and rivers.

A. I could not answer that question, only so far that they would not allow the sewerage company to dump into the river.

Q. You have testified that the section of the town near the sewerage plant had been built up rapidly during the last few years?

A. Yes, it has.

Q. And that building and development took place after the plant had been installed and was in operation?

A. If you will excuse me; I mentioned two different points. I mentioned the point of Harmerville in the neighborhood of a half mile, eighth of a mile or a quarter of a mile away, and the Plaza tract which is only about, I should judge—some houses on the Plaza tract—only about eight hundred feet away. I am taking two different points. The Plaza tract has stopped, practically stopped, because I am in a position where the people have come to me and wanted to borrow money and we will not take it.

Howard J. Webster, sworn on behalf of objectors.

Direct examination.

By Mr. Palmer:

Q. Mr. Webster, what is your business?
A. Consulting engineer.
Q. Have you had any experience in making estimates for the construction of sewerage disposal works?
A. I have.
Q. Have you made an estimate of the reproduction cost of the Burlington sewerage system?
A. I have.
Q. You have that estimate with you?
A. I have it with me.

Commissioner Hillery: Do you desire to offer it now?

Mr. Palmer: Yes, I will offer it.

Commissioner Hillery: Any objection, Mr. Tatem?

Mr. Tatem: No objection whatever.

(Report of Mr. Webster received and marked Exhibit O1.)

Q. Referring to your report, Mr. Webster, what is the total which represents the present value of this sewerage company's works?
A. The total value, the present value of the sewer company's plant is shown in the lower right-hand corner, $66,733.39.

Q. That is its present value?

A. Yes, sir.

Q. And what is its reproduction cost?

A. The cost to reproduce as shown on the bottom of the center column is $82,116.28, reconstruction as of date October 6th, 1914.

Q. Mr. Webster, have you been upon the ground of the disposal works of the Burlington Sewerage Company recently?

A. I have.

Q. How frequently?

A. I was called in in this case by letter dated July 25th, and went to visit the plant immediately and from July 25th this year I have visited the plant about fifteen times.

Q. Will you tell us, describe to us the physical situation of the disposal plant.

A. The disposal plant is located in the lower drainage basin of Burlington to the left of the railroad going toward Philadelphia and on an embankment. The elevation of the drainage basin is from minus one to minus two and the top of the septic tank is an elevation of plus eighteen so that gives the elevation twenty-four feet from the pumpage, from the sewer to the septic tank and eighteen feet or twenty feet from the trench so this waıer ın the trench could not be to the top of the septic tank and the ground is a short distance below that for the reason that the tank is ten feet deep and the sludge pipe comes out of the bottom of that and goes over a portion of the hill.

Q. What is the physical condition of the beds of the disposal works?

A. I examined the beds on every visit I made and found their condition to vary in the short time I have been examining them and I think I would prefer to give a result of the examination last Saturday at which time they were in the most favorable condition. As far as the effluent goes the effluent at that time was very satisfactory from a casual examination. I examined every outlet and every leak in the trough and the effluent there seemed to be satisfactory and was free from putrescent odor. Other times, only a week before that I made a similar examination, and found discoloration, the water highly discolored and the putrescent was going out into the discharge trench and going into the city drainage water and that, of course, is objectionable from the standpoint of operation. The lower part of the beds was in good condition Saturday but only a week ago they were filled with a fearful lot of filth and the water was up near the top of the embankment. There was just myriads of worms and small larvae in there and a great many mosquitoes in there, stirred up as we walked along showing that mosquitoes were being bred. That is objected to by the state board of health and is a menace to the community. The matter of water coming down from the upper part of the beds—the design contemplates the water being distributed uniformly over the beds, but as a matter of fact because of the excessive pitch or grade of the beds the water does not come down uniformly but on the contrary comes down in furrows so the effect, the land drainage effect is practically nil and the water then accumulates in the basins at the lower ends of the beds and there we have septic action set up or putrific action and the breeding of mosquitoes just before the filtration, showing the plant is not being operated properly.

Q. What would you say as to the efficiency of this plant judging from your observations?

A. I made some calculation and for this type of plant the plant is capable of being operated efficiently and the area this covers is sufficient for this number of people, the number of people in Burlington with the average amount of sewage, but now as to the cause for not being in good condition, that can be accounted for possibly in three main ways, first the excessive quantity of sewage that is pumped on the fields, the amount of sewage is way in excess of the sewage to be expected from that number of people. Second, the septic action, the settling tanks are overloaded and consequently the settling does not occur and is not perfect, with the result that the sludge goes out onto the beds and there is trouble, the water does not percolate through and as I mentioned before the action of the forepart of the beds is practically nil.

Q. What is the cause of the excessive amount of sewage which you say comes to this plant to be disposed of?

A. Infiltration.

Q. Does that affect the quantity, that quantity of infiltration affect the efficiency of the disposal works?

A. Yes, it does.

Q. Materially or otherwise?

A. Very materially.

Q. Mr. Webster, in this valuation summary on page one you have allowed one per cent. for legal and other expenses?

A. Yes.

Q. Is that, in your experience, a proper allowance for that purpose?

A. It is. I want to say in that connection that if you will refer to the details in the back of the report you will find the other allowances for overhead. This is just the organization expense, one per cent., but if you will study the report you will find the other overhead charges are allowed in the table at the back of the report and they are allowed for each classification, each account and they are indexed to the left. Sheet two as shown there, account number one, land, the overhead charge is 14.3% and that is made up as per the verticle column, the items off to the left. Sheet number three, account number two, buildings, is shown with a total overhead charge of 25.45%. Account number three collecting system, the overhead charge is 24.26%. Account number four, mechanical equipment, the total overhead charge is 25.6%. Account number five, pump well, septic tank and pipe, 26.6%, made up as shown above.

Q. That overhead charge means what?

A. The overhead charge—charges proper to allow for this work. They include in the cost of the land legal expenses and brokerage. In the case of the other accounts, contingencies and omissions which are very small because of the care with which we have gone into the thing and the data we have from our records. The office watchman and so forth, contractor's cost and contractor's profit which is allowed on contractor's cost, the contractor's price, engineering, supervision, which is taken at five per cent. by this method and which is the usual method and the usual percentage; architect's fees, that occurs on account number two, building; interest at six per cent. and taxes which occurs on land.

Q. Those percentages are figured into your totals?

A. Yes, they are figured into my totals. Then, of course, the one per cent. organization expense shown on sheet number two is overhead of this again.

Cross-examination.

By Mr. Tatem:

Q. Mr. Webster, how long have you made a specialty of sanitary engineering?

A. It is a little difficult to say that; sanitation and sanitary engineering has been a matter of great interest to me from its inception and from the beginning of my practice.

Q. Won't you let us know of some sewerage plant in the state of New Jersey that you have designed or built or superintended the construction of?

A. I have not designed and built any in the state of New Jersey. In our office at the present time we are estimating the plant at Plainfield and Dunnellen.

Q. Suppose we stick to those that you have already built or superintended; just mention those for us, will you?

A. The Asbury estate at Oak Lane three years ago; I revised that and corrected some errors in it and the figures used in this estimate, however, are from the actual contractor's figures used in the state of New Jersey.

Q. I was dealing at the present time with your present experience in regard to this work. It is an extremely technical branch of engineering and I wanted to know just what your personal experience consisted of. As a matter of fact, sanitary engineering is not the phase of engineering work to which you devote your particular attention?

A. Not the principal attention, no, but I devote a fair proportion of my total time to it.

Q. What is the special line to which you devote your particular attention?

A. Power plant work, but I do estimating of bridges and sewers and some water works estimates and sewerage estimates.

Q. Then won't you tell me what actual experience you have had in the last three years with the installation of sewer work in localities similar to that of Burlington?

A. I cannot give you many places.

Q. Give me a few.

A. The work passes through my office and I work on it and the figures are made up and we use them for making calculations of other plants and that is my principal point in this work; to get accurate costs to reproduce the plant and I have those from actual work. If you want to know about this in detail I will be pleased to give it to you.

Q. I would say, Mr. Webster, that the only way you could have knowledge of actual costs would be in your own experience, work that has actually passed through office.

A. This work has passed through my office.

Q. Can't you give us specific reference to some sewer systems of which you have had charge in regard to the construction or installation during the past two or three years?

A. No, I have not actually had charge of any construction work.

Q. Then can you give us reference to some sewer systems where you have been the consulting engineer in regard to the method of treatment or disposal?

A. No, that is a matter of study. I have not actually had plants where I had to design them and had to act as consulting engineer.

Q. Then really, Mr. Webster, the information which you embody in your report is second hand information, isn't it?

A. No, it is not.

Q. If you have had no experience in regard either to the construction of sewer plants or in regard to the method of treatment or disposal, what in regard to the qualification have you to express an opinion in regard to the efficiency of this plant?

A. I have, by study and by observation and I have made calculations as to costs of plants and that all comes from data. There is no engineer, no consulting engineer, that actually constructs every plant about which he has his data. We know that. I dare say Mr. Boardman, your engineer, has used a great many figures of which he himself has never taken any note in arriving at.

Q. I will grant you that, Mr. Webster, but I cannot see how anyone who has had no experience in regard to the construction of plants under similar conditions can testify except theoretically as to what the construction of this plant would cost.

A. That is just exactly what this proposition is; it is cost to reproduce, it is a theoretical proposition based on actual cost figures. That is identical of the case. I have made no extensions to the sewer system in Burlington and that is all the better in certain ways, because I can use average figures to show the cost to reproduce.

Q. But average figures are apt to go very greatly wrong in unusual conditions, are they not?

A. No, because the unusual conditions is what we want to eliminate in arriving at the cost to reproduce. We don't want an unusual figure.

Q. You testify that in your opinion the inefficiency of this plant was due to the fact that it pumped so much water?

A. Yes.

Q. As a matter of fact, the more water a plant pumps the less percentage of putrid matter there will be in it, isn't that so?

A. The less percentage of putrid matter? There might be a less percentage of putrid matter, yes, but the matter might be there to putrify and that is the dangerous part. What has putrified is the matter there to putrify.

Q. As a matter of fact, up until the last few years when the method of chemical treatment has come to the front it was generally accepted that if you could only dispose of your sewage into a large enough body of water the percentage of impure matter would be so small that the sewage would not do any harm?

A. That is a false theory.

Q. That is the theory that they are still going on when they empty their trunk sewers into the Atlantic Ocean?

A. That is a different matter. The ocean is a different matter altogether. No state board of health is concerned very much with the dumping of sewage into the ocean. It is concerned with the dumping of sewage into the streams.

Q. I understood you, Mr. Webster, to say that in your judgment the septic tank at Burlington was not properly constructed?

A. It has not sufficient capacity.

Q. What is the purpose of a septic tank?

A. You are going into a legal proposition. A septic tank and settling tank ——

Q. It is an engineering proposition.

A. The septic tank is—the septic action is another action and the settling action is the action which sewerage authorities really consider as of the greatest importance. The septic action is that action which is set up six or eight weeks after the tank has been in operation and is a more complete bacterial action. Doctor Imhoff most fully developed the tank for carrying on that action and this is covered by patents. That action of those tanks was carried out to practical technic in the Emsen River district in Germany. I understand in the history of the case, one of the engineers of Massachusetts state board of health was the first to promulgate the Imhoff tank and carry on experimental work. The settling action is the action more commonly spoken of and the authorities agree that two hours' action of settling is sufficient and is considered good practice. Our septic or settling tank, and I prefer to call it settling tank, is forty-five feet in diameter and ten feet deep on the drawings or eight feet effective depth. That gives a cubic content of 95,000 gallons, and on the basis of 400,000 gallons a day we have the capacity which will allow about a two hours' settling action if the tank is not unnecessarily filled or too greatly filled with sludge.

Q. As a matter of fact these so-called Imhoff tanks are a comparatively new development, aren't they?

A. I think it was a Massachusetts engineer started their work about twelve years ago, just about the time this plant was installed.

Q. But they have not come into general use until quite recently?

A. Quite recently, yes, and that is the principal type of tank we are estimating on now.

Q. Those tanks were originally I take, invented by a German scientist?

A. No, invented by a Massachusetts man, further experiments carried on by an English engineer and Doctor Imhoff perfected them. They are called Imhoff tanks.

Q. As a matter of fact there have been numerous theories advanced or numerous changes in the accepted methods of treatment of sewage in the last fifteen years, have there not?

A. I don't consider so.

Q. Wouldn't you say that there had been a very great development in sanitary engineering as regards treatment and disposal of sewage in the last fifteen years?

A. Yes, the development is quantitative not altogether scientific. If you mean that, I say, yes; if you mean scientific, I say, no. Bacterial action has been long understood and it has been going on since the time of the first individual.

Q. We have to deal with a practical world. As a matter of fact before a period of twelve or fifteen years ago comparatively little work had been done in the installation of plants to dispose of or treat sewage?

A. Yes, that was a period of agitation and pioneer work.

Q. And really when this plant was put in in 1901, there was generally very much less known as to the methods of treatment or at least the practicability of applying those scientific principles to the actual treatment of the sewage of our towns and cities?

A. Yes, there was less known.

Q. In other words it is during these last dozen years that the great majority of our towns have had to face this question in some practical way?

A. Yes, and a great deal of study and a great deal of care is being given to this proposition and it is a very important department in any engineer's office and it is a department that is growing in my office, not because I want it to grow, although I am interested, but because it is forced upon me.

Q. As I understand your criticism of the condition at the sewer beds in Burlington it is two-fold;

in the first place, in your judgment, if the amount of pumpage per day were not so great the result would be better?

A. The result would be better.

Q. In the second place the plant considering it as a plant which was designed and installed twelve years ago, twelve or thirteen years ago, the plant was in conformity with the accepted practice at that time?

A. It was and did the designing engineer credit at that time.

Q. And the question as to how efficient it is from time to time, or from week to week, we will say, depends largely upon the care which is used in operation?

A. Very largely.

Q. And that accounts for the statement which you made that on the times of your different visits when you had taken samples of the effluent, sometimes you found that the plant was doing its work more efficiently than at others?

A. Yes. Of course that was an advantageous time because it was the end of the dry season and undoubtedly the quantity of water coming through the sewer at that time is smaller than at other times when there would be a greater amount.

Q. In other words, the weather conditions or the general conditions are bound to affect to a greater or less extent?

A. The weather conditions were favorable at last Saturday's examination.

Q. And the plan of that sewer, of course, in order to get good service requires intelligent management and operation?

A. It does.

Mr. Tatem: If your Honor please, if it were possible I would like to have an opportunity to go into in some detail this very extended report of fifteen or twenty pages that Mr. Webster has presented. I don't feel I am prepared to go into that just at this time, if it would be possible to have him recalled for that purpose, because your Honor can see it is impossible to segregate the items to which I want to call attention and on which I particularly wish to examine him.

Commissioner Hillery: It looks to me as though we would have to have another day of this, in view of the fact that the information asked for by Mr. Watts would have to be produced at some future time. In view of that, would there be any objection to asking Mr. Webster to come back at that time?

Witness: I have a suit in Philadelphia, serving as an expert, in which I must be present tomorrow and Friday.

Mr. Palmer: If the commissioner please, I think this, we are ready to close our case with one more witness, a comparatively short examination. The same situation confronted us with reference to the testimony of Mr. Boardman given in his report. We did not feel justified in asking this commission to adjourn this hearing to some other time to give us an opportunity to take that matter up in detail for the purpose of cross-examination and in addition to that there is the situation of the further expense to us if Mr. Webster must come back here. I think the cross-examination of the witness should be concluded today. So far as the information that Mr. Tatem is to produce to us is concerned, we ask for no cross-examination, we are going to assume it is true as presented, it being figures from their books, no question of cross-examining on that at all. It puts that record before the board showing what the connections are that we ask for, the price and so forth. We want the board to have information.

Witness: I could specify some other time, unless you want to do it some other time, or I could specify with Mr. Boardman any time, or you, at any time you might determine.

Mr. Tatem: They have another expert to put on and it will be quite impossible to conclude the hearing today. I would like to call my friend's attention to the fact that up to date more than two-thirds of the entire time of the hearing has been taken up in their cross-examination.

Mr. Palmer: We are prepared to go on.

Mr. Tatem: I am prepared to go on too, perfectly willing to go on. It seems to me it would be disadvantageous. Here is a report, as I say, twenty pages in length which I should have an opportunity to go over and in view of the fact that it will be impossible to conclude the hearing today—of course we can continue for an hour or hour and a half cross-examining this witness as you did ours.

Commissioner Hillery: We could only continue for about twenty or twenty-five minutes. The board's position is this; they desire all the light possible to be thrown on any of these reports in the way submitted, and would therefore prefer that there should be such cross-examination upon the reports as can be had. I am of the opinion that in view of the fact that we cannot conclude today, tnat this request ought to be granted. At the same time if there is anything about any of the reports, if the other side find anything in them, if they desire to recall a witness or for instance the other side desire to recall Mr. Boardman for further examination of his report they ought to be entitled to the same privilege. So that request will be granted and we will fix a day at the conclusion of the hearing when we will adjourn, at which time we will ask the production of this classification of the customers or connectors as they are called, of the sewer company. Do you want to discontinue with this witness now?

Mr. Tatem: I have completed my cross-examination in regard to the physical condition of the plant, the method used and so forth, whether in good condition and efficiently operated. The rest of my cross-examination would have to do with the detail figures embraced in Mr. Webster's report and I say perfectly frankly I think it would be a waste of the commission's time to do that before I had an opportunity to go over and find out the items on which I wish to direct that examination.

Commissioner Hillery: That will be granted. No further questions of Mr. Webster at this time. You will be recalled for the purpose of cross-examination on your report at the next hearing.

Mr. Palmer: In view of that fact we think we would prefer to let the matter go over and present what additional testimony we have at the next hearing.

Commissioner Hillery: Any objection to that?

Mr. Tatem: No objection at all.

Adjourned until Tuesday, October 20th, at State House, Trenton, N. J. at 11.00 A. M.

Trenton, N. J., Tuesday, October 20, 1914.

Before the following commissioners:
R. W. E. Donges, Esq.
T. J. Hillery, Esq.

For petitioner appears J. Fithian Tatem, Esq.
For the objectors, the city of Burlington, appear E. Watts, Esq., and V. C. Palmer, Esq.

Howard J. Webster, resumes the stand for further cross-examination.

Cross-examination.

By Mr. Tatem:

Commissioner Hillery: At the conclusion of the last hearing there was some information asked for of the company. Might it not be just as well to produce it now?

Mr. Tatem: The company was asked to have prepared and presented today a classified list which should show the number of houses having different numbers of connections and which should also show how the new rates would affect those particular houses.

Commissioner Donges: That is following the suggestion of the member of the board of health who was here.

Mr. Tatem: Yes, that is true. We had prepared such a list which shows just what the fixtures are and the number of houses that have that particular number. There are 181 dwellings that only have one kitchen sink, no other fixture. It was emphasized that the large minimum asked in the new schedule was a particular hardship on the small houses. For instance, there are fifty-four houses that have a kitchen sink and one bath tub; ninety houses that have a kitchen sink and one water closet and so on. We have prepared a tabulated list showing all our customers and what would be the charge under the old rate and what the charge under the new rate for those classes of customers would be.

Commissioner Donges: It better be marked.

(Statement showing classification of properties according to fixtures in use, and comparision between present rates and proposed rates received and marked Ex. P6.)

Q. Mr. Webster, referring to your report on what is called sheet four, account number three; you have the estimated reproduction cost of the various sizes of terra cotta pipe. Referring you to the item of eight inch terra cotta pipe from 0 to 6 feet in depth, forty and four-tenths cents per foot; will you kindly let me know the items that enter into the making up of that price?

A. You can turn to table two and the average cost of eight inch pipe throughout a period of five years is .1485, average cost per foot f. o. b. Burlington.

By Commissioner Donges:

Q. What page is that shown on?

A. It is one of the back sheets, table two. The average cost per foot f. o. b. Burlington is .1485. Turn to table five, cost per lineal foot for the following sizes and the third column is eight inch, and then over at the left-hand column you will find the cost of pipe f. o. b. Burlington, from table one is .1485. The hauling and laying in the ditch is added to that and then the total, then the loss due to breakage is added and the joints, material and labor and the cost of pipe per lineal foot laid in trench not including excavation or back filling is found to be .2071. Then turn to table seven D; that refers to the heading, total cost of eight inch pipe in place per lineal foot and the depth in feet, four, five, six, seven, eight, and the various depths are given there. I believe your question was as as 0 to 6 feet, the cost of pipe.

Q. Yes, I took that because it was a large amount.

A. And the items enter into that, the cost of pipe laid in trench exclusive of back filling and the cost of trenching and back filling, table 6A, and losses due to tools, sundries and bad weather, and the total for the various depths as given, plus six per cent. overhead to contractor, the total cost of pipe in place per lineal foot and then the figures at the bottom are the figures used in the valuation.

Q. On what basis have you figured labor in those costs, Mr. Webster?

A. I understand the labor is figured on the actual cost of the labor.

Q. What would be the actual cost of labor for that kind of work per day in Burlington?

A. The cost of eight inch pipe laid 0 to 6 feet deep is forty cents.

Q. You said just a minute ago in response to my question that you understood it was figured on the actual cost of the labor, didn't you?

A. You mean just labor alone? Yes.

Q. Didn't you prepare your figures yourself?

A. No, these figures are only tabulated by me. The figures given in the table are actual labor figures on actual jobs or they were tabulated from construction jobs.

Q. Actual jobs that came under your experience and observation?

A. Not under my experience and observation.

Q. Then the figures really in this report are not the result of your observation and experience at all?

A. Well, as near as I can get at it.

Q. No, but you just stated that they were collected by you, but so far as their actual application to this particular job, you have no knowledge about them.

A. I have knowledge about them to this extent, that this table was prepared by Mr. Vosbury & Remington, of Camden. We have worked some with Mr. Vosbury, I have, and these are the same figures that Mr. Vosbury used in another case he has had before the commission, and I inquired into the way these figures were made up and they are not theoretical figures, but figures of cost based on construction jobs similar to Burlington, so I used these figures and directed Mr. Vosbury to prepare this table and used these figures for the reason that I felt that was the most correct way to get at the cost of the sewer work in Burlington, because these other cases in New Jersey are very similar to the Burlington case and whatever figures I have have been in other states and in different soils, so I felt I was serving the city of Burlington best and your company best by getting as near as possible at the exact costs for similar work in other places.

Q. On what basis of charge per day for labor are these tables computed?

A. On the basis of, I understand, $1.75 a day, but if you want to have the direct testimony on that I can pass that question up and leave someone else answer it.

Q. I was simply trying to find out, Mr. Webster, whether from your own personal experience it was your opinion as an expert that these tables as shown in this report were what it would cost to reproduce the Burlington sewerage plant, but I understand now that these tables were not prepared by you, but that you took these tables prepared by someone else as, in your judgment, best suited to meet the Burlington conditions.

A. Yes, that is it, and I understand the labor employed is at the rate of $1.75 a day.

Q. In making that estimate for the cost of laying this eight inch terra cotta pipe, what allowance have you made for the fact that the greater portion of that pipe is submerged and was laid in water?

A. The estimate allows for a certain amount of water.

Q. But suppose these figures were the same figures as are before the commission in a case now pending before them where the conditions are entirely different and where the pipes are rarely if ever below the water line.

A. But these figures were obtained from plants in which there was water.

Q. As much water as Burlington?

A. That we have to assume and that we have to make allowance for.

Q. You don't have to assume; let us find out where there is a plant which has as much of its pipe, anywhere near the same amount of its pipe below the water level as Burlington has.

A. To begin with, I think none of us know what the water conditions were in Burlington. I was not there and I am sure very few of us were there in a position to observe accurately just what the water conditions were. There has been no testimony—the figures presented to me by your engineer, there is nothing in those figures submitted to me to show what percentage of the pipe was laid, and the sizes of pipe, under water, and the depth at which water was found. That data was not submitted. We are perfectly willing to give you credit for anything done but we have no evidence so far.

Q. Then you would admit that if a substantial part of the pipe had to be laid below the water level it would considerably increase the cost of construction?

A. No, I would not say that, because water is found in nearly all sewer work. It is rarely that water is not found. If quicksand—you did not say that in your question—I would say no. These figures are specific, and water was found in the trenches on which these figures were based.

By Commissioner Donges:

Q. The specific question was whether the presence of water would not increase the cost of laying sewer pipe.

A. Not necessarily, is the answer, not necessarily increase the cost.

By Mr. Tatem:

Q. Then do I understand your testimony as an engineer that it would cost no more to lay a sewer pipe in high ground, above water level, than it would below the water level?

A. It depends on the ground.

Q. Grounds similar to that in Burlington?

A. But these figures do allow water.

Q. Please answer my question.

Commissioner Donges: The question is not about your figures, but about conditions.

(Question read.)

Witness: That depends on the ground and the amount of water.

Q. Would you say, in your opinion as an engineer, that it would be any more expensive to lay sewer pipe in Burlington below the water level than it would be above the water level?

A. Yes, it would be more expensive in Burlington.

Q. About how much would that probably add to the expense?

A. I cannot say unless we would know approximately how deep and the length and I would not want to give an opinion of a percentage basis on any plant unless I had some data.

Q. If fifty per cent. of the pipe in the plant should be below the water level that would materially increase the cost of construction, would it not?

A. Not necessarily.

Q. In Burlington?

A. Not necessarily.

Q. You just stated—the witness has just stated that in Burlington it would, to lay pipe below the water level, because of the condition of the soil, would be more expensive than to lay it above the water level. Now, I ask him the question if fifty per cent. of the system were below the water level, would it not make the system substantially more expensive than if none were below the water level?

A. The chances are it would make it more expensive, but not necessarily so, as I answered before.

By Commissioner Donges:

Q. Did I understand you right when you said that in Burlington laying sewer pipe below water level would increase the cost of such laying in Burlington?

A. Perhaps I am a bit confused about what I am told of conditions there.

Q. Didn't you answer that it was your judgment that the cost would be increased in Burlington as you understand or know whichever it may be, conditions actually exist?

A. Will you repeat the question again, please?

(Question and answer read as follows):

"Q. Would you say in your opinion as an engineer that it would be any more expensive to lay sewer pipe in Burlington below the water level than it would be above the water level?

A. Yes, it would be more expensive in Burlington."

Witness: Yes, that is right.

(Question and answer read as follows):

"Q. If fifty per cent. of the pipe in the plant should be below the water level that would materially increase the cost of construction, would it not?

A. Not necessarily."

Witness: That is right.

By Commissioner Donges:

Q. Do you still adhere to both answers?

A. Yes, I still adhere to both answers, yes.

Q. Will you tell me just how you reconcile the answers? Apparently you agree that the cost would be greater in Burlington to lay pipe below the water level and your answer to the next question is: assume fifty per cent. of the pipe is below water level wouldn't the cost be increased, and you say not necessarily.

A. Not necessarily so. My answer to that is based very largely on the reports of those in Burlington at the time the sewer was laid on certain streets.

Q. If I anticipate your statement now it is that water did not exist—go ahead.

A. The question I have been asked is a general one.

Q. No, it is specific; assuming that it costs more in Burlington to lay pipe under the water level and assuming that fifty per cent. of the pipe is laid under the water level, wouldn't the cost be increased for the laying of pipe under the water level in Burlington, practically a repetition of the question?

A. Practically a repetition. My answer was it would be increased—although the chances are it would be increased, but not necessarily so.

Q. That modifies your answer to the first question as to whether it would increase the cost. You say the probabilities are it would be increased, but not necessarily so.

A. I think that is what I meant to say in the beginning, sorry I did not say it; that was my thought.

By Mr. Tatem:

Q. In your opinion, Mr. Webster, what would be the percentage of difference in cost in Burlington in laying eight inch terra cotta sewer pipe at a depth of six feet where that was below the water level over the cost of laying the same pipe at the same depth where it was above the water level?

A. The precentage of cost then again depends on whether quicksand was struck and just exactly the conditions. It might increase.

By Commissioner Donges:

Q. That was not a factor that was included in the question, quicksand.

(Question read.)

Q. Just assume, Mr. Webster, the conditions that are stated in the question.

A. The cost of laying the pipe can be increased from twenty per cent. to one hundred per cent.

Q. Due solely to the presence of water?

A. Yes.

By Mr. Tatem:

Q. What, in your judgment, would be a fair allowance for a contractor to make for the percentage of difference between laying the pipe referred to in the former question below and above the water level?

A. The difference may be as high as twenty per cent.

Q. As a matter of fact, the contractor would have to take a chance on making his estimate and could only tell definitely how much the added cost would be when he had completed the work.

A. That is the way I feel about it, that is true.

Q. Now, Mr. Webster, what effect so far as cost of construction is concerned would quicksand, the encountering of quicksand have in the laying of a sewer system?

A. The quicksand is one of the most treacherous things to encounter. What is the effect on cost?

Q. Yes.

A. It may increase the cost slightly and may increase it very greatly, depending on preparedness and what you anticipate, or whether you don't anticipate, and the amount of water and conditions, and all those things which are right there at the time. That is one of the greatest variables we have.

Q. The existence of quicksand then is liable to add very materially to the cost of installing a sewer system?

A. The section in which it is found, yes.

Q. And therefore a contractor, in bidding on the installation of such a system would have to make what seemed to him a fair allowance for the probability of encountering quicksand?

A. Yes.

Q. What allowance has been made in the figures which you have submitted, for the quicksand encountered in building the Burlington plant?

A. Strictly speaking, we have allowed no—we have not allowed for quicksand on an engineering basis. We have not assumed a certain amount of certain size would be laid in quicksand and figured accordingly and the reason that was not done was because we had no information as to just what percentage of quicksand, and what size of main and length of main was laid in quicksand.

Q. Would you say that in the table on which you have based your estimates there is any allowance for a substantial part of the Burlington sewers being laid in quicksand?

A. No, not a substantial amount being laid in quicksand, no.

Q. If, in using these same figures in another case before the commission, Mr. Vosbury who compiled them had added ten per cent. for quicksand encountered in a locality where there is not nearly so much quicksand as in Burlington, in your judgment, would it not be fair to add an allowance for quicksand in Burlington?

A. Yes, it would be fair.

Q. And if according to the testimony which is in this case by the engineer who built the plant, that quicksand was encountered in a great deal of the Burlington plant and that the contractor because of that quicksand and unexpected difficult construction lost over nine thousand dollars on his contract, would you not say that there should be some allowance for quicksand in addition to the price per foot which you have put in your report?

A. If I were simply figuring the cost to reproduce I think that would be a fair thing to do. I think if I may be allowed to say, I think it is a question whether that item ought to go into this plan. I think that is a question, but that is for the commission to decide on, not me.

Q. I am not offering to introduce that item. I am merely offering the testimony which is in the case as showing that Burlington offers unforeseen difficulties and unusually expensive construction.

Commissioner Donges: Do I understand you to say that if such conditions were encountered and the expense of laying the sewer pipe were actually increased, that in your judgment such increase in cost ought not to be taken as part of the reproduction cost new?

Witness: It is not a cost, because if the contractor lost nine thousand dollars on his contract, that is a private affair and that should not come on the citizens of Burlington at all.

Commissioner Donges: Your thought is that in agitating what the company actually paid, that would not be an item.

Witness: No, that is it. I consider the evidence the company has a right to present, but the company has not presented it.

Q. We are dealing now with your estimate of reproduction costs and my purpose is to call to your attention the conditions as they exist in Burlington as shown by the testimony and to ask you what in your judgment would be a fair allowance to add to the cost as you have computed it because of those unusually difficult conditions.

A. I don't feel I can answer that question by a percentage. I could answer it if it was shown by those engaged on the work that a certain length of pipe of given size and depth quicksand was encountered. Then I feel we could get at it, but I don't feel like making a lump estimate of the percentage on the total cost of the job. I don't think that is a fair way of doing it. I would like to be excused from answering the question on a percentage basis.

Q. In your report, however, there was no special allowance for those items?

A. No.

Q. As a matter of fact, where quicksand is encountered and where the sewer is below the water level, isn't it necessary, as a rule, to use sheathing timber?

A. Oh, yes.

Q. Wouldn't that add very greatly to the expense?

A. Yes, it would.

Q. I think in your estimate you have allowed—have you allowed for the use of sheathing?

A. Yes, it is in column 6B you will find it, sheathing and shoring 6A and 6B four inch to twelve inch pipe in detail. 6C on the following page, trenching including lost time, if I may be allowed to read the column; depth of trench, trenching including lost time, sheathing and shoring, pumping and baling and cleaning up, the total in the cost of trenching.

Q. As a matter of fact, the sheathing very materially increases the cost of laying the pipe, doesn't it?

A. Yes.

Q. Mr. Webster, I wanted to take up with you your estimate of the cost of manholes. It appears on sheet number five, account number four of your report. The first item is 150 plain and intercepting manholes at an average cost of $33.60 each; could you tell us on what basis that cost is figured?

A. It is based on a depth of six feet, and I don't know just exactly what further data you want. I know that is the cost of the manhole.

Q. Take those plain manholes; how many yards of excavation are there, on the average?

A. I don't—whatever the diameter is and the depth, you get the yards of excavation from that.

Q. You testified, Mr. Webster, that you examined this sewer plant at Burlington and you make a report on it and we see that there are 150 manholes of a certain type. As a matter of fact, your reproduction value on those is very substantially less than the company's engineer's estimate and I am trying to show where the discrepancy is. Surely that manhole consists of certain material and labor that enter into its construction and so I ask what you had allowed, how many yards of excavation and what you had allowed per yard.

A. I don't know that.

Q. On what basis have you figured the cost of concrete which entered into the construction of those manholes, per cubic yard?

A. The cost per cubic yard of the concrete is from six dollars to eight dollars per cubic yard; it might be nine dollars, but I am speaking from memory, I think I could see it here in the estimate.

Q. I notice on table eight in your report that you have concrete four dollars per cubic yard.

A. Here is the table referring to manholes; it shows four dollars per yard for the various depths.

Q. As a matter of fact, Mr. Webster, you just stated that concrete cost from six to eight dollars a yard and might cost nine dollars.

A. Yes, when you take in everything entering into the cost of it, yes; but this table here goes into the various items, and then, of course, just the bare concrete is a lower figure.

Q. Then how much concrete is there in one of those plain manholes?

A. According to the table, for those depths there is half a yard; two dollars is the estimate for concrete.

Q. Mr. Webster, as long as you did not prepare the table, suppose we just discard the table and tell me from your own knowledge.

A. I would rather present Mr. Vosbury, who is qualified to give you the analysis of this table. I think that is the fair thing to do.

Q. Mr. Vosbury is not being examined and we are not asking Mr. Vosbury's opinion.

A. I can only tell you just what the table says here.

Q. Do you know how many bricks would enter into the construction of the plain manholes?

A. No, I don't, not without making calculations for them.

Q. Do you know how many brick it would take to make one of these drop manholes for which you have allowed ——

A. Sixty cents per foot of drop.

Q. I mean how much per manhole; fifty-two dollars each. As a matter of fact, Mr. Webster, your cost that you have testified to and as set out in the report is based upon a computation of which the foundation or the figures, the table of figures which are in the report.

A. Yes, we had to do that.

Q. And not from any special observation as to the conditions as they exist in Burlington?

A. As near as we could get them, that is all. The number of manholes and depth were given us by your engineer and the lengths of pipe and we went up on the job and checked up the number of manholes, did not check up the depth. We checked up the length of the sewer system and checked up approximately the length of pipe as given in your engineer's tables. Of course, we did not go down any place in the manholes to check up the size of the pipe there, merely checked up the size of the pipe as given on your engineer's table and his estimate and then with that rough approximation we went ahead with the estimate and thought that was as fair a way to get at it as we could. There was a difference in the engineer's figures at first and then that was later revised by you and checked up and found the final estimate of length to be correct.

Q. Suppose, Mr. Webster, as a matter of fact, it should appear that the following labor and material entered into the construction of one of those plain manholes—I want to then get your estimate of the cost—ten yards of excavation, 1.8 cubic yards of concrete, 770 brick, three ladder irons, cast iron frame cover and pan, two pieces of flagstone eighteen inches by five feet by two inches thick, in addition to the cost of the labor to instal those; will you give me from that, what in your judgment, would be the cost of reproducing that manhole?

A. That ten yards of excavation would be what depth?

Q. Between five and three-quarters and six feet.

A. And what diameter of opening would that be?

Q. You are familiar with the manholes in Burlington. I have here a blue print showing the construction. I am referring now to the plain manhole.

A. I don't care to take the time to calculate this thing and all the details that enter into it, but the cost by my table is twenty dollars and sixty-five cents or three dollars and forty-four cents a foot.

Q. Mr. Webster, suppose we discard the table. How much would ten cubic yards of excavation cost?

A. Ten cubic yards of excavation, thirty cents a cubic yard, would cost three dollars.

Q. You have testified that concrete is worth from six to eight dollars a yard and may be worth nine dollars; how much would 1.8 yards of concrete cost?

A. Our table here is on the basis of four dollars a yard.

Q. How much would 1.8 yards of concrete cost at ——

A. Seven dollars and twenty cents.

Q. No, at the price you testified to that it was worth, from six dollars to eight dollars a yard? Suppose we take an intermediate price and say seven dollars.

A. Twelve dollars and sixty cents.

Q. How much would 770 brick cost laid in the manhole, including labor and cement for laying them?

A. That would be a little higher; that might be fifteen dollars a thousand, $11.55.

Q. What would the ladder irons cost?

A. Three dollars.

Q. And what would the cover cost, approximately?

A. Ten dollars. I think in our estimate we have allowed twelve dollars, if I am not mistaken.

Q. I think it was twelve dollars, including the pan.

A. I think twelve dollars was considered a liberal figure at the time. The two pieces of flagstone, eighteen inches by five feet by two inches ——

Q. Fifteen square feet in that, as a matter of fact?

A. Fifteen square feet?

Q. Yes, that is what it figures.

A. Is that on the basis of eighteen inches by five feet?

Q. Yes, eighteen inches by five feet; there are two pieces.

A. Fifteen square feet takes in the two pieces?

Q. Yes, seven and a half each.

A. At twelve cents a square foot, six dollars.

Q. If there was only fifteen square feet that would be $1.80 at twelve cents.

A. That is $43.95, $44.00.

Q. Of course, that would be the cost based upon the assumption that those quantities are correct. Now, the intersecting manholes would cost somewhat more, would they not?

A. Yes, they cost more money.

Q. The drop manholes being much deeper would have cost also more?

A. Yes, I think that is allowed for in the table here too. My recollection is those figures we have allowed here for manholes are the same figures we have used on other jobs we have figures. If there is any error I would like to have it pointed out. So far, I don't know of any error in it.

Q. Isn't it possible that those figures are on a three foot manhole and not on a four foot manhole, Mr. Webster?

A. No, I don't think, unless it can be shown so.

Q. Do you know where those figures on the manholes—what job they were taken from, Mr. Webster?

A. No, I do not.

Q. You testified a short time ago that it was impossible to see how much of the Burlington sewer system was really under water. The plans which were given you showed the various levels, did they not?

A. Well, the levels of the lower line are looked at, I did not look at the upper levels; I have no doubt they were given.

Q. If you knew the height of the outfall sewer, there would be no difficulty in computing from those plans just exactly what portion of that pipe was below the water level and what portion was above.

A. The water level is not a fixed point, it varies.

Q. It is pretty nearly a fixed point when you have a tide stream like the Delaware River right alongside of you.

A. No, I don't consider it is. Just because the river is out there does not say we are going to have water in every foot of our trench and so much water, based on engineer's estimates carried right across.

Q. A comparison of those levels and a knowledge of the height of the outfall sewer would enable an engineer to tell with reasonable certainty in how much of that trench he would find water?

A. Yes, he would expect to find water.

Q. Yes, of course.

A. Yes.

Q. On what basis have you figured the cost of timber used in this sewerage system?

A. On page five, sheet five, account four, it is based on thirty dollars per thousand.

Q. What kind of timber does that contemplate using?

A. Well, pine timber or hemlock or spruce.

Q. Do you know of any place you could obtain that timber delivered in the trench at anything like that price?

A. Yes. I had a quotation only yesterday of thirty dollars a thousand—it was not a quotation, but a client was in my office and said the timber quoted him was thirty dollars a thousand.

Q. That would be f. o. b. cars, wouldn't it?

A. Yes.

Q. And it would cost something to take to the trench and something to get it unloaded and something to put it in place and saw it to length.

A. We took this as a fair average. The market price may vary, of course.

Q. As a matter of fact, the average price of timber the last five years, of that character, has been very much above thirty dollars, hasn't it?

A. Not to my knowledge.

Q. Have you any knowledge on the subject?

A. I was just wondering what I could recall about that.

Q. As a matter of fact, Mr. Webster, you do know that at the present time the timber market is extremely low, lower than it has been for a long time, don't you?

A. Yes, it is low.

Q. And you remember now that during the past five years it has been quite impossible to secure the kind of timber that you would have to use for that work at thirty dollars a thousand?

A. No, I don't know that, I don't know that to be a fact at all.

Q. Do you know what the price on cement your tables were based on on Portland cement?

A. I recall seeing it here twenty-five cents a bag.

Q. I think that is right. How many bags in a barrel?

A. Four bags.

Q. And that would be a dollar a barrel?

A. Yes, one dollar a barrel.

Q. In your judgment, can you buy proper quality Portland cement for that work delivered on the work at Burlington for anything like one dollar a barrel?

A. I cannot say just offhand, I don't recall just what the price of cement is. I use a great deal of it too, but I cannot recall the price of it.

Q. The price at the present time is about $1.20 f. o. b., isn't it?

A. I was going to say about $1.20.

Q. As a matter of fact, in making your figures I think you testified a couple of weeks ago that you had really taken the minimum cost, the minimum price.

A. Not the minimum, no. We have made some liberal allowances and in some cases they may be the minimum. We tried to take a fair average price.

Q. Mr. Webster, referring to your report, sheet number five, account number four, on the collecting system you have allowed a depreciation item of sixteen per cent. That is based, I think, on a probable life for that system of seventy-five years, isn't it?

A. Yes, that is right, with an age of twelve years.

Q. On certain other items as appear on sheet nine, account five, embracing the pump well, septic tank and sewage field, you have allowed a depreciation of forty per cent. Will you just state to us why you allowed such a large depreciation on those portions of the plant, as they are permanent structures?

A. If I may refer you to the next sheet number ten, under (X) depreciation is based on a life of thirty years with an age of twelve years. Although the existing plant may be capable of satisfactorily performing its duties at present and for some years in the future, the method now employed is one that is rapidly passing out of use. In view of the rapid advancement in the art of sewage disposal, it is reasonable to assume that the present plant as now in use will have ceased to exist in its present form at the end of twenty years.

Q. Then, as I understand ——

A. That is how the item of forty per cent. depreciation is obtained.

Q. ——that is an allowance for obsolescence, in other words?

A. Yes, I think that is fair to say that.

Q. Your idea is that by the time it has been in thirty years it will have ceased to be of any practical value for the use of the sewer system?

A. Yes.

Q. Then, of course, during that period of time the company should be entitled to earn not only the interest on the investment but this large depreciation charge, should it not?

A. Well, if it can be shown that the company acted to the best of its ability and did the best it was possible to do, I think that would be the proper thing to do.

Q. If the testimony should show that at the time this plant was installed it was up to the accepted standards of sewage disposal and treatment, the company should certainly be allowed to earn in addition to the interest on the investment, such a sum for depreciation or obsolescence as would retire that portion of the plant when its usefulness had ceased?

A. Yes, and then the question of the growth of the city. This part of the sewer system is never allowed to run for a very great length of time. Of course, the whole art is really new and what I have to say is based on the fact that this is a new field of engineering and of sanitary engineering and it is a field in which we have to feel our way. A sewer system, a disposal system is really not built for a very great length of time or a very great increase in population. If the population increases it is figured we must put in another disposal plant. The disposal plant must be operated at its designed capacity and in making up depreciation we felt thirty years was a fair allowance and that the depreciation ought to be based on the twelve years of operation.

Q. Then during that thirty years, if thirty years be the life of the plant, the company in order to earn a fair return would have to provide not only for the interest on investment but for amortizing the entire cost of that portion of the plant during the thirty years?

A. Yes, I think that is true.

Harry M. Herbert, sworn on behalf of objectors.

Direct examination.

By Mr. Watts:

Q. Where do you reside, Mr. Herbert?
A. I live at Bound Brook.
Q. What is your business?
A. Civil engineer, civil and sanitary engineer.

Mr. Tatem: We will admit Mr. Herbert's qualifications.

Mr. Watts: I think they should go on the record.

Q. Have you ever been connected with the state board of health?
A. Yes, sir, I was three years a member of the state board of health and chief of the division of sewerage and water supplies and previous to that I was two years a member of the state sewerage commission which was merged into the state board of health.
Q. Have you had any experience in constructing sewerage systems in this state?
A. Yes, sir; I designed and constructed several sewerage systems.
Q. And disposal plants?
A. And disposal plants.
Q. Are you acquainted with the Burlington sewerage system and disposal plant?
A. I am; I have been there several times.
Q. How long have you known that plant?
A. I have known it intimately since about 1906; the first part of 1906 was the first time I visited it.

Q. How did you know it at that time?

A. I was a member of the state sewerage commission and visited it officially.

Q. Did you make an examination of the plant at that time?

A. I did and I made inspections, several inspections.

Q. In 1906, and afterward?

A. 1906, 7, 8, 9, 10 and 11.

Q. When did you make the last investigation of that plant?

A. It was on October 3d, 1914.

Q. Have you, at the request of the city of Burlington made an appraisement of that plant?

A. I have.

Q. Have you that appraisement with you?

A. Yes, sir.

Q. Will you produce it please?

(Witness produces report.)

Commissioner Donges: Do you offer it?

Mr. Watts: I offer it.

Commissioner Donges: Any objection?

Mr. Tatem: No objection.

(Mr. Herbert's report entitled "Estimated cost of reproducing the Burlington sewerage system, October 5th, 1914," received and marked Ex. O2.)

Witness: I should like to state in beginning that I found that the city of Burlington had no plans or data in regard to the sewerage system and I obtained same from the Burlington Sewerage Company and my estimates have been based on that data. It is the best I could do. I tried to confirm part of it and I found it was all right and Mr. Webster, who was connected with me, I understood, carried on a confirmation in other lines and my estimate has been based on that data. On the last page, the summary, you will find the cost of the real estate was $1620, the collecting system $63,285.43, the pump well $829; the pumping station $1500; pumps, engines, etc., $3,058.-25; septic tank $2,941.93; broad surface irrigation plant $5,193.15; resurfacing streets $2,452.20; material on hand $591.56; tools $223.55; office equipment $273.50; barn and contents $832.25; making a total of $82,800.82, to which I have added engineering and inspection at seven per cent. $5,796, making a total of $88,596.82. Organization expenses at three per cent. amounted to $2,657.90, a total of $91,254.72. Interest during construction for six months at six per cent., $2,737.14, making a grand total of $93,992.36 cost of plant. Then I have allowed for depreciation for the twelve years on the collecting system I have allowed twelve per cent. which is $7,594.25.

By Commissioner Donges:

Q. One per cent. a year?

A. One per cent. a year, yes, sir. I think that is a very fair allowance on it. The disposal plant; on the pump wells, twelve per cent., or one per cent. a year, pumping station twelve per cent., pumps, engines, etc., fifty per cent., septic tank twelve per cent., and filter beds twelve per cent. The pumps and engines I figure wear out in about twenty to twenty-five years anyhow. The rest is good for a century. The filter beds is twelve per cent.

By Mr. Watts:

Q. Referring to the first page of the appraisement and the first item, your valuation of the land or real estate; upon what did you base that?

A. One hundred dollars an acre. I made some inquiry around Burlington and that seemed to be what the people thought it was worth there originally, the land, that is, without the sewer plant on it.

Q. Upon what information did you base your estimate of the cost of the collecting system?

A. On the actual cost of material and labor taking the cost of sewer pipe at seventy-five per cent. off the list price which was the discount up to about ten days ago and then a further discount was made. The cost of cement at a dollar and a half a barrel and labor at a dollar seventy-five a day.

Q. In your estimate of the cost of the collecting system, did you figure the manholes, timber and sheathing or not?

A. In the collecting system, yes, sir. You will find it at the bottom of page two; four drop manholes, ten feet deep and under, sixty-eight dollars. On the top of page three, fifty-three intersection manholes sixty-five dollars and ninety-seven plain manholes at forty-six dollars.

Q. Upon what did you base your estimate of value of the pump well?

A. The pump well, on the figures as the amount—or the figures supplied me by the sewerage company that that is what was used. It was impossible to get to the bottom of the well and see what was in it and the cribbing used and so on, so I had to take their figures and use what I considered a fair price for it. I figured the excavation at fifty cents a yard, taking it above water and below water. It goes down below water there and under water is worth about a dollar a yard, and above worth less, and fifty cents is a fair average for the two. Concrete I have figured at eight dollars a yard which is a fair price for it, actual price, and bricks at ten dollars a thousand; cement at a dollar and a half a barrel and sand at a dollar a yard, laying of bricks six dollars. The items are all given there.

Q. Upon what, Mr. Herbert, did you base your estimate of the value of the pumping station?

A. The size of the building, and I finished a similar building, not quite as large, just completed it within the last two weeks and I had a pretty good line to go on.

Q. And the contents of the pumping station, how did you arrive at their valuation?

A. The prices of the engines and pumps, I asked Mr. Webster to get the price of those in Philadelphia and those were the figures he gave me. The other items I was more or less familiar with. Where I did not know I endeavored to find out the prices, the actual prices at the present time and in most of them I was familiar with the cost of them.

Q. Do you know about the cost of the construction of septic tanks, do you?

A. The septic tank, I have seen the plan of it and I know the present condition of the tank and I have seen the blue print of the original drawings. That is on high ground and the excavation is dry there, therefore I allowed thirty cents instead of fifty cents as I did for the pump well.

Q. Upon what did you base your estimate as to the value of the irrigation plant?

A. Well, on the same basis that I did the rest of the work. That is, the sand and cement and pipe and so on, it is all on the same basis as for the collecting system and the excavation and so on.

Q. They are all matters of which you have knowledge of the cost?

A. Yes, I am familiar with it because I am doing the work.

Q. The same thing as to the resurfacing of the streets?

A. The resurfacing of the streets, I took the figures given me by the sewerage company as the number of square feet and I ascertained as nearly as I could what the work was worth.

Q. And as to materials and equipment on hand?

A. The equipment on hand, where I knew the price of materials I used it and where I did not I obtained it from the other side, what they paid for it.

Q. As to the office equipment?

A. That is the same way.

Q. As to the barn and farming implements and so forth?

A. I can form a pretty good estimate on those.

By Commissioner Donges:

Q. Your quantities agree with those given by Mr. Boardman?

A. Yes.

Q. And the same that Mr. Webster showed?

A. Those were quantities they furnished, they gave me.

By Mr. Watts:

Q. Mr. Herbert, will you describe to the board the disposal plant at Burlington, the matter of its construction and operation?

A. The plant is what is known as a septic tank and broad irrigation. The sewage is collected throughout the city and passes down through a twenty-four inch main to a brick pump well in the meadow from which point it is pumped up on the hill through a septic tank. There it is held in detention several hours, passes through with a very slow flow, velocity, and then is discharged through a smaller tank over a weir where it comes in contact with the air. The smaller chamber has four outlets each one leading to a separate bed. At the upper end of the bed where the sewage is discharged there is a brick carrier to carry the sewage along and discharge it out evenly over the beds. Then it passes through a pile of, a coating of broken stone and brick bats, receives more or less straining and from there out onto the beds which are on the side hill, but it flows down to the lower end, that which does not come through into the underdrains flows down to the lower end and stays there until it finds its way through. These beds are under underdrained, about one-third of the lower end of them have underdrains for collecting the effluent after it passes through the sand. The beds are very fine sand and originally they used hassocks, dug up hassocks in the meadow there and turned them upside down and filled around them, and we found that the burrowing animals had a tendency to come up alongside the hassocks and make holes through them and let the sewage run down into the underdrains without any straining through the sand.

Q. While you were a member of the state sewerage commission and the state board of health were any complaints made against this plant in Burlington?

A. Yes, sir.

Q. As to its efficiency?

A. Yes, sir. There were several complaints made. The local board of health, through Mr. Carter, made complaints before the commission in 1906, 1907, 1908 and since then. In fact, all the while I was connected with the board and commission, the state board of health and commission.

Q. Following those complaints was any investigation made by the commission of the plant?

A. Yes, sir, we investigated them, all of them.

Q. Did you make any investigation yourself?

A. I did. I was appointed at one time, I was a committee of two, I was chairman and Doctor Jacobson was a member of the committee and we went down and held a hearing at Burlington in which the sewerage company and the citizens appeared, the local board of health and some of the citizens. We also examined the beds at that time and made a careful inspection of them and afterwards I went down as a committee of one, the same year I think it was, twice—I can tell by referring to the book. In 1906, the pipe was broken, they complained that the pipe leading to the pump well, the main intercepting sewer further down leading to the pump well was broken where it crossed the city ditch and the sewage was being discharged into the city ditch and we found that this was so. I tested it out by closing down the pumps, I had them stop pumping and the sewage would rise in the pipes and come out and flow into the ditch and when they would start pumping again it would recede. The crack was in the top of the pipe. Then on December 10th, 1907, on complaint of the local board of health that the sewage was being backed up into the pipes into the town so that it flooded some of the cellars, I went down and investigated that and found they had plugged the twenty-four inch pipe and one of the manholes down near the pumping station and the water was flowing out over the top of the manhole and necessarily backed up some distance into the pipe before it raised high enough to overflow the manhole. We ordered them to relieve that in twenty-four hours, which I believe they did.

Q. Were any reports of those matters or investigations made to the state board?

A. I reported them.

Q. Were they reported in writing?

A. They were in writing, yes.

Q. Have you those reports now in your possession?

A. No, I have not. I have copies of them in the annual reports of the board.

Q. Will you produce the copies of those annual reports?

A. Yes, sir.

Q. Just state, Mr. Herbert, what those reports show, won't you?

A. "On December 17th, 1906, a renewed complaint was received from the board of health of the city of Burlington that repairs to the sewers of the Burlington Sewer Company had not been effected and that sewage was still being permitted to escape into the city ditch. An answer was also received from the Burlington Sewer Company, stating that repairs were being made by it; that some leakage still continued, but not constant nor enlarged volume, because it was not desired to disturb the main sewer at that time of the year.

At a meeting held August 1st, 1907, a communication was received from Doctor Newcand, sanitary inspector of the board of health of the city of Burlington, complaining that the Burlington Sewer Company has failed to repair a break in its main sewer. At the same meeting Commissioners Herbert and Jacobson were appointed a committee to investigate the complaint against the Burlington Sewer Company.

At a meeting of the commission held April 22d, 1907, Messrs. Herbert and Jacobson reported that as a committee to investigate the complaint of the board of health of the city of Burlington against the Burlington Sewer Company they had visited the city of Burlington on April 3d."

Q. I understood you to state August 1st, 1907; was that April 1st?

A. April 3d.

Q. When the complaint was made?

A. The original complaint was made on December 17th, 1906. That was a renewal of the complaint.

Q. What date was that?

A. That was December 17th, 1906, was the renewal of the complaint.

Q. When was the next complaint made?

A. The next complaint was by Doctor Newcand on April 1st, 1907. On April 3d we went to Burlington and conferred with the representatives of the city of Burlington and of the Burlington Sewer Company, that the representatives of the local board of health stated there was a break in the main outlet sewer pipe from which sewage ran into the city ditch and thence into the back bay and that in times of high water this flowed back over a large part of the city causing a nuisance; that the septic tank and filter beds were not properly cared for and that the odor from them could at times be detected in parts of the city; that the septic tank overflowed on the filter beds; that pumping was carried on irregularly and inefficiently; that the daily flow of sewage was from six hundred thousand to eight hundred thousand gallons, a large portion of it being due to infiltration of ground water caused by the poor construction of the joints in the mains.

The representatives of the Burlington Sewer Company stated that they had used their best endeavors to stop the leak in the main sewer and had succeeded in doing so except at one point, where they had as yet been unable to remedy the trouble owing to quicksand through which the sewer passed; that the pump well was about twelve by eighteen feet and that the pumping was never discontinued long enough to overflow the well; that there was about 850 connections with the sewerage system; that the average daily flow was about 550,000 gallons; that the filter beds had been placed in good condition last fall, but that according to custom no work had been done on them during the winter and they were consequently not in such good condition at the present time.

The committee visited the plant and found that between the city ditch and the pump house the sewer had been uncovered for about thirty feet, the excavation being about five feet in width and the top of the pipe being about three feet below the original surface of the ground; that the excavation was separated from the city ditch by an earthen dyke, the top of which was at the same elevation as the ground surface; that the excavation showed that the pipe was laid through live quicksand; that the pipe had recently been encased in concrete but that there was apparently a break in the bottom of the pipe at one joint; that the exposed bottom and sides of the trench were strongly impregnated with sewage, and that water was standing in the trench to about one-third of the depth of the pipe; that when pumping was stopped for about twenty minutes the sewage rose rapidly in the trench showing considerable leakage from the pipe; that this was reduced again when the pumping was resumed; that the septic tank was active, but that owing to two overflow pipes placed in the top of the tank the scum was broken and carried off; that the filter beds were covered with a stubble of grass of weeds, that the effluent from the tank, instead of spreading over the surface of the beds was flowing through channels to holes in the beds from whence it found its way by subterranean channels to the city ditch, and that only a few of the underdrains were working. The committee recommended that the Burlington Sewer Company be required to pump continually until the break in the main sewer was repaired and the leakage into the city ditch stopped; to permanently close the two overflow pipes in the septic tank, to cause the filter beds to be plowed and harrowed and levelled to grade; to cause the underdrains to be examined at several points and if they should be found to be clogged, to have them relaid at an increased depth, and to cause them to be covered with at least three inches of cinders or course gravel.

This report of the committee was adopted by the commission and the secretary was directed to notify the Burlington Sewer Company that the commission required that the repairs and improvements recommended in the report of the committee be made.

At a meeting of the commission held June 20th, 1907, Commissioner Herbert reported that he had inspected the sewage disposal plant of the Burlington Sewer Company on June 18th, 1907, and found that nothing had been done to repair the leak in the main outlet pipe, that the sewage was being pumped only during the day and that at night it escaped from the broken pipe into the city ditch that a number of underdrains had been relaid and appeared to be doing good work, with the exception of two or three in the northerly bed in which bed there was a pool of sewage which was running through two subterranean channels to the city ditch; that a small dyke had been thrown up on the lower edge of the southern bed and that several holes in the bed observed at the last inspection had been filled, but that the beds had not been plowed and levelled and that they were covered with a rank growth of grass and weeds, the sewage flowing in rivulets instead of spreading over the surface of the beds; that the septic tank was covered with scum, except about ten feet square; that this was due to the stopping of the two overflow pipes, but that this had only been done by a temporary arrangement instead of being permanently closed; that he recommended that these pipes be either permanently closed with cement or extended so that the inlets would be three feet below the surface of the sewage in the tank, and that the commission require the Burlington Sewer Company to immediately repair the broken main and renovate the filter beds. The secretary was directed to notify the Burlington Sewer Company that the commission require that within ten days it comply with the requirements heretofore made for the improvement of the plant and that unless this was done the commission would take such action as the law provides to secure compliance with the requirements or to prevent the operation of the sewage disposal plant. The secretary was also directed to notify the Burlington board of health of the action taken by the commission.

Commissioner Donges: That appears in the report of ——

Witness: The report of the state sewerage commission for the year 1907.

By Commissioner Donges:

Q. At what page?

A. At page 70.

Q. Any report subsequent to that time?

A. Yes, 1908. "At a meeting of the commission held December 5th, 1907, F. S. Carter, a member of the board of health of the city of Burlington, consulted with the commission in relation to the sewage disposal plant of the Burlington Sewer Company. He stated that the company had not properly repaired the filter beds of the sewage disposal plant; that it had not been successful in repairing the breaks in the main sewer leading to the disposal plant; that pumping was not done regularly; that the sewerage backed up in the system, overflowing into some cellars and that a large amount of sewage had been discharged on the meadows in the southerly section of the town, causing considerable nuisance. Commissioner Herbert was appointed a committee of one to examine the sewerage system and sewage disposal plant of the Burlington Sewerage Company and to make such requirements on behalf of the commission for the improvement of the disposal plant as might be necessary."

At a meeting of the commission held December 12, 1907, Commissioner Herbert reported as a committee of one to examine the sewerage system and sewerage disposal plant of the Burlington Sewer Company, that he had visited Burlington and made an examination of the sewerage system and disposal plant on Tuesday, December 10th, 1907; that he found that the main sewer had been plugged in order that the leaking joints might be cemented and that the sewage was overflowing from a manhole to the meadows in the lower section of the city causing a considerable nuisance; that the pumps were idle and that the contents of the septic tank had been permitted to flow back into the sump well and overflowed at that point; that the beds were not in proper repair and not properly cleaned; that no work was being done at the time of his visit because of rain and because it was desired to permit the cemented joints to harden, that he had instructed the sewerage company that the plug must be removed from the sewer within twenty-four hours; that he would reinspect the plant and make a further report to the commission in relation to the condition of the plant.

At a meeting of the commission held December 19th, 1907, a communication from Samuel G. Shaw, superintendent of the Burlington Sewerage Company, stating that the plug had been removed from the main sewer of that company in accordance with the requirement made by Commissioner Herbert at the time of his inspection of the plant, was received and filed.

On July 8th an inspection was made, of which the following is a report: "That is rather a long report and it is the same thing, practically that."

Q. State the page where that is to be found.

A. The pipe had been repaired by that time, but they were complaining about the beds and the general state of the plant.

Q. State the pages where that is to be found.

A. That is the state board of health report for 1908, page 333.

Q. Was there any report after that time?

A. Yes, sir.

Q. When?

A. Part of this was the report of the state sewerage commission that was merged into the state board of health and carried on under the division of sewerage and water supplies. Everything down to May 8th, 1908, was under the state sewerage commission and then after that it was carried on under the division of sewerage and water supplies of the state board of health.

Q. What was there after that time, May, 1908?
A. There was a report made on July 8th, 1908.
Q. What page is that?
A. On the same page, follows right with it.
Q. What was there after the one made in July, 1908?
A. There was a report on the condition in 1909.
Q. Give the book and page where that is to be found.
A. The 1909 report of the state board of health, page 230, report on Burlington sewerage plant.
Q. Was there anything after 1909?
A. 1911.

Mr. Tatem: I think we ought at least to have the substance of these reports. It means nothing to simply state that a report on the Burlington Sewerage Company ——

Mr. Watts: I was going to offer them in evidence.

Commissioner Donges: I take it Mr. Watts is going to offer copies of the reports themselves.

Mr. Watts: Yes, the copies we have here, or if objected to, the originals.

Witness: The 1911, report of the state board of health, page 307, in which they were ordered to put the disposal plant in a satisfactory condition. 1912, on page 326, report on condition of the plant. 1913, on page 461, reports improvements contemplated in the plant. Page 513 of the same report reports plans were filed for a sludge bed.

Q. Anything after 1912?

A. 1913, I just gave you. There wasn't anything in 1910, as I remember it. The state censor cut out the report in 1910 to reduce the printing expenses.

Q. Will you refer to the report of 1913 and read to the commission from page 461?

A. "The sewerage disposal plant of the Burlington Sewerage Company which serves the city of Burlington, which consists of pump well, pumps, settling tank and land filters, is described in the state board of health report of 1909 on page 230. Inspections were made January 14th, February 27th, May 2d, June 16th and 26th, August 22d, and September 10th, 1913. During the spring and early part of the summer the offensive conditions of the past few years continued to exist; large quantities of sewage being pounded at the lower ends of the land filters. During August, however, changes were made in bed number 4, in accordance with the recommendations repeatedly made by this department. The upper portion of the bed was plowed and harrowed and three lines of underdrains were carried one hundred and fifty feet further up the slope. The results were so satisfactory that the other beds are being changed in like manner. Putrescibility samples have stood up on an average for eleven days, the minimum being six days and the maximum in excess of fourteen days."

Q. Will you read to the board from the report of 1912, page 326?

A. "The sewage disposal plant serving the city of Burlington consisting of settling tank and land filters has been described in state board of health report for 1909 page 230. Inspections were made November 5th, December 18th, 1911, March 1st, April 8th, May 24th, July 11th, September 4th, October 19th, and each time the plant was reported in a very unsatisfactory condition. The stone barriers at the upper ends of the beds were badly clogged, the filters were in very poor condition and breaks through to the underdrains allowed unpurified sewage to escape from the surface of the beds to the effluent channel. Although the company is under orders to put their plant in good condition and promises of improvements have been made, little has been done. They have, however, replaced one of the old pumps with a new and larger one and at the October inspection the plant was found in a little better condition but still far from satisfactory and giving very poor results. At a meeting of the board held August 27th, 1912, plans for the extension of the sewer system of Burlington were approved."

Mr. Watts: We will offer those copies in evidence.

Commissioner Donges: They will be admitted; so much of the reports as refer to the Burlington Sewerage Company. I think it would be well to furnish copies of those reports only, that is to say, of the reports on the Burlington Sewerage Company.

Mr. Watts: Yes, sir.

Commissioner Donges: You can submit typewritten copies of so much of the report as is pertinent. They will be marked when received.

Q. Mr. Herbert, what is the estimated amount of sewage delivered to the Burlington system?

A. I did not have to make any gaugings of the flow of the sewage but I got a rough estimate from the water company, or the water department, in which they gave me the annual output for the year 1913 as 1,051,439 gallons per day average and they have 2,180 connections. From this I find that allowing the same for each connection it would give an average of 482.3 gallons per water connection. There are 1248 sewer connections and multiplying the 1248 by 482.3 gallons of water which goes into the tap, would give you a discharge into the sewer of 601, 910 gallons per day. Of course, there is some of this would not find its way into the sewer and that is rather remote, but it is the nearest, and I believe that is pretty close to the amount of sewerage that is being discharged there. It is a larger amount than is actually finding its way, but it is within ten per cent. anyhow.

By Commissioner Donges:

Q. Do you think approximately 600,000 gallons?

A. 600,000 gallons of sewage per day.

By Mr. Watts:

Q. Does ground or surface water find its way into the sewerage system in Burlington?

A. Yes, sir, there is no question.

Q. In what manner?

A. It finds its way through the joints of the pipe of the collecting system and also through the joints of the laterals leading into the houses. It is a wet ground there and the joints will fill up there and infiltrate more or less unless they are strictly waterproof joints and even those under pressure will give a little water.

Q. Can you give any estimate of how much water finds its way into the Burlington sewerage system in that way?

A. No, sir, I cannot.

By Commissioner Donges:

Q. What would you expect—what amount or percentage of infiltration would you expect to find in a well constructed sewer system?

A. At the present time you could build a collecting system that would be almost free from infiltration but it would be an expensive matter, probably would mean an increase of cost of twenty-five per cent. on laying your pipes, probably. You would have to use your waterproof cement and make all your joints with the utmost care and double them.

Q. In a system constructed as this collecting system is if properly constructed, I mean, good engineering and good workmanship and good material; what percentage of infiltration would you expect to find?

A. That is a hard question to answer. It depends on the diameter of your pipes in a great measure. To illustrate, you may have a large pipe and very little sewage going through it, very little connection, and that pipe would take more ground water in than an eight inch pipe would, because there is more surface of the cement joint exposed to the wet ground and you have to take into consideration the diameter of the pipe and the amount of sewage going through, but in a system like Burlington, built at that time, I should say that if one-quarter of the sewage was ground water the system had been fairly well constructed.

Q. How many gallons per mile? I think some reference to the quantity was made.

A. The tests that have been carried on show quite a variation in that and they run from six thousand gallons a mile up as high as eighty thousand on pipe sewers and I think that there is one place in Massachusetts where they got it down to about two thousand gallons a mile, but it was laid with the utmost care. There is an account of that in the proceedings of the American Society of Civil Engineers. I have it in my satchel; it would be a matter of interest.

Mr. Watts: Do you wish that produced?

Commissioner Donges: No.

By Mr. Watts:

Q. Mr. Herbert, from your observation and knowledge of this plant would you say that it has been during its years of operation, an efficient plant?

A. It has not been operated in the most efficient manner. What has been the result of operating the plant in the inefficient manner in which you say it has been operated, upon the treatment of the sewage disposed of?

A. For the first three years I knew the plant there was practically little or no septic action in the tank. The pipes were open, probably points at the top of it which allowed the sewage to flow out to the top and no scum formed on it and it did not get the proper septic action in there. It came out on the beds in that state, and if the beds had been kept loosened up so the sewage could have percolated through, it would probably have given you a fair effluent, but the beds were clogged, they were overgrown with weeds, tomato vines, raised everything on them almost, and the sewage ran down over it in channels; instead of spreading out over it in a sheet it cut little channels through and confined itself to a very narrow space and, of course, the rest of the bed was useless. It would run down to the lower end and there it would stand impounded until it became putrid, stunk. Some of it would get away through these holes, but a low spot with no hole in it, there the sewage would stand. The top of the beds were not cleaned and harrowed properly. I would like to say, after a bed has been in operation for awhile a sort of skin forms over it and that is almost impervious to water. It is caused by soapy matter and grease and so on in the sewage, and if water is drawn off of it and it is allowed to stand in the sun for a few days, the skin curls up and is scraped off and the sewage is allowed to come in contact with the fresh sand again and passes on through. The bed needs to be worked up, harrowed over and cultivated, keep it loosened up, especially with the fine sand. If it was a very course sand it would not need so much attention.

Q. When you made your visits to the sewerage plant, did you smell any loud and obnoxious odors arising from the plant?

A. Oh, yes, at times it was very perceptible and at others not so much.

Q. Was that in a greater degree than it should be for such a plant if run in an efficient manner?

A. At times it was.

Cross-examination.

By Mr. Tatem:

Q. Mr. Herbert, during these three years you speak of, the first three years when there was little or no septic action, the company was not under the management of those who are at present in control, was it?

A. No, sir, you have another superintendent now, I believe. I think Mr. Shaw was superintendent at that time, if I remember properly.

Q. Mr. Ubil was not superintendent at that time, was he?

A. No, sir.

Q. As a matter of fact, during at least a portion of that time Mr. Kent was in control of the company?

A. Yes, Mr. Kent was.

Q. Would you say that during the last three or four years the plant had not been operated with reasonable efficiency?

A. I should say three years ago it was not, and since then I have seen very little of the plant until recently and my last visit to the plant, I should say vast improvements were made in the operation of it.

Q. Vast improvements have been made in the operation?

A. Yes, sir.

Q. In other words, during the past three or four years, that is, from the time when you visited it before up to the present time great improvements in operation have been made?

A. Yes, sir.

Q. And would you say today that it was operated with reasonable efficiency considering the character of the plant?

A. Yes, sir.

Q. What would you say, Mr. Herbert, what in your judgment would be the probably annual expense of the operation of such a plant as the Burlington plant including an allowance of $700 for taxes and insurance?

A. No pay to officials, higher officials?

Q. No.

A. Allowing for superintendent?

Q. Eliminate every expense that you might say was overhead administration; simply the superintendent, the clerical work, the actual labor performed, fuel for pumping and so on.

A. Roughly speaking, about $5,000.

Q. Owing to the large amount of sewage pumped the cost for gasoline for pumping during the past year was $2,000, and also due to the very high price of gasoline during the last year; would you say that considering that and including taxes and insurance that an operating expense of sixty-four hundred dollars was about fair?

A. Yes, under those conditions.

Q. The improvements which you notice have been made since you visited the plant several years ago would call for an outlay of considerable money, would they not?

A. Well, not so very much; the work had been done gradually.

Q. Really, the criticism of the previous years was that the plant did not receive intelligent care and attention in regard to its operation rather than anything defect in the system itself.

A. I think that with a good superintendent there you could have gotten much better results from it ——

Q. That is shown by the present ——

A. —— without spending very much more money. The same as running a farm in good shape and running it in poor.

Q. As a matter of fact, Mr. Herbert, the question of infiltration in sewer systems varies so greatly that it is perfectly impossible to lay down any rule, isn't it?

A. Yes, sir, there is a wide variation in it.

Q. In some cases it goes as high as fifty or even one hundred thousand gallons a mile, I believe.

A. I stated that in some instances eighty thousand, as I remember it.

Q. You stated that at the present time it would be possible to build a system which would be very nearly free from infiltration but that that would entail considerable additional expense.

A. On the cost of the pipe laying, yes.

Q. So far as the Burlington system is concerned a system which has been in for ten or twelve years, a great deal of that infiltration comes in through the joints of the laterals, does it not?

A. No doubt some does, but I don't think most of it does.

Q. In order to make the system tight you would have to relay those laterals as well as the sewer mains?

A. Go over the entire piping.

Commissioner Donges: We will discontinue at this time.

Adjourned until Thursday, October 22, 1914, at the State House, Trenton, N. J., at 10.30 o'clock A. M.

Trenton, N. J., October 22, 1914.

Before the following commissioners:
R. W. E. Donges, Esq.
T. J. Hillery, Esq.
J. J. Treacy, Esq.

For the petitioner appears J. Fithian Tatem, Esq.
For the objectors appear E. Watts, Esq., and V. C. Palmer, Esq.

H. M. Herbert, resumes the stand.

Cross-examination. (Continued.)

By Mr. Tatem:

Q. Mr. Herbert, from your experience as a sanitary engineer would you say that Burlington, because of the local conditions, was rather an expensive place in which to instal a sewer system?

A. Yes, for the collecting system, it is.

Q. And what are the elements that make it more expensive than normal conditions?

A. Because it is low and wet, a great deal of surface water there.

Q. Because of its relation to the water levels it would be probable that a very considerable portion of the collecting system would be below the water line, would it not?

A. I should say so, yes.

Q. Would you also expect to find more or less quicksand in such a condition as exists in Burlington?

A. Quicksand is an unknown quantity. You strike it where least expected and sometimes when you expect it you don't find it, but you are liable to strike it, and I know you have quicksand in part of the system because I have seen it, that is, down near the pumping station.

Q. In making your estimate as to the cost of installing that collecting system you have made, I suppose, what you consider a reasonable allowance for such contingencies?

A. I allowed for excavation under water on the entire system what I thought was reasonable.

By Mr. Watts:

Q. Mr. Herbert, would you say that the sewerage could be collected and disposed of by a smaller plant than that plant in Burlington?

A. Yes, the plant could be smaller.

Q. How much smaller plant would dispose, collect and dispose of the sewerage in Burlington, in your opinion?

A. I should say you could reduce it one-third by keeping it up in good order, keeping the beds in first-class order you could get along with one-third less area.

By Commissioner Donges:

Q. And do the work efficiently?

A. Yes, sir.

By Mr. Tatem:

Q. The question of the size, as I understand, refers now to the size of the disposal beds.

A. The size of the disposal beds, ——

Q. You don't mean to say, considering the condition, the pipes are too large, for instance?

A. ——Taking the present amount of sewerage that is being disposed of.

By Mr. Watts:

Q. Might the sewerage which is collected there be collected by pipe which is smaller than those in that system?

A. I wouldn't advise it. At the present time some of them might possibly be made a little smaller, but would have to be enlarged later on as the connections increase and I understand ——

Q. But at the present time the pipes are too large to do the work?

A. Not from a good engineering point of view. We always allow for an increase in the flow and under the maximum conditions for the pipe to flow one-half full. We always figure on a flow of one-half the pipe. That allows for any sudden rush that may come upon the sewers such as in time of an unusual amount of water being used and if the system leaks, your collecting system leaks, it allows for a rainy season. I should not say your pipe lines were too large there.

By Commissioner Donges:

Q. Would you say they were no larger than the needs of the community demanded?

A. I should say from an engineering point of view they were properly designed.

By Commissioner Hillery:

Q. The future is always anticipated somewhat in all plants of that kind?

A. Yes, sir. The entire city is not connected with the sewerage system yet, and if all the houses were connected I think the plant would take care of it nicely and that is about as far as it would go.

By Commissioner Donges:

Q. The question that was asked is as to the present needs; whether the plant both in its distribution and its disposal features is larger than is presently needed?

A. The collecting system is not larger, the disposal plant could be reduced one-third.

Q. And still do the work efficiently?

A. Yes, sir, if properly—if kept in proper condition.

By Mr. Tatem:

Q. Mr. Herbert, as a matter of fact, it is neither good engineering nor good business to put in a plant such as a sewer system, collecting system, just large enough to meet the immediate requirements, is it?

A. The collecting system should be large enough to take care of the community when it is all built up. I always figure on a collecting system that way, allowing for a house on twenty-five feet of land and five people to the house, is the basis I figure on in designing my pipe system. As far as the disposal plant goes, that can be increased at any time. It is wise to acquire land, but there is no need of building the beds until it becomes necessary, because that is a matter that can be done as is required.

By Commissioner Donges:

Q. That is from a business side?

A. Yes, sir.

Q. You are viewing it now from the business side only, the engineer's viewpoint?

A. From the engineering viewpoint.

Q. Not taking into consideration the question which evidently is raised by Mr. Watts and that is whether the present consumers, users of the service, ought to pay for the plant installed for future needs.

A. Well, that is a matter of judgment.

By Mr. Watts:

Q. How far in the future should that be provided for?

A. As the plant is supposed to last one hundred years, it should be provided for one hundred years; figuring on depreciation at one per cent.

By Mr. Tatem:

Q. Mr. Herbert, in the summary of your report the disposal beds, or irrigation plant, the total reproduction cost is $5,193, isn't it?

A. Yes, sir.

Q. And that is the only item which would be reduced if the present size disposal beds had not been put in operation?

A. The septic tank, there would have been a reduction in that.

Q. The two items together amount to eight thousand dollars?

A. Yes, sir, about that.

Q. And they might have been, in your judgment, say one-third smaller than they are now?

A. Yes, sir.

Q. What difference would you say then that that would probably make in the construction of those items?

A. Difference in construction?

Q. Difference in the construction cost.

A. It would be one-third, practically one-third less.

Q. It probably would not run quite one-third, would it?

A. It might not be quite that, but very nearly.

Mr. Watts: That closes our case, excepting we want to offer the ordinances of the city of Burlington which bear on the sewerage company's franchise.

Mr. Tatem: No objection to that, particularly as the ordinance obliged us to put in this kind of plant with eight-inch pipe, nothing less than eight-inch pipe, and so forth.

Commissioner Donges: That will be admitted and you will furnish copies.

Commissioner Donges: Are you prepared now to furnish copies of such portions of the annual reports of the state sewerage commission and board of health as were referred to by Mr. Herbert at the last session?

Mr. Watts: Not prepared at this time, but will do so very shortly.

May it please the board, I think that all the portions of those reports to which you referred to were copied into the record. Does the board desire additional copies?

Commissioner Donges: Those not in the record.

Mr. Watts: We will furnish copies of all the reports then.

F. E. Daniels, sworn on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Mr. Daniels, what position do you occupy with the state board of health?

A. Director of water and sewerage inspection.

Q. How long have you been connected with the board?

A. Since June, 1908.

Q. And during that period, has it been a part of your duty to have charge and supervision of the inspection of sewer plants in the state?

A. It has.

Q. As a part of your duty, have you had occasion to inspect or investigate the conditions at the Burlington Sewerage Company's plant?

A. Yes.

Q. Will you kindly state to the commission what you have found the conditions there and how the condition of the plant is at present, in what condition the plant is at present.

Mr. Palmer: The time of his inspection should be shown.

Mr. Tatem: He said from 1908 to the present time.

Mr. Palmer: In giving his answer let him give it according to the date.

A. I cannot recall each inspection date nor can I recall the exact condition found at that time. The results of my reports, however, are on file in the state board of health, although I haven't them here. I can only answer that question in a general way.

Q. You just answered it. Tell us the results of your investigation and inspection in a general way.

A. Covering that whole period?

Q. Yes, I think so.

A. I first found the plant in a condition which needed improvement. The banks occasionally broke through as a result of some burrowing animal and the beds were covered with a dense growth of vegetation, especially on the upper two-thirds of the ground where heavy grass and weeds were present. The lower one-third of the ground was mostly marshy and contained large plants such as swamp cabbage and other marshy plants. The ground in that section was underlaid with a sort of peat formation. That condition existed for quite some time and repeated efforts were made both on my part and on the part of official actions from our board to get the company to make improvements and constant effort seemed to be being carried on by the company towards preventing these outbreaks, as I before mentioned, of the unpurified sewage breaking through into the ditch. The prevention of that was done mainly by enlarging and building up the dykes or banks at the back of the lower parts of the fields. Those banks now are fully three or four times the width that I found them on my first inspection and possibly three or four or five times the height and very rarely can I ever find any indication of a burrowing animal breaking through now. With the exception of these defects, the plant was delivering an effluent which usually stood a pretty severe test on an analysis so that it was practically impossible for the state board to go into the Court of Chancery and get an injunction against the company for polluting the Delaware River, because I could not conscientiously say that pollution was occurring because I could not back up my word with analytical results except as I said before, when, of course, a burrowing animal would make a hole, then a stream of unpurified material would rush out, but as you know, by the time I could have gotten any evidence along that line the break had been repaired and conditions were normal. I made quite a number of attempts to get the vegetation taken off of the beds and comparatively recently the company has started in to do that in earnest and as a result the upper portions of the beds have been plowed up, harrowed, and pretty much all of the vegetation killed. The lower portion of the beds has been pretty effectively stripped of all traces of swamp vegetation and some of the peat has been taken out and the soil now is gradually changing somewhat by the sand which is washing down slowly from the upper ends of the fields. At times I have had direct complaints, both verbal and in writing, from citizens and the local board of health in Burlington, and upon an immediate investigation, have found that a good many of those complaints were exaggerated. Quite recently I had a complaint from a member of council in Burlington saying—in writing this was—saying that the raw sewage was emptying from many outlets from that plant directly into the stream. Upon investigation with the man who made the statements I demonstrated to him that he had been mistaken and he admitted to me that the vent pipes across the fields, he believed, because he had been told, that they were valves to let out raw sewage into the ditch, but I showed him they were mere observation pipes to observe the height of the ground water in the sand. The plant has always been in need of better reconstruction and improvement and could be improved right along. There is no sewerage plant that I have ever known or heard of which was perfect. There is always a chance for improvement, but when it comes to the actual character of the effluent discharged from that plant, the analytical tests show that it is not of a serious character unless at the particular time of some, what we might call, an accident.

Q. You would say then that at the present time the plant is being operated with reasonable efficiency and with the evident desire to give good service?

A. From the point of view of the pollution, the plant is giving a reasonably satisfactory output. There is still an objectionable feature, namely, the ponding of the liquids on the field in the vicinity of the banks, which is ready, of course, to flow out should any break in the banks occur and during the summer time is a breeding place for a large number of mosquitoes. That is something I have always talked against.

Q. What, in your judgment, would be necessary in order to prevent that condition?

A. There would be two alternatives, one to reconstruct the plant entirely on a different system, the other would be to make such improvements to this plant as would enable it to work along the lines of the fundamental principles upon which such a plant is supposed to be designed, namely, that the sand beds should receive its proper dose well distributed so that all parts work alike and at short intervals, that is to say, the dose should be discharged upon the beds, the dose cut off, allow that dose to go into the sand without running over and forming ponds, then after a sufficient time for aeration and rest, come around again in a cycle and repeat the dose. Under such a procedure the dose of sewage would be applied intermittently upon the sand and would not remain exposed to view long enough to cause the sand to stagnate or become sour or waterlogged, or would there be an opportunity for the breeding of mosquitoes.

Q. Would that require any special alteration in the plant as it now exists or would that be a detail of the operation of the plant?

A. That would be a little difficult to answer just at present. In fact, on account of the present stage of reconstruction or improvements as they are now going on, it may be found that all the underdrains are sufficient to carry off the water or it may be found that a few more underdrains may have to be laid which, of course, is a small matter in itself and of more or less minor detail.

Q. I think that the number of underdrains has been considerably increased of recent years, has it not?

A. Yes, the number of underdrains have been increased and the length of them have been increased. Some of them have been extended well upon the field and it remains to be seen now that they are getting the soil so pulverized and the vegetation removed whether the water will go into the soil, it remains to be seen as to whether there will be enough underdrains then to take the water away as fast as it goes into the soil or whether more will be needed.

Q. I think the additional amount of underdrains was really put in at the suggestion of your department, was it not?

A. Yes, I think so. I made that suggestion and I imagine it was put in as a result of that.

Q. And as a practical matter, the wisest thing would be to see whether, under the improved conditions, it will or will not be necessary to put in still additional drains, by actual experience.

A. Yes, that is as I understand it.

Q. Would you say that the beds, considering the amount of sewage they are now treating, they are now disposing of, were too large at the present time?

A. I would hardly say they are too large, because a large bed will have just so much less work to do on a given amount of sewage than a smaller one, but I have always believed that the same efficiency could be obtained by a smaller area in the same location, by bringing it up to a high state of efficiency along modern practical lines of sewage disposal.

Q. In other words, a sewer disposal bed would probably give better results under what you might call intensive cultivation?

A. Yes, sir.

Q. Do you know, Mr. Daniels, whether when this plant was constructed the plans were approved by your department?

A. That was before my time; I don't know.

Q. Of course, there has been substantial development in both the theory and practice of sewage treatment in the last twelve years, has there not?

A. Yes, there has been quite a development in the practice. The old fundamental principles have been changed very little.

Q. But the application of those principles have been modified by experience from year to year?

A. Very much so.

Cross-examination.

By Mr. Watts:

Q. Mr. Daniels, when did you make the first inspection of this sewer system and disposal plant?

A. It was during the summer of 1908, some time after June 18th, I don't know the exact date. That, however, is in our files, but I cannot recall it now.

Q. Can you tell what was then the condition of this sewerage plant?

A. Only in a very general way can I remember, as I said a while ago.

Q. Will you kindly tell us from your memory what you recall about it.

A. I recall a very heavy dense amount of grass and other vegetation on the beds, especially on the upper two-thirds, and a rather dense marsh-like vegetation on the lower one-third, among which vegetation was, as I said awhile ago, such things as skunk cabbage and the like. The banks were low, rather small, and frequent breaks in those banks were found, possibly one of them was found at that first inspection, I cannot say, but it was almost the rule in those beds to find somewhere along the banks a stream of unpurified material coming out because of the inroads of some burrowing animal, some rat or something of that kind.

Q. Would you say that at that time the plant was efficient?

A. As a general proposition it was not efficient because these breaks and accidents were happening. I say that at the time when a break or an accident of that kind is happening I do not consider then the plant as being efficient, but eliminating those, stopping that immediately, the water that was going through the ground and getting such purification as it was able was not coming out in such a state that would cause a pollution to the river. Now, I said awhile ago that in general the tests were usually found, or rather the samples usually taken showed a fairly satisfactory purification, but at times no doubt I may have found a sample which was not up to standard. As I say, I am talking now more from my memory and the results of every sample I have taken have been analyzed, I think—yes, every sample I have taken—have been published in the annual reports of the state board of health so they can be taken from those reports and verified exactly.

Q. Mr. Daniels, did you observe at that time or any other time whether the raw sewage was weak or strong?

A. As near as I can recall the raw sewage was rather weak although I would rather have you show me the results of my analytical work and I could tell from the figures whether it was weak or strong, but from appearances I rather think that the sewage was weak.

Q. How did you account for that raw sewage being weak?

A. I would rather account for it by the belief that it was being diluted with ground water. That is usually the cause of weak sewage in a general collecting sanitary system.

Q. Then if the sewage is weak the disposal plant, of course, does not have to do as much work as it otherwise would?

A. That depends a little bit. After all, the efficiency of a disposal plant is very often governed by the total volume it has to handle. For instance, if the beds are wet for too long a time and you put a dose of sewage on and then simply put water on and cut off the air, the oxidation processes are hindered some by the cutting off of the air. I grant you that considerable oxidation may go on by a process of dilution with ground water if there is a very considerable amount of dissolved oxygen present, but the mere fact that a sewage may be weak would not necessarily mean that we could get along with a very small sewage disposal plant.

Q. At the point where the effluent runs into the city ditch and between that point and the river is quite a distance, isn't it?

A. Yes; I don't know exactly how far it is, but it must be—I am guessing—I suppose a quarter of a mile or more.

Q. And from what place there did you take the samples?

A. Right from the outlets of the tiles leading from the beds.

Q. Right at the disposal plant?

A. I always take samples from the beds themselves. I do not credit a plant with any purification which the effluent may get in a ditch lower down. I take it right from the plant because I assume that the plant must do its work and the proper place to do its work is right at the plant.

Q. When you made this first inspection, in what condition was the septic tank?

A. I am afraid, sir, I could not answer that. You will have to—I think that report is probably published and if that is available I would have no hesitancy in reading that I said at that time, but I would not like to base it on my memory.

Q. Did you inspect the plant every year from 1908, including 1908, down to the present time?

A. Yes; I am pretty certain I have been there every year, several times every year since that. For about three years I made very nearly a monthly visit to Burlington along with other plants, and then my visits were less frequent, until recently I get around now and then.

Q. When did you first observe that the plant was being improved or being made more efficient than it had been? I mean, when did you first notice any real physical improvement being made at the plant?

A. That is a matter of judgment it seems to me. There were improvements being made all along. Every time I would go there I would find some improvement, but my reports will probably show that while I noted certain improvements, I urged that improvements should be carried on faster. They were not going as fast as I wanted them, but yet they were going along slowly in the early days and more rapidly recently.

Q. When did they take the vegetation off the beds?

A. There was a mowing and hauling off of the grass every season, but I think it was last fall, some time last fall, about a year ago or a little less than a year ago, the first plowing was done, and since then the beds—I think, if I remember right now, last fall some time one bed was plowed up and then the cold weather came on and the plowing was delayed until this season and the real effective work of plowing and removing the vegetation and getting the beds in order has been done this present summer.

Q. And up until that time there was no work done which materially added to the efficiency of the plant?

A. Yes, there was. The main work, however, was done in stripping the lower portions of the beds of their skunk cabbage and marsh-like vegetation and raising the protecting dykes. Those banks were continually being raised for the last—ever since I have been going there, little by little, and that was effective to a great extent in preventing the burrowing animals from letting the sewage out.

Q. When were the underdrains put in there, the additional underdrains?

A. In one bed last fall. I think last fall there were additional underdrains put in one bed for the purpose of trying out this experiment I have recommended, and the other underdrains were put in later.

Q. Mr. Daniels, is it necessary to plow those disposal beds from time to time?

A. I think it is, and in fact, that is what I have advised all the time and the results of the plowing, of course, can best be told on that particular bed and I am basing my recommendation on what I have seen at other plants and I have noticed the plowing has been very beneficial in other places and have assumed it was necessary to do that at this plant.

Q. If these beds were kept in first-class condition as they should be and the underdrains extended; in what proportion do you think they could be diminished and still have beds that would be efficient to do the work?

A. I suppose you mean to assume that the increase of sewage will not take place. Assuming the same amount of sewage will be used?

Q. A reasonable maximum.

A. I am always advised and I still stick to it, that I believe that the upper two-thirds of those fields could be made to handle the present amount of sewage with the same efficiency as the whole amount of the field.

By Mr. Palmer:

Q. Mr. Daniels, I show you the report of the state sewerage commission of New Jersey for 1906, and on page 179 thereof I ask you if you have ever seen the Burlington sewage beds when they were in the condition as represented by that photograph.

A. Yes, and if you will turn to the first—I think the first report of the board of health after I came here, I think it is the report for 1908 or 1909, you will see almost a similar photograph which I took myself.

Mr. Palmer: I offer this photograph, if the commission desire to see it.

Commissioner Donges: If you desire to offer it.

Mr. Palmer: Yes.

Commissioner Donges: Very well, it will be admitted.

(Photograph received and marked Ex. O3.)

By Mr. Watts:

Q. Then, Mr. Daniels, in your opinion, the system is not now efficient, is it?

A. From the pollution point of view the effluent that is coming out of the plant, from my latest information which I saw myself recently, is satisfactory, but the condition of the ponding I believe should be eliminated, that the sewage should be made to go on the sand in an intermittent dose, should be forced to go through the ground and not accumulate in large ponds at any portion of the field.

Q. Has that condition which has existed there, in your opinion, any tendency to prevent people who own property in the city from connecting with the sewer?

A. I hardly see how I could answer that. Certainly, if I own property there I would not hesitate for a minute connecting with the sewer. I see no reason why other people should not connect with the sewer.

By Commissioner Donges:

Q. From the householder's point of view only. The consumer is ——

A. I cannot see how the condition of the disposal plant would effect the sanitary conditions advising the connection of a sewer on a man's property way up in town.

Q. In other words, his sewage is taken?

A. Certainly.

Q. And so far as his premises are concerned, so far as you know ——

A. You ought to be connected with the sewer.

Q. ——all is done that is required for the comfort and safety ——

A. Of his property, yes.

By Mr. Watts:

Q. Then you don't think that the stench arising from the disposal plant and the mosquitoes and other insects which are bred in this sewage which is improperly ponded there, that would have a tendency to prevent people from connecting with the system?

A. I don't know what tendency that would have on the minds of the people at all, but from the sanitary point of view and from the outside point of view, or from my own point of view there is no reason I can see why a man should not connect with the sewer regardless of what the conditions are down at the sewer plant. That is another question.

Q. And notwithstanding the fact that the company is not carrying out its contract to dispose properly of the sewage?

A. Notwithstanding that fact; I cannot see why one man should live in filth or sewage or have a cesspool in his own property just because the sewer plant down in another place is improperly managed.

Q. And that also notwithstanding you might reside in the neighborhood of the disposal beds?

A. Why, certainly. I might use every effort I could to get something done down at the disposal plant, but I certainly would want the sewage taken away from my own property.

Q. Supposing your efforts in that connection had been unavailing for a period of ten years?

A. I cannot see how it would make—at present I cannot see how that would make me change my mind. Of course, I don't know what I would do if I had been living in that for ten years.

Q. Mr. Daniels, did you ever have any complaint of the sewage backing up into the houses by reason of the pipes being stopped?

A. I don't remember any.

Q. You don't know of any condition existing at times, such as that?

A. No, I do not, and probably if I had such a complaint I would have been sent to investigate that. I have never investigated any stoppage in Burlington and I cannot recall any.

Q. Weren't there so many complaints about the Burlington Sewerage Company that you are unable to remember what those complaints were at this time?

A. I remember very distinctly that there were a very great many complaints, but the most of them were—in fact, all I can recall were directed toward the disposal plant and that was the feature that I always investigated, the disposal plant.

G. P. Benckert, sworn on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Where do you live, Mr. Benckert?
A. Burlington, New Jersey.
Q. What is your business?
A. Plumbing.
Q. In the course of your business have you had occasion to repeatedly make connections to the mains of the Burlington Sewerage Company?
A. I have.
Q. During what period of years has that experience extended over?
A. As a master or as a journeyman?
Q. Both.
A. Ten, about ten years in Burlington.
Q. Will you kindly state the result of your observation as to the condition of the pipes when you had occasion to make connections to them?
A. I have found the pipe as a general rule in a fairly, generally good condition, I would say.
Q. About how full of water, on the average?
A. That would depend. Sometimes I have seen them with as much as four inches, sometimes just a little stream trickling through.
Q. As a rule, have you found the joints of the pipe in good condition?
A. I have.
Q. From your ten years' experience would you say from your observation of that system that it had been constructed of good material and in a workmanlike manner?

A. I would; those parts I have come in contact with I would say so.

Q. In case there was a good deal of surface water got into the sewer wouldn't it be probable that a large percentage of it came in through leaks or defective joints in the laterals?

A. Yes, sir.

Q. Do you know whether as a matter of fact great care has been employed in the laying of those laterals or service pipes?

A. I do know of instances where it has not been so, yes, sir. And I have had occasion to make repairs on service lines, branch laterals you might call them, and have found the joints in very poor condition in some of them.

Q. And the leakage which came in through those defective joints would ultimately find its way into the main sewer?

A. Positively so, yes, sir.

Q. As a matter of fact, when complaints are made, because of the sewer being stopped, hasn't it been your experience that the stoppage is usually in the service pipe or in the trap, rather than in the mains of the sewerage company?

A. Yes, sir.

Q. Isn't that almost always the case?

A. Always the case; I don't know of an exception to that in my experience.

Q. Whose duty is it in Burlington to inspect the service pipes when they are put in?

A. The inspector of the board of health, I believe.

Q. Is that inspection very rigid from your experience?

A. Well, no, sir; not so much as I would like to have it for my own part; very lax I would call it, the inspection.

Q. You think the service could be substantially improved if the inspection regarding services was more rigid?

A. It would have to be so.

By Commissioner Donges:

Q. You mean the inspection by the local ——

A. By the local board of health.

By Mr. Tatem:

Q. The sewerage company, I understand, has nothing to do with the services?

A. We take a permit from the board of health for which we pay a fee and that is an inspection fee and when the connection is made the inspector of the board of health inspects that, the connection only. I think it should go further, I think it should go to the completion of the branch system of the house.

By Commissioner Donges:

Q. The only thing inspected is the actual connection?

A. The actual connection, yes, sir.

Q. And the services are run by any plumber?

A. Any plumber, yes, sir.

Cross-examination.

By Mr. Watts:

Q. You understand you are to receive compensation from the sewerage company for testifying here today, don't you?

A. I have no information to that effect direct, no, sir.

Q. Have you any indirect information?

A. Only talked of between the plumbers ourselves.

Q. Has anybody connected with the sewerage company said anything to you about it?

A. No, sir.

Q. You stated that the pipes were found to be generally good?

A. The main pipes, yes, sir.

Q. Speaking about the main pipes, there were some exceptions, however, is that right?

A. Nothing that has come under my personal observation, no, sir. I will say though that I have known of some breaks in the main.

Q. Whereabouts?

A. On Federal Street.

Q. Have you observed those breaks?

A. I did, yes, sir.

Q. When was that?

A. Possibly seven or eight years ago, maybe a little more recently than that; it may have been five or six.

Q. How many times have you observed the sewerage pipes?

A. That would be impossible for me to tell just offhand.

Q. About how many times?

A. That I couldn't say. I think there is a record of all connections I have made in the sewer office.

Q. Were you around when the plant was being built?

A. No, sir, it was just about completed when I came to Burlington.

Q. How many years have you been engaged in the plumbing business yourself?

A. Seven years yesterday.

Q. In that seven years, about how many connections have you made to the Burlington sewerage system?

A. I would not like to say positive, but I would suppose probably in the neighborhood of fifty, maybe not that much. I don't make that as a positive answer. I could tell you exactly by referring to my books.

Q. Would you say at least twenty-five?

A. Oh, yes, at least twenty-five.

Q. You always found water in the pipes, didn't you?

A. Oh, yes, that would be a natural condition.

Q. And to what extent?

A. As I stated, sometimes as much as four or five inches, sometimes just a little stream trickling through.

Q. What size are you speaking of when you say you found four or five inches of water?

A. Sometimes an eight-inch pipe, sometimes it may be in a ten or twelve inch, all depending on the size of the main and the locality in which I was located.

Q. And you have found four or five inches of water in a twelve-inch pipe?

A. I never measured it. Just by looking at it casually I would say there had been that much and it seemed to be flowing freely.

Q. When you make a connection to the sewerage system, how many joints do you inspect?

A. How many joints do I inspect?

Q. In making that connection.

A. Whatever joints are exposed in the vicinity of the Y which we are connecting to.

Q. And ordinarily, how many would be exposed?

A. Two to three, sometimes four.

Q. What size excavation do you make?

A. Do I make for what?

Q. In making the connection to the system.

A. That would depend on the depth to which you were going down, the depth of the main. If to any great depth, it would be necessary to make a Y excavation and put cribbing in. If the main is in a shallow place, you don't make it so wide.

Q. Do you open up more than three feet on the main?

A. Sometimes, not always.

Q. What is the maximum that you open up on the main?

A. I don't know there is any set rule. I never measured it by a rule. We allow sufficient room for a man to work comfortably in that hole.

Q. Not over five feet then, is it?

A. Not always, sometimes more. When you are looking for a Y you may not get right down where it is and it is customary to dig one way or the other to locate that Y.

Q. What is the length of this terra cotta pipe composing the main, that you observed?

A. Generally two feet.

Q. Two feet in length?

A. Yes, sir.

Q. How are they fastened together at the joints?

A. By cement joints.

Q. You have had occasion to examine those joints?

A. Not examining them as to making any examination. I have exposed those joints in making a connection, but I never looked at them for the sake of seeing how the joints were made, but had there been any leakage I would surely have noticed it, because the ground would have been wet.

Q. You never did find a particle of leakage coming from any of these joints?

A. I cannot say I did, no, sir.

Q. When you dig for these Y's of which you speak, you are governed by a plan, are you?

A. We are, yes, sir.

Q. Did you ever, in digging for a Y, find it was not located where the map showed?

A. Yes, sir.

Q. Was that frequently the case?

A. It has happened on several occasions with me, yes, sir.

Q. What do you do when you find that condition to exist?

A. We dig along for a little ways, in fact, both ways, and if the Y is located we make a background to that. If it is not, it is customary then to tap in the pipe near the top, on the top if the main is deep enough.

Q. When you tap the pipe in the top you make a right angle connection to the main swer?

A. Forty-five generally.

Q. Forty-five?

A. Forty-five degrees, yes, sir, unless the main is very, very deep and then we make a tap direct into the top and then make a right angle turn run up for a few feet.

Re-direct examination.

By Mr. Tatem:

Q. From your experience, breaks in sewer systems are liable to occur no matter how well the sewer systems are constructed, are they not?

A. Yes, sir.

Q. That is one of the unavoidable things?

A. That is one of the unavoidable things; that would be caused by the settling of earth under the sewer.

Q. You testified that when you tapped into these mains you had always found water in them?

A. Certainly.

Q. It would be a pretty poor sewer system if they didn't have water in them?

A. It would not be much of a sewer system, would not be performing its function at all.

Q. The purpose of a sewer system is to carry the water?

A. That is what I suppose it is to be.

Q. You are here in response to a subpoena issued by the board and served on you?

A. I am. I have it in my pocket if you wish to see it.

EDWARD MARLIN, JR., sworn on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Where do you live, Mr. Marlin?

A. Burlington, New Jersey.

Q. And your business?

A. Plumbing.

Q. How long have you been engaged in that business?

A. I have been engaged in the plumbing business about thirteen years.

Q. All of that time in Burlington?

A. No, about two years in Moorestown.

Q. And about eleven years in Burlington. During that time have you had occasion to make repeated connections with the pipes of the Burlington Sewerage Company?

A. Oh, yes.

Q. Will you state in what condition you found them?

A. I have always found them in a perfect condition.

Q. You have made a large number of such connections, have you?

A. Yes, I have made lots of connections. I should imagine—I have been in business for myself four years and I should imagine in that time I have made at least thirty-five or forty, I should say at least thirty-five anyway.

Q. And previous to that time when you were not in business for yourself you actually made a considerable number?

A. Yes, working for George Groves.

Q. From your observation of that collecting system, would you say that good material had been used and it was laid in a workmanlike manner?

A. I have always found it that way, yes, sir.

Q. You were subpoenaed to appear here today, were you not?

A. Yes, sir.

Mr. Watts: No questions.

J. Edgar Gandy, sworn on behalf of petitioners.

Direct examination.

By Mr. Tatem:

Q. Where do you live, Mr. Gandy?

A. Burlington, New Jersey.

Q. What is your business?

A. Plumbing.

Q. How long have you been engaged in that business in Burlington?

A. About five years.

Q. During that time have you had occasion to make connections with the mains of the Burlington Sewerage Company?

A. I have.

Q. Have you had occasion to do that repeatedly?

A. I have.

Q. State the condition in which you found the mains.

A. I have always found the mains in good condition.

Q. From your observation would you say that the collecting system of the company had evidently been built of good material and in a workmanlike manner?

A. I do.

Q. About how many times do you suppose you have had occasion to make connection with these mains?

A. I guess perhaps I made about twenty-five altogether.

Q. You are here to testify in response to a subpoena issued by the board, are you not?

A. Yes.

Mr. Watts: No questions.

W. H. Roth, recalled on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Mr. Roth, you are the assistant to the treasurer of the Burlington Sewerage Company?

A. No; assistant secretary.

Q. You have been connected with that company how long?

A. Since 1908.

Q. As a matter of fact, were the parties who at present own the control of the Burlington Sewerage Company identified with it before the year 1908?

A. No, they were not. In 1908 we started to operate the plant but did not acquire control of the stock until several years later.

Q. You did not acquire control of the stock until several years after 1908?

A. Yes, sir.

By Commissioner Donges:

Q. When you say "We," who do you mean?

A. I mean the present management, the present controlling interest, I should say.

By Mr. Tatem:

Q. Suppose we put that on the record. Who, at present, controls the management of the plant?

A. The American Pipe & Construction Company.

Q. And while that company was interested in the plant, held some of the securities from 1908, they did not acquire the actual management and control of the stock until several years later than that?

A. I think about 1911, if I recall correctly.

Q. From your experience, Mr. Roth, would you say that the operating expenses of the Burlington Sewerage Company, as shown by the tabulation which you have presented are economical and low for a plant of that size and capacity?

A. I would, because there are no expenses in the amount given for administration, general bookkeeping, officers' services, or directors' services, or any matters of that kind.

Q. The only items which are charged are for actual work and services in Burlington?

A. Yes, sir.

By Commissioner Donges:

Q. Does it appear in this case what the earnings of the company have been?

A. From the beginning, yes, sir.

Q. And the dividends paid?

A. There weren't any dividends paid.

Q. That is in tabulated form?

A. Yes, sir.

By Mr. Tatem:

Q. As a matter of fact, Mr. Roth, taking the year 1913, as an example, the operating expenses were between seventy-five and eighty per cent. of the gross receipts, were they not?

A. They were.

Q. Since you have been connected with the management of the plant have you, on numerous occasions, taken up the matter of the operation of the plant with the representatives of the state board of health?

A. I personally have had a number of talks with representatives of the state board of health both in Trenton and in Philadelphia. As a result of those talks there weren't any orders issued by the state board of health. We talked generally to ascertain what they wanted us to do. We tried to agree on what was best to be done to put the plant in first-class condition and we have been endeavoring to carry out their wishes. Some experiments were made and I think resulted in a large improvement. Since 1908 there has been a constant improvement. Our aim is to operate that plant in the most efficient manner consistent with the character of its construction. Certain recommendations were made by representatives of the state board which did not meet with the approval of the company's engineer and for that reason some of the recommendations were not carried out, but other things were done instead, so that there has been an earnest effort made to improve conditions, and as Mr. Daniels has said, the effluent has always been uniformly good and satisfactory.

Q. The question as to just what changes or improvements would better the conditions has been largely a matter of expert opinion, has it not, in which engineers would differ?

A. Yes, sir, that is true. I want to add this to my former statement, that I personally met the city councils or committees of councils and the city board of health and particularly the president of the board of health on a number of occasions at which a general talk concerning the situation at the disposal works and the financial condition of tthe company generally was discussed, our idea being to endeavor to get together with the city on a basis that would enable us to do the things which the local board and the state board wanted us to do and also to extend the system into a section of Burlington that is not now receiving service. To that end we made a proposition to the city but there was never any agreement arrived at. What we asked the city to do was to pass an ordinance making connections to the sewer compulsory and we asked them to pay a fair rate for the service rendered to the city direct, that is, for draining the school houses and other municipal buildings, and in lieu of that we agree to extend our system into East Burlington which now has no sewer pipes in it and also to make such improvements at the disposal works as would meet with the state board of health's approval. That proposition was not accepted. There was one other condition, and that was that a new schedule of rates should be adopted, such a one as would meet with the approval of the Board of Public Utility Commissioners.

By Commissioner Donges:

Q. Was the suggestion made with the view to increasing the rates or decreasing the rates?

A. Increasing them; that was generally understood and that was the hitch. They would not agree to any increase in rate although they did want all these improvements.

Cross-examination.

By Mr. Watts:

Q. Mr. Roth, all the improvements which you have made to the physical plant in the last year or so could have been made in 1908?

A. I presume they could.

Q. Or in any year after that time or before?

A. I presume so; that was a matter of engineering.

Q. Referring to the table showing the deficits, I note that in 1907 and 1908 deficits appear to be much greater than in previous years and subsequent years; can you account for that?

A. I think that is largely due to the fact that in those two years a considerable amount of money was spent in doing the very things which have been complained of, in trying to put the plant in good operating condition.

Q. And can you state what was done to make the deficits come up during those two years?

A. Not in detail. There was a break on Federal Street which pipe is deep and is laid in quicksand. It was quite expensive to uncover that main and to make the necessary repair and I think that a portion, if not all, of the cost of doing that is in those two years' expenses.

Q. And that break was caused by faulty construction in the first place, was it not?

A. I cannot answer that because I am not familiar with that.

Q. These additional deficits then were occasioned not by improvements but by necessary repairs?

A. By necessary repairs and expense properly chargeable to the operation of the plant. If they had not all been made in one or two years they would have been scattered over several years and the result would have been the same from a financial point of view.

By Mr. Tatem:

Q. Mr. Roth, where has the Burlington Sewerage Company obtained the money to make improvements and extensions which it has made in the last few years?

A. All of the money needed in excess of its operating expenses which it could not get out of its gross income was borrowed. No interest has ever been paid on the bonds of the company.

Q. No interest has ever been paid on the bonds and no dividends upon the stock?

A. None whatever.

By Commissioner Donges:

Q. You say no interest has ever been paid?

A. None has ever been paid. The owners of the bonds have the coupons as well as the bonds.

Q. What is the amount of stock and bonds now outstanding?

A. The bonded indebtedness is $75,000 and the stock, I think is—I am not sure, the record will show fifty or seventy-five thousand dollars.

Q. What is the unfunded debt?

A. The unfunded debt on December 31st, 1913, was $25,478.59. That is represented by notes. Then there are accounts payable amounting to $47,314.01, the greater part of which is the past accrued interest on the bonds and the balance is current accounts outstanding at the close of the year.

Q. Are you able to say how much of that sum is due for unpaid interest and how much for current expenses?

A. Yes, sir. Of that sum $46,562.50 is unpaid bond interest, leaving approximately $800 for current liabilities.

By Mr. Tatem:

Q. As I understand it then, the present indebtedness of the company consists of $75,000 five per cent. first mortgage bonds and notes aggregating ——

A. Twenty-five thousand four hundred and seventy-eight dollars and fifty-nine cents.

Q. And bills payable ——

A. Accounts payable.
Q. Accounts payable?
A. $47,314.01.

By Commissioner Donges:

Q. Which does not include the $25,000?
A. No, sir. $46,000 of that is bond interest.

By Mr. Tatem:

Q. The item of notes represents money which has been advanced to the company for the purpose of making improvements and extensions, does it not?

A. Yes. The first mortgage bonds and bills payable together amounting in all to $100,478.59 represents a little less than the actual cost of the plant.

Q. The accounts payable is composed mainly of the interest on the bonds of the company which have been issued and are outstanding, which interest has not been paid?

A. That is true.

Q. To the extent of how much?

A. $46,562.50.

Q. In other words, in round figures the $75,000 of bonds and the $25,000 of notes payable represent capital or principal invested in the construction of the plant?

A. Yes, within about $6,000. That $6,000 was earnings applied toward improvements, there being no interest paid, all earnings over and above operating expenses went back into the plant or against floating debt.

By Commissioner Donges:

Q. Isn't it true that in the two years specifically referred to, to wit, 1907 and 1908, the expenditures on account of operating exceeded the gross income?
A. I guess that is so. In 1907, I hadn't anything to do with the thing.
Q. From what source was the difference received?
A. That was borrowed.
Q. Is that included in the $25,000 of bills payable?
A. Yes, sir.
Q. So that not all of the $25,000 represents extensions and improvements properly capitalized?
A. It may not. All of the money was not always applied, when borrowed, to improvements, but as a matter of fact the cost of the plant actually exceeds the bond issue and that particular part of the floating debt.
Q. I understood your statement to be, and that is why I challenged its accuracy, that in fact all the money borrowed now represented by notes outstanding was used for proper capital purposes?
A. I did not intend that it had been; I meant the total.
Q. That a sum equivalent to that ——
A. Yes, sir.

A. C. Ubil, sworn on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Where do you live, Mr. Ubil?
A. Edgewater Park, New Jersey.

Q. What is your business?

A. Superintendent of the Burlington Sewerage Company.

Q. How long have you held that position?

A. Since June, 1908.

Q. Has it been a part of your duty to inspect the collecting system of the Burlington Sewerage Company when it has been opened from time to time for the purpose of making connections to it?

A. It has.

Q. How have you found those mains?

A. In good condition.

Q. In your judgment, from that observation, would you say the system had been constructed of good material and in a workmanlike manner?

A. As fas as my knowledge is concerned, I would say so.

Q. How many times have you had occasion to inspect the openings to connections with the mains?

A. I would judge from 250 to 300 times I have seen the mains exposed.

By Commissioner Donges:

Q. You are a plumber, are you?

A. No, sir.

Mr. Tatem: He is superintendent of the company and has charge of those matters.

By Mr. Tatem:

Q. It is a part of your duty, is it not, when connections are made, on behalf of the company to see they are properly made and note the conditions?

A. They are, but I have not always done it, because some of the joints have been covered before I have seen them.

Q. From your observation, how much water is there usually found in the pipes?

A. That depends upon the locality. I have seen the main trunk line half full of water and the eight inch line I have seen from an inch of water to about four inches.

Q. The weather conditions have something to do with that, did they not?

A. Yes.

Q. As a matter of fact, is the level of a large portion of that system below the water level?

A. I could not answer that question, I don't know.

Q. Do you frequently find the pipes are under water?

A. No, I have not.

Q. Were not some of these mains, when you saw them exposed, in wet soil or wet earth, so they were really below the water level?

A. I have seen the Federal Street line and on the High Street in Burlington.

Cross-examination.

By Mr. Watts:

Q. When you said weather conditions affected the amount of water in the pipes you meant to say that in wet weather more water leaks in than in dry weather, didn't you?

A. I mean to say by that, in rainy weather we catch a lot of water in the manholes and traps at the curb.

Q. That is because the manholes are not properly covered, isn't it?

A. No, sir, it is because the streets are so uneven.

Q. Isn't that because the manholes are not high enough?

A. Probably so.

Q. Is that all the weather has to do with the situation?

A. About.

Q. Doesn't more water leak in at the joints in wet weather than it does in dry?

A. I don't know that.

Q. According to your idea no water leaks in at the joints, is that right?

A. I have seen no open joints.

Q. Do you know how much sewage is pumped by the Burlington Company; do you keep a record of it?

A. In what time?

Q. Twenty-four hours?

A. Between 800,000 and 900,000 gallons.

By Commissioner Donges:

Q. Is that the average?

A. About the average.

By Mr. Watts:

Q. Does it increase any when the weather is wet, the season?

A. It does.

Q. How much, approximately?

A. It runs from that up to a million gallons in twenty-four hours.

Q. Can you state any time when you pump one million gallons in twenty-four hours?

A. Can I say how many times?

Mr. Watts: Repeat the question.

(Question read.)

Q. Any time.
A. No, I cannot; I haven't that data with me.
Q. When you are pumping a million gallons in twenty-fours hours the pipes are kept pretty full, aren't they?
A. Our main trunk line is.
Q. Did you ever observe any breaks?
A. When I came to Burlington there was a break on Federal Street.
Q. Is that the only break you ever observed?
A. That is the only break in a pipe I ever observed; the only one, yes, sir.
Q. You go down there and look over the disposal bed once in a while?
A. I do.
Q. Been doing that since 1908, haven't you?
A. Yes, sir.
Q. What condition were those beds in in 1908 when you took hold of the plant?
A. They were in an unkept condition.
Q. How long did they remain in an unkept condition?
A. We started to improve them immediately.
Q. What did you do?
A. We mowed off the grass and kept it mowed off and cleaned up the sludge that was on the beds. There was some sludge on the bed and we cleaned that off and cleaned out the septic tank.
Q. When did you first plow the beds?
A. About a year or a year and a half ago.
Q. Why didn't you plow them before?
A. Because the engineers of the company thought it was not advisable to plow them.

William H. Boardman, recalled on behalf of petitioner.

Direct examination.

By Mr. Tatem:

Q. Mr. Boardman, in your appraisal of the plant of the Burlington Sewerage Company which is in evidence you base your valuation upon your actual knowledge of the conditions as they exist in Burlington, did you not?

A. I did.

Q. I think you testified that you were the engineer in charge of this work when the system was installed?

A. Yes, sir.

Q. I want to take up with you in detail a few of the costs in your estimate so that the board may understand just how your unit figures are arrived at. Referring to the item under the collecting system on the first page of your report; 32,506 feet of eight inch pipe, 0 to 6 feet deep, you have made an allowance of fifty-two cents per foot; may I ask you to tell us on what you base that figure of fifty-two cents a foot?

A. The eight-inch pipe cost on the cars f. o. b. at station fourteen cents a foot, the unloading, hauling and distribution of it was one cent a foot, the laying, the jute and corking was two and a half cents a foot, the cement in place is one and a half cents a foot, breakage one cent, that makes a total for the pipe of twenty cents per foot, the excavation and refill is fifteen and a half cents a foot, the sheathing seven cents, pumping and baling, two and a half cents, and the profit and sundry expenses is seven cents, makes a total of fifty-two cents.

Q. Some of those items like sheathing, pumping and baling, would be higher in conditions as they exist in Burlington than they would in a territory where the grades were different, would they not?

A. In some soil you don't need any sheathing at all. But at Burlington it is necessary to sheath it on account of the running nature of the sand.

Q. As a matter of fact, from your actual knowledge of conditions there, you find quicksand in many places, do you not?

A. In several places we found quicksand and fifty per cent. of the job there is running sand.

Q. Your other prices for the different sized pipes at different depths are based on the same unit costs as those you have just testified to?

A. Yes, sir.

Q. On what basis have you figured the cost for labor, for unskilled labor, how much per day?

A. The labor we figured, common labor, at a dollar and seventy-five cents a day, the bottom men $2.00, the timber men $2.25, the foremen $4.00.

Q. Suppose we take one of the larger pipe as an illustration. Near the bottom of the first page of your report you have the item 3,238 feet of twenty-four-inch pipe at a depth of eight to ten feet at $2.28 a foot; will you let me know the items that enter into that?

A. Twenty-four-inch pipe f. o. b. cars at station costs eighty-two cents a foot, the unloading, hauling and distributing seven cents a foot, the laying, jute and corking, nine and a half cents, the cement in place five and a half cents, the breakage five cents, makes $1.09 for the pipe; eight to ten foot excavation and refill was fifty-six cents a foot, the sheathing sixteen cents, pumping and baling twenty-two cents, and profit and sundry expenses twenty-five cents, makes $2.28.

Q. Now, Mr. Boardman, on the second page of your report you have prices for the different manholes, different kinds of manholes. The estimated price for the plain manhole is $45 each; will you let us know just how the detail of that estimate is made up?

A. The average cut was 5.89 feet, that would require ten cubic yards of excavation at fifty cents, that is five dollars, there is 1.8 cubic yards of concrete at eight dollars, $14.40; 770 brick at $14.00, that includes cement, sand and laying, $10.78; three ladder irons at twenty cents, $.60; frame, cover and pan is $12.50; there are two pieces of flagstone eighteen inches by five foot, fifteen square feet at eighteen cents makes $2.70; total $45.98.

Q. For that you estimated $45.00?

A. We took it at $45.00 flat.

Q. Give me the detail in regard to the intersection manholes.

A. The intersection manholes; eleven cubic yards of excavation at fifty cents, $5.50; 182 feet of board measure of timber at $40 a thousand, in place, $7.28; one and eight-tenth cubic yards of concrete at $8.00, $14.40; 840 bricks laid at $14 a thousand, $11.76; three ladder irons at twenty cents, $.60; cast iron frame, pan and cover, $12.50; flagstones, $2.70; and sheathing $5.40; $60.14.

Q. And your estimate was $60.00?

A. $60.00.

Q. What is the size of these manholes?

A. Those manholes are four foot circular bottom with nine inch wall and they have a concrete bed under them seven foot square and twelve inches thick.

Q. Give me the detail in regard to the drop manholes, please.

A. The drop manholes; eighteen cubic yards of excavation at fifty cents, \$9.00; foundation timber, 182 feet of board measure, \$7.28; one and eight-tenths cubic yards of concrete, \$14.40; 1580 brick at \$14 a thousand, \$22.12; there are four ladder irons at twenty cents, \$.80; the frame, cover and pan, \$12.50; flagstones, \$2.70. There is one vitrified T at \$1.00; one vitrified quarter bend \$.75; and sheathing \$10; \$80.55.

Q. Your estimate on those drop manholes was eighty dollars each?

A. Eighty dollars each.

Q. On the second page of your report you have an item 100,000 feet of board measure of sheathing left intrenched at forty dollars; what kind of lumber is used for that purpose?

A. All yellow pine, yellow pine stringers, four by six and two by twelve, and yellow pine side bracing.

Q. In your opinion forty dollars is a fair price for that?

A. Yes, sir.

Q. What does that price include?

A. That includes furnishing the timber, hauling and cutting of it, the carpenter work and putting it in place.

Q. In other words, the forty dollars a thousand means not the price of the timber f. o. b. cars, but it means the cost of the timber actually in the trench?

A. In place, yes, sir.

Mr. Watts: No questions.

Mr. Tatem: That is our case, if your Honor please.

REPORT.

STATE OF NEW JERSEY.

BOARD OF PUBLIC UTILITY COMMISSIONERS.

In the Matter of the Application of Burlington Sewerage Company for Approval of a New Schedule of Rates.	REPORT.

J. Fithian Tatem, for the company.

Ernest Watts and V. C. Palmer, for the city of Burlington.

The Burlington Sewerage Company was incorporated in the year 1900 to provide the city of Burlington with a method of disposing of its sewage. It was organized under Chapter 210 of the Laws of 1898. Section one of that act provides that not less than seven persons may organize a company for the purpose of constructing, maintaining and operating a system of sewerage in any municipality in this state.

Section two provides that "such persons" (the incorporators) shall execute "a certificate in writing which shall state the corporate name adopted by the company, the amount of the capital stock, the term of existence, the number of directors, the names of those who shall manage the affairs of the company for the first year, or until their successors are elected and qualified, and the name of municipality in or for which such sewerage system is to be constructed and the business of such company carried on; such certificate shall be filed in the office of the secretary of state, together with the consent in writing of and the terms and condition or conditions upon which the consent has been granted by the corporate authorities, if any, of the municipality in which such sewerage system is to be constructed."

The act then provides that when such "certificate, conditions and consent shall have been filed as aforesaid" the persons shall be a body politic and corporate, with power to enter upon and condemn lands necessary for its corporate purposes.

Section twelve of the act provides that upon application to the corporate authorities for the consent, as provided in section two of the act, said authorities may provide that such consent shall be conditioned upon certain terms, "and said corporate authorities shall annex to such consent the maximum prices or rents that may be charged property owners or others for the use of such sewerage system, and any further or other terms and condition or conditions upon which said consent is granted; if the certificate referred to in section two hereof be filed, there shall be annexed thereto and filed therewith a copy of the terms and condition or conditions upon which such consent is granted, and such filing shall be conclusive evidence that said corporation has assented to said terms and condition or conditions, and the same shall be deemed and taken to be binding and operative upon said corporation, its successors and assigns."

Section fourteen reads as follows:

> "Said company may contract with property owners and others for the use of said system of sewerage for such price or prices, or quarterly or annual rents, and such restrictions as said company may think proper, Provided, that the same shall in no case exceed the maximum rates which may be named in the terms and condition or conditions on which the consent of the corporate authorities shall have been obtained."

In this case the corporate authorities in compliance with the statutory direction that they "annex to such consent the maximum prices or rents that may be charged," provided in the ordinance giving consent and permission to the petitioner to construct its sewerage system in the city of Burlington for certain maximum prices to be charged property owners for the use of the sewerage system.

For a dozen years or more the company has operated in the city of Burlington under the law and ordinance above stated. It does not deny that but for the passage of the Public Utility Act of 1911 it would be its duty to continue to serve the property owners of Burlington in accordance with that statute and ordinance. It claims, however, that the Public Utility Act having conferred upon this board the power to fix rates, the contractual obligations assumed by it towards the city of Burlington with respect to rents are not binding upon the board and we may allow the increased rates asked for. We agree with the contention that the power of municipalities to provide by contract with public utilities respecting rates is subject to the power of this board to fix rates and that ordinance provisions contravening this power must give way.

This question is, shall this utility be relieved by this board of its obligation to live up to a contract with the city of Burlington?

In the matter of the application of rates of the Wildwood Water Works Company to the borough of North Wildwood, this board said:

> "While this board has the power to fix rates and establish rules and practices governing service without regard to ordinance provisions or contracts between municipalities and utilities, we would not feel disposed to exercise such power to relieve a utility from the burden assumed by such ordinance or contract in any case where it appeared that a municipality or its inhabitants would under such ordinance or contract receive rates or service more advantageous than this board would be justified in ordering, unless it appeared that such ordinance or contract imposed terms involving such loss and hardship as to make it impossible for the company to render safe, adequate and proper service. A company may agree to give rates and service upon terms that will not accord to its stockholders a fair return upon the capital invested. We would not be disposed to permit an increase of rates in any case where an agreement between a municipality and a utility exists, if the only benefit from such increase of rates is an increase of dividends. In such case the company would be presumed to have acted with a knowledge that its earnings would be reduced by such terms and to be willing to wait for adequate returns upon the investment."

The present case seems to call for an application of the doctrine there laid down. If this board is to set aside the contract made by the petitioner it should appear that the terms of the contract involve "such loss and hardship as to make it impossible for the company to render safe, adequate and proper service."

There were three appraisals made of the plant and property of the petitioner. Mr. Boardman, for the petitioner, placed a valuation thereon which included engineering and organization expenses and interest during construction, with depreciation deducted of $89,081.22. Mr. Herbert, for the city, gave a valuation, which included the same items as Mr. Boardman's, of $83,613.29, and Mr. Webster, another appraiser for the city, valued the company's property at $66,713.39. Mr. Webster, however, allows only $813 for all organization expenses and he estimates the depreciation to be considerably higher than either Mr. Boardman's or Mr. Webster's estimate of that item. We are, for the purposes of this case, willing to assume that the value of the company's property is in the neighborhood of the figure fixed by Mr. Herbert and Mr. Boardman and we shall assume, without so deciding, that Mr. Boardman's estimate, the highest, is to be taken as the value of the petitioner's property used and useful in the service of the public, that is to say, $89,081.22.

The following is a statement of the earnings and expenses of the company from the year 1909 to 1913, inclusive:

	Total Earnings	Total Expenses	Net Earnings
1909	$6,904.05	$5,215.12	$1,688.93
1910	7,137.08	5,403.17	1,733.91
1911	8,127.88	6,274.91	1,852.97

1912	8,442.07	5,877.90	2,564.17
1913	8,668.83	6,450.26	2,218.57

It will be seen that the company is earning more than two and one-half per cent. on the value of the property devoted by it to the public use. Rates that will produce that income cannot be said to be confiscatory. It does not appear that the denial of an increase in rates will involve such loss and hardship as to make it impossible for the company to render safe, adequate and proper service.

Nor does any question of discrimination in rates arise.

In this situation the board is unwilling to relieve a utility which, with all the deliberation necessitated by a compliance with the statute from which it derives its being enters into a contract, from the self-imposed limitations of that contract. In so doing the board would be using the power conferred upon it by the state to set aside a contract entered into under the statute for the benefit of one of the parties which it could not itself set aside. Every other legal entity, human or corporate is bound by its contracts. A utility should not be an exception to the rule and unless a condition similar to those mentioned above justifies the board's interference it will leave the parties where it finds them.

Dated March 22nd, 1916.

Board of Public Utility Commissioners.
By
(Signed) John J. Treacy,
(Signed) John W. Slocum,
Commissioners.

(Seal)

Attest:

(Signed) Alfred N. Barber,
Secretary.

I Hereby Certify the foregoing to be a true copy of report made and filed by the Board of Public Utility Commissioners at a meeting held Wednesday, March 22nd, 1916.

(Signed) Alfred Barber,
Secretary.

DISSENTING OPINION.

STATE OF NEW JERSEY.

Board of Public Utility Commissioners.

In the Matter of the Application of Burlington Sewerage Company for Approval of a New Schedule of Rates.	Dissenting Opinion.

By Commissioner Donges:

I vote with my colleagues to deny the application to increase rates.

My conclusion, however, is based upon different reasoning from that upon which they reply.

Chapter 210, Laws of 1898, provides the municipal consent is requisite to the formation of sewerage companies, which "consent in writing of the terms or conditions upon which the consent has been granted by the corporate authorities" shall be filed with the certificate of incorporation in the office of the secretary of state. It further provides that the "corporate authorities shall annex to such consent the maximum prices or rents that may be charged property owners or others for the use of such sewerage system," and * * * * "such filing shall be *conclusive evidence* that said corporation has consented to said terms and condition or conditions, *and the same shall be deemed and taken to be binding and operative upon said corporation,* its successors and assigns."

The company and municipality appear to have followed the statute, and the present status is the direct consequence of compliance with the statute.

It is the duty of this board to construe statutes, but not to pass upon their validity. It is the duty of this board to determine whether the municipal action is a compliance with the statute, but it is not its duty to pass upon the validity of such action where express statutory sanction thereof exists. That is a function of the courts.

I conclude, therefore, that this board should not assume, in the circumstances of this case, to alter a relationship explicitly and definitely created by statute, and must refuse to sanction the charging of rates by this company in excess of those fixed by the consent of the municipality, filed by the company with its certificates of incorporation, as directed by the statute, and thereby accepted by the company.

Dated March 22nd, 1916.

(Signed) Ralph W. E. Donges,
Commissioner.

I Hereby Certify the foregoing to be a true copy of dissenting opinion filed by Commissioner Donges at a meeting held Wednesday, March 22nd, 1916.

(Signed) Alfred N. Barber,
Secretary.

PETITION FOR REHEARING

BOARD OF PUBLIC UTILITY COMMISSIONERS OF NEW JERSEY.

In the Matter of the Application of Burlington Sewerage Company for Approval of a New Schedule of Rates.	PETITION FOR REHEARING.

To the Board of Public Utility Commissioners of the State of New Jersey:

Your petitioner, Burlington Sewerage Company, respectfully represents: That in the year 1914 it filed with your Honorable Board a proposed new schedule of rates for sewer service in the city of Burlington and asked that your board approve the same; that testimony was taken and argument had upon said application, and a report thereon filed by your Honorable Board on March 22nd, 1916, but that no order has as yet been entered in this matter; your petitioner prays that your Honorable Board will grant to your petitioner a rehearing on the matters embraced in its said application for the approval of a new schedule of rates, and that upon said rehearing your board may take into consideration the conditions under which your petitioner has been obliged to operate its plant from January 1st, 1914, to the present time, and the conditions which render your petitioner unable to continue to render safe, adequate and proper service.

In particular your petitioner begs to call the attention of your Honorable Board to the following facts:

1. *Increase of Taxes.* The amount of taxes assessed against your petitioner for the year 1912

was	$517.60
For the year 1913 was	533.58
For the year 1914 was	1164.43
For the year 1915 was	1371.97

After the hearing before this board the assessment on your petitioner's real estate was increased from $1900 to $4500, and the assessment upon petitioner's personal property was increased from $15,000 to $45,000.

2. In the report of your Honorable Board it was assumed that the sum upon which your petitioner should be allowed to base a fair return was the reproduction value of its property, less the accrued depreciation. Your Honorable Board is reminded of the fact that in determining this figure no allowance was made for unearned depreciation, nor for the cost of developing the business, which items have heretofore been considered by your board in similar cases. Neither was any allowance made for annual depreciation, which, according to the repeated rulings of your board, must be considered and provided for. It is generally conceded that at least one and one-half per cent. for annual depreciation of a sewer property should be allowed. Mr. Boardman's estimate of the depreciated value of petition-

er's property, as of December 31st, 1913, was	$89,081.22
Extensions in 1914 and 1915 have cost	1,086.18
Total value on this basis Dec. 31st, 1915	$90,167.40

The estimated gross income of your petitioner under its old schedule of rates for the year

1915 is	$9,213.05
Operating expenses and taxes	7,178.35
Net, after deducting operating expenses and taxes,	$2,034.68
Depreciation 1½% on $90,167.40	1,352.51
Balance applicable to return on investment	682.17

being less than 8/10 of 1% on value of $90,167.40

It is therefore respectfully submitted that the actual operation of your petitioner's plant for the years 1914 and 1915 conclusively shows that after making the absolutely necessary allowance for annual depreciation, the present schedule of rates charged by your petitioner is insufficient to yield a return of 1% upon the admitted value of petitioner's property, although in determining that value no unearned depreciation or intangibles are considered.

Your petitioner therefore respectfully represents that the schedule of rates under which it is at present operating fail to yield sufficient revenue to enable our petitioner to render safe, adequate and proper service; and your petitioner therefore asks that your Honorable Board will grant a rehearing of its petition for the approval of a new schedule of increased rates, and will fully examine this entire matter with particular reference to the conditions as they have existed since the hearing aforesaid and as they now exist, and grant your petitioner such relief in the premises as may seem adequate to enable your petitioner to carry on the purposes for which it was incorporated.

And your petitioner will ever pray, &c.

Burlington Sewerage Company,
Signed by Jos. S. Keen, Jr.,
President.

Attest:
H. Bayard Hodge,
(Seal) *Secretary.*

State of Pennsylvania, }
County of Philadelphia, } *ss.*

H. Bayard Hodge, of full age, being duly sworn according to law, on his oath says that he is the secretary of the Burlington Sewerage Company; that deponent has read the foregoing petition, and that the same is true to the best of his knowledge and belief.

Signed H. Bayard Hodge.

Sworn and subscribed to before me this 30th day of October, A. D. 1916.

Signed A. Reynolds Colesberry,
(Seal) *Notary Public.*
My Commission Expires March 1, 1919.

REPORT.

STATE OF NEW JERSEY.

BOARD OF PUBLIC UTILITY COMMISSIONERS.

In the Matter of the Application of the Burlington Sewerage Company for Rehearing on the Question of Approval by the Board of a New Schedule of Rates. } REPORT.

Ernest Watts, for Burlington.
J. Fithian Tatem, for the company.

On March 22nd, 1916, the board filed a report on the application of the Burlington Sewerage Company for approval of a new schedule of rates, which schedule proposed increases in the company's charges. Following the filing of this report application was made for rehearing and a date fixed for argument on the question of such rehearing. After consideration the board is of the opinion that the matter should not be reopened for further hearing.

In its former report the board held that although the rate of return on the company's property at the valuation assumed for the purposes of that report was low, it was not confiscatory and because of the obligation of the company to furnish service at specified rates it would not allow an increase.

It appears that since the former hearing the municipality of Burlington increased the taxes about $800. This increase in taxation, it seems, was based upon the valuation of its property which the company presented in this proceeding.

The imposition of the additional assessment is in effect a penalty which the company has and to pay as a consequence of the appeal to this board for an increase in rates. The result is that what was admittedly a low rate is now reduced to what may be a confiscatory one.

We think the company should be allowed an increase in rates sufficient to return additional income to the amount of the added assessments imposed by the municipality since the hearing. The imposition of the new assessment leaves the company with a net return upon its property of a little over one per cent. instead of two and one-half per cent. which the board found inadequate but not confiscatory, and which it refused to increase because of the contract between the city and the company as to maximum rates. The city is not in a position to complain of an increase in rates sufficient to pay the added burden in taxes. It can be seen that the company would soon be taxed into insolvency if it were not permitted to earn the amount of the increased taxes. The report expressing disapproval of the schedule of rates heretofore filed is reaffirmed except to the extent of allowing an increase sufficient to pay the increased taxes referred to herein. The company may file a new schedule in accordance with this report.

Dated March 21st, 1917.

BOARD OF PUBLIC UTILITY COMMISSIONERS.
By
(Signed) JOHN J. TREACY,
(Signed) JOHN W. SLOCUM,
Commissioners.

Attest:
(Signed) ALFRED N. BARBER,
Secretary.

DISSENTING OPINION.

STATE OF NEW JERSEY.

BOARD OF PUBLIC UTILITY COMMISSIONERS.

In the Matter of the Application of Burlington Sewerage Company for Approval of a New Schedule of Rates. } DISSENTING OPINION.

Ernest Watts and Claude V. Palmer, for the city of Burlington.

J. Fithian Tatem, for the company.

By Commissioner Donges:

For the reasons given in the report filed by me in this case on original hearing I vote to deny a rehearing and any change in the existing tariffs.

Dated March 21st, 1917.

(Signed) Ralph W. E. Donges,
Commissioner.

I Hereby Certify the foregoing to be a true copy of dissenting opinion filed by Commissioner Donges at a meeting held Wednesday, March 21st, 1917.

(Signed) Alfred N. Barber,
Secretary.

(Seal)

ORDER.

STATE OF NEW JERSEY.

Board of Public Utility Commissioners.

In the Matter of the Application of Burlington Sewerage Company for Approval of a New Schedule of Rates.	Order.

The Burlington Sewerage Company having by letter to the board dated June 27th, 1914, submitted a new schedule of rates proposing increases in its charges for service, and the board having investigated the question for the reasonableness of the proposed increases and of its power to grant the same, and having on March 22nd, 1916, and March 21st, 1917, filed reports containing its findings of fact and conclusions thereon, which said reports are hereby referred to and made parts hereof, the board disapproves the proposed new schedule of rates referred to herein, and

It Is Hereby Ordered that the application made to the board for its approval of said schedule be and the same hereby is Dismissed.

Dated April 4th, 1917.

Board of Public Utility Commissioners.
By
(Signed) Ralph W. E. Donges,
(Seal) *President.*

Attest:
(Signed) Alfred N. Barber,
Secretary.

I Hereby Certify the foregoing to be a true copy of order adopted by the Board of Public Utility Commissioners at its meeting held Wednesday, April 4th, 1917, and recorded in the minutes of said meeting.

(Signed) Alfred N. Barber,
Secretary.

EXHIBIT "P2."

Burlington Sewerage Company

Appraisal of the Value of the Plant

By Wm. H. Boardman, C. E.

September, 1914.

---

1. *Real Estate*—		
16.2 acres land at Disposal Plant		$1,620.00
2. *Collecting System*—		
1222′ 4″ pipe @ $.35		$ 427.70
194′ 5″ pipe @ .40		77.60
32506′ 8″ pipe 0-6′ deep @ .52	$16,903.12	
10286′ 8″ pipe 6-8′ deep @ .65	6,683.90	
725′ 8″ pipe 8-10′ deep @ .80	580.00	24,169.02
582′ 10″ pipe 0-6′ deep @ .67	389.94	
175′ 10″ pipe 6-8′ deep @ .76	133.00	
686′ 10″ pipe 8-10′ deep @ 1.09	747.74	
180′ 10″ pipe 19-12′ deep @ 1.20	216.00	1,486.68
33′ 12″ pipe 0-6′ deep @ .76	25.08	
1800′ 12″ pipe 6-8′ deep @ .85	1,530.00	
1123′ 12″ pipe 8-10′ deep @ 1.18	1,325.14	
625′ 12″ pipe 10-12′ deep @ 1.30	812.50	3,692.72
321′ 15″ pipe 6-8′ deep @ 1.06	340.26	
728′ 15″ pipe 8-10′ deep @ 1.33	968.24	1,308.50
403′ 18″ pipe 8-10′ deep @ 1.62	652.86	

50′ 18″ pipe 10-12′ deep @ 1.81	90.50	743.36
663′ 24″ pipe 0-6′ deep @ 1.86	1,233.18	
3238′ 24″ pipe 6-8′ deep @ 2.05	6,637.90	
1566′ 24″ pipe 8-10′ deep @ 2.28	3,570.48	
25′ 24″ pipe 10-12′ deep @ 2.50	62.50	
		11,504.06
891′ 8″ cast-iron pipe @ $1.00	$ 891.00	
885′ 10″ cast-iron pipe pumping main @ 1.29	1,141.65	
78′ 12″ cast-iron pipe) depth 6′.0″) under railroad)) 12.55		
54′ 20″ cast-iron pipe) tons depth 11′.0″) @ $50.00	627.50	2,660.15
under railroad) per ton)		
55.58′ 24″ cast-iron pipe) under railroad)		
4—5″ Y branches @ $.48	1.92	
2887—8″ Y branches @ .66	1,905.42	
112—10″ Y branches @ .96	107.52	
230—12″ Y branches @ 1.20	276.00	
78—15″ Y branches @ 1.62	126.36	
22—18″ Y branches @ 2.28	50.16	
296—24″ Y branches @ 3.90	1,154.40	3,621.78
4—drop manholes 10′ deep and under @ 80.00	320.00	
53—intersection manholes 10′ deep and under @ 60.00	3,180.00	
97—plain manholes 10′ deep and under @ 45.00	4,365.00	7,865.00

100,000 ft. B.M. sheathing left in trench @ 40.00	4,000.00	
27,120 ft. B.M. timber in foundations @ 40.00	1,084.80	5,084.80
		62,641.37
3. *Pump Well—*		
90 cu. yds. excavation @ $.50	45.00	
5 cu. yds. concrete @ 9.00	45.00	
18000 bricks @ 10.00	180.00	
30 bbls. cement @ 2.00	60.00	
12 cu. yds. sand @ 1.00	12.00	
Laying 18000 bricks @ 6.00	108.00	
Ladder, 18′ long	10.00	
Wooden platform and iron screens	250.00	
Well curb 12′.2″ diam. x 20′ high	125.00	
Pumping during construction	125.00	960.00
4. *Pumping Station—*		
Pumping Station		1,750.00
5. *Pumps—Engines—and Accessories in Pumping Station—*		
2—21 H.P. Otto gas engines @ $600.00	1,200.00	
2—engine foundations @ 50.00	100.00	
Hauling and erecting @ 75.00	150.00	
1—6″ Alexander centrifugal pump	120.00	
1—5″ Morris centrifugal pump	95.00	
1—2½″ gear-driven circulating pump	50.00	
Pump foundations	75.00	

Hauling and erecting	75.00	
Pump connections, valves, primers, etc.	500.00	
2—Magnetos	19.00	
Dynamo	22.00	
6—Edison cells	30.00	
3—Spark coils @ 2.50	7.50	
7″—2-ply leather belt, 23′ long	39.00	
10″—2-ply leather belt, 27′ long	54.00	
Sims oil filter, Size O	15.00	
Stove	2.00	
Copper oil-guards and trays	13.00	
2—anti-fluctuators @ 12.00	24.00	
1—piece platinum	14.00	
Galvanized iron railing	27.00	
Eight-day clock	2.50	
2—#3 Banner oil lamps @ 2.00	4.00	
250′—1½″ rubber-lined fire hose @ .23	57.50	
3—60 gallon galvanized gasoline tanks @ 5.00	15.00	
2—brick chambers	40.00	
Work bench	2.00	2,752.50

6. *Septic Tank*—

266 cu. yds. excavation @ $.25	66.50	
714 cu. yds. embankment @ .25	178.50	
80 cu. yds. concrete @ 9.00	720.00	
52000 bricks @ 10.00	520.00	
80 bbls. cement @ 2.00	160.00	
35 cu. yds. sand @ 1.00	35.00	
Laying 52000 bricks @ 6.00	312.00	
612′—8″ C.I. pipe, with specials and valves, laid complete @ 1.00	612.00	

25′—12″ C.I. pipe, with specials and valves, laid complete @ 1.85	46.25	2,650.25
Special Castings		
1—12″ x 12″ x 8″ Y @ .03	18.96	
4—12″ x 12″ x 8″ tees @ .03	60.24	
1—12″ x 12″ x 10″ tee @ .03	15.57	
1—12″ ¼ bend @ .03	10.98	
2—12″ plugs @ .03	3.00	
2—10″ ¼ bends @ .03	16.68	
1—8″ ⅛ bend @ .03	4.50	
5—8″ valves @ 16.20	81.00	
400′—12″ terra-cotta drain pipe 0-6′ deep @ .76	304.00	514.93
		3,165.18
7. *Broad Surface Irrigation Plant*—		
2322 cu. yds. earth excavation and grading @ $.25	580.50	
911 cu. yds. earth embankment @ .25	227.75	
361 cu. yds. broken stone @ 2.50	902.50	
49 cu. yds. stone, slag and cinder, barrier @ 2.50	122.50	
77 cu. yds. brick and concrete carrier @ 12.00	924.00	
6117′—6″ drain tile @ .20	1,223.40	
1800′—4″ drain tile @ .18	324.00	
7720 ft. B.M. Y.P. in ditch @ 40.00	308.80	4,613.45
8. *Resurfacing Streets*—		
12570 sq. ft. asphalt blocks @ $.12	1,508.40	

7680 sq. ft. shale bricks @ .08	614.40	
10323 sq. ft. Macadam @ .03	309.69	
657 sq. ft. cobble @ .07	45.99	2,478.48

9. *Materials and Equipment on Hand*—

5″ Morris centrifugal pump	95.00
4″ Gould centrifugal pump	80.00
Hand pressure-pump	5.00
10″ x 12″ pulley)	
12″ x 15″ pulley)	15.80
12″ x 12″ pulley)	
51 gallons gas engine cylinder oil	20.40
27 gallons machine oil	8.64
2 gallons muriatic acid @ .225	.45
80 gallons gasoline @ $.12	9.60
55 gallons coal oil @ .09	4.95
8 lbs. Polarine grease @ .10	.80
2 galv. oil storage tanks @ 5.00	10.00
250′—1½″ old rubber hose	5.00
2 pairs rubber boots @ 4.25	8.50
80 lbs. cotton waste @ .08	6.40
2¾ lbs. 7/16″ ring-packing @ .90	2.48
50 lbs.—8 penny nails @ .03	1.50
25 lbs.—10 penny nails @ .03	.75
25 lbs. jute @ .035	.88
1600 lbs. hard coal @ 6.75	5.40
Scrap iron	2.50
158′—8″ terra-cotta pipe @ .165	26.07
2′—12″ terra-cotta pipe @ .30	.60
2′—24″ terra-cotta pipe @ .975	1.95
26′—5″ terra-cotta pipe @ .12	3.12
13′—5″ closed horseshoe tiling @ .04	.52

45′—4″ horseshoe tiling @ .03	1.35	
31—8″ x 6″ terra-cotta Ys @ .66	20.46	
112—6″ stoppers @ .05	5.60	
70′—4″ wrought iron pipe @ .34	23.80	
16′—2½″ wrought iron pipe @ .18	2.88	
1—4″ elbow, screw	.30	
4—4″ sockets, screw @ .25	1.00	
1—4″ 45° bend, screw	.36	
1—8″ 45° bend, screw	2.13	
2—4″ flanges, screw @ $.60	1.20	
2—6″ flanges, screw @ 1.00	2.00	
1—8″ flange, screw	1.30	
1—6″ to 5″ flange reducer	3.15	
2—10″ foot-valves @ 14.50	29.00	
Pipe fittings, ¼″ to 4″	5.00	415.84

10. *Tools on Hand*—

Work bench and tools	25.00
400′ sewer cleaning rods, and tools	110.00
18″ pipe wrench	1.75
14″ pipe wrench	1.50
2 monkey-wrenches @ $.50	1.00
1 set engine wrenches	2.00
4 wood saws @ 1.00	4.00
1 hack saw	.60
3 hammers @ .75	2.25
2 hatchets @ .75	1.50
2 axes @ .75	1.50
4 rakes @ .375	1.50
1 tamping iron	.50
1 grubbing hoe	.40
5 forks @ .60	3.00
1 hoe	.60

2 wheelbarrows @ 2.00	4.00	
3 cold chisels @ $.25	.75	
2 pairs pliers @ .50	1.00	
3 lanterns @ .50	1.50	
2 buckets @ .25	.50	
1 5-gallon oil can	1.00	
1 Star drill	1.00	
1 pair grass clippers	1.00	
5/8″ & 3/4″ iron taps	.75	
1 set stock and dies, 1/4″ to 1″, right hand	4.50	
1 set Armstrong dies, 1/8″ to 1″, left hand	4.50	
1 belt clamp	3.50	
18 shovels @ .75	13.50	
7 picks @ .60	4.20	
1 broom	1.00	
1 24″ asbestos pouring ring	6.00	
1 8″ asbestos pouring ring	2.00	
1 pipe vise, 1/4″ to 2 1/2″	.75	
1 tripod	15.00	223.55

11. *Office Equipment—*

Oak roll top desk	29.00
Flat top desk	25.00
Letter file cabinet, 24 drawers	25.00
Letter press and cabinet	15.00
8 vertical letter files	10.00
Safe	25.00
Letter file, 5 drawers	10.00
Smith typewriter	50.00
Electric fan	12.50
Water cooler	2.50
Cuspidor	1.00
Metal clock	1.50

Inkstand	1.00	
Desk Chair	7.50	
2 chairs	5.00	
Waste paper basket	.50	
Glass bottles	3.00	
Stationery, blanks, etc.	25.00	
Window shades	7.00	
Linoleum	16.50	
50 ft. metallic tape	1.50	273.50

12. *Barn, Farming Implements, Etc.*—

Barn	450.00	
Horse	250.00	
Cart	45.00	
Plough and cultivator	9.00	
Hose carriage	25.00	
Grindstone	2.25	
3 Scythe blades	2.50	
1 set cart harness	20.00	
1 set plough harness	3.00	
Stable bucket	1.00	
½ ton #2 hay	9.00	
Watering can	.50	
Lawn-mower	15.00	832.25

Depreciation

Collecting System—

Built, 1902-1914.		
Average time,—6 years.		
1% on $62,641.37 for 6 years		$3,758.48

Disposal Plant—

Pump Well.		
Cost, $960.00—12 years—12%	$ 115.20	
Pumping Station.		
Cost, $1,750.00—12 years—12%	210.00	
Pumps—Engines—and Accessories in Pumping Station.		

Cost, $2,752.50—12 years—50%	1,376.25	
Septic Tank.		
Cost, $3,165.18—12 years—12%	379.82	
Broad Surface Irrigation Plant.		
Cost, $4,613.45—12 years—12%	553.61	2,634.88
		$6,393.36

Summary	Cost of Plant Collecting System	Disposal Plant
1. Real Estate		$1,620.00
2. Collecting System	$62,641.37	
3. Pump Well		960.00
4. Pumping Station		1,750.00
5. Pumps — Engines — and Accessories in Pumping Station		2,752.50
6. Septic Tank		3,165.18
7. Broad Surface Irrigation Plant		4,613.45
8. Resurfacing Streets	2,478.48	
9. Materials and Equipment on hand		415.84
10. Tools on hand		223.55
11. Office Equipment		273.50
12. Barn — Farming Implements, etc.		832.25
	65,119.85	16,606.27
Engineering, 7%	4,558.39	1,162.44
	69,678.24	17,768.71
Organization Expenses, 6%	4,180.69	1,066.12
	73,858.93	18,834.83

Interest during construction, one year, average, 6 mos. @ 6%	2,215.77	565.05
	$76,074.70	$19,399.88

	Totals
	$95,474.58
Discount on Bonds sold at 85 1/3%	11,002.50
	106,477.08
Depreciation	6,393.36
	100,083.72
Cost of Developing Business, to December 31, 1913, as per Tabulated Statement thereof furnished by the Burlington Sewerage Company	92,203.71
	$192,287.43

EXHIBIT "P3."

Burlington Sewerage Company

Appraisal of the Value of the Plant

By Wm. H. Boardman, C. E.

September, 1914.

Supplement. Analytical Abstract as to Sewers on Certain Streets. Oct. 6/14

Camden Road, from Federal to Mott Avenue:—

777′ 8″ pipe 0-6′ deep @ $.52 $ 404.04

348′ 8″ cast-iron pipe @ 1.00	348.00	
9 Y branches @ .66	5.94	
6 plain manholes @ 45.00	270.00	
1 intersection manhole	60.00	$1,087.98
Camden Road, from Mott to Salem Avenue:—		
210′ 8″ pipe 0-6′ deep @ $.52	109.20	
7 Y branches @ .66	4.62	
1 intersection manhole	60.00	173.82
Camden Road, from Salem toward Beverly Road:—		
249′ 8″ 0-6′ deep @ $.52	129.48	
5 Y branches @ .66	3.30	132.78
Mott Avenue, from Camden Road to Dead End:—		
874′ 8″ pipe 0-6′ deep @ $.52	454.48	
471′ 8″ cast-iron pipe @ 1.00	471.00	
52 Y branches @ .66	34.32	
3 plain manholes @ 45.00	135.00	
1 intersection manhole	60.00	1,154.80
Salem Avenue, from Camden Road to Dead End:—		
460′ 8″ pipe 0-6′ deep @ $.52	239.20	
48′ 8″ cast-iron pipe @ 1.00	48.00	
17 Y branches @ .66	11.22	
1 plain manhole @ 45.00	45.00	343.42
		$2,892.80
Engineering 15%		433.92
Total		$3,326.72

EXHIBIT P4.

Burlington Sewerage Company

Statement of Income and Expenses 1909 to 1913 Inclusive.

Earnings	1909		1910		1911		1912		1913	
Sewer Rents		6,810.40		7,064.73		8,022.35		8,356.31		8,667.87
Rent a/c		12.00		12.00		12.00		12.00		12.00
Misc. Earnings		49.00								
Int. on Deposits etc.		32.65		60.35		93.53		73.76		18.96
										8,698.83
Less Dec. Tapping (Adj.)										30.00
Total Earnings		6,904.05		7,137.08		8,127.88		8,442.07		8,668.83
Expenses										
Office expenses	110.69		60.15		146.88		111.72		64.40	
Office Rents	120.00		120.00		120.00		120.00		110.00	
General Expenses	379.23		366.16		375.54		221.97		379.31	
Salaries	699.70		799.32		643.69		745.97		742.41	
Pump Sta. Wages	1,161.12		1,260.00		1,263.75		1,262.70		1,260.00	
Misc. Wages	348.13		664.43		1,027.54		847.98		916.17	
Gasoline	1,304.17		1,361.00		1,718.00		1,503.65		2,028.78	
Misc. Pump Sta. Exp.	71.73		55.23		72.40		68.78		92.26	
Legal Expenses			10.00		54.97		16.15		80.40	
Tools	98.31		99.23		16.36		57.88		76.53	
Machinery repairs	111.82		101.59		147.78		234.95		24.70	
Septic Tank repairs	4.57				35.85					
Pipe Line repairs	84.48		6.98		30.68		25.24		.75	
Building repairs	.64		.70		6.01		6.13		11.50	
Filter Bed repairs	276.88		36.90		16.33		20.25		18.33	
Taxes	383.65		401.00		513.63		517.64		533.58	
Insurance	60.00		60.48		85.50		116.89		111.14	
Total Expenses		5,215.12		5,403.17		6,274.91		5,877.90		6,450.26
Bal. appl. to interest		1,688.93		1,733.91		1,852.97		2,564.17		2,218.57
Bond Interest	3,750.00		3,750.00		3,750.00		3,750.00		3,750.00	
Int. on notes & Loans	849.48		1,178.20		1,267.07		1,362.76		1,329.97	
Total Interest		4,599.48		4,928.20		5,017.07		5,112.76		5,079.97
Deficit Excl. of Dep.		2,910.55		3,194.29		3,164.10		2,548.59		2,861.40

EXHIBIT "P5."

BURLINGTON SEWERAGE COMPANY

INVESTMENT INCLUDING COST OF DEVELOPING BUSINESS TO DEC. 31, 1913

	INVESTMENT End of Year			Interest				Depreciation	Oper. Exp. Taxes & Ins.	Total Expense	Gross Income	Deficits
1902	45,663.19	6%	2,739.79		1%	456.63						
Added in 1902	29,336.81	3%	880.10	3,619.89	½%	146.68		603.31	612.80	4,836.00	471.45	4,364.55
1903	79,364.55	6%	4,761.87		1%	750.00						
Added in 1903	729.47	3%	21.88	4,783.75	½%	3.65		753.65	1,761.28	7,298.68	1,715.88	5,582.80
1904	85,676.82	6%	5,140.61		1%	757.29						
Added in 1904	7,684.99	3%	230.55	5,371.16	½%	38.43		795.72	2,720.69	8,887.57	3,559.56	5,328.01
1905	98,689.82	6%	5,921.39		1%	834.14						
Added in 1905	2,446.95	3%	73.41	5,994.80	½%	12.23		846.37	2,274.37	9,115.54	4,674.64	4,440.90
1906	105,577.67	6%	6,334.66		1%	858.61						
Added in 1906	2,000.62	3%	60.02	6,394.68	½%	10.00		868.61	5,224.92	12,488.21	5,735.10	6,753.11
1907	114,331.40	6%	6,859.88		1%	878.62						
Added in 1907	1,215.56	3%	36.47	6,896.35	½%	6.08		884.70	8,113.33	15,894.38	5,279.86	10,614.52
1908	126,161.48	6%	7,569.69		1%	890.77						
Added in 1908	591.10	3%	17.73	7,587.42	½%	2.96		893.73	10,400.25	18,881.40	6,424.18	12,457.22
1909	139,209.80	6%	8,352.59		1%	896.69						
Added in 1909	2,182.28	3%	65.47	8,418.06	½%	10.91		907.60	5,215.12	14,540.78	6,904.05	7,636.73
1910	149,028.81	6%	8,941.73		1%	918.51						
Added in 1910	1,036.33	3%	31.09	8,972.82	½%	5.18		923.69	5,403.17	15,299.68	7,137.08	8,162.60
1911	158,227.74	6%	9,493.66		1%	928.87						
Added in 1911	3,133.39	3%	94.00	9,587.66	½%	15.67		944.54	6,274.91	16,807.11	8,127.88	8,679.23
1912	170,040.36	6%	10,202.42		1%	960.21						
Added in 1912	1,087.08	3%	32.61	10,235.03	½%	5.44		965.65	5,877.90	17,078.58	8,442.07	8,636.51
1913	179,763.95	6%	10,785.84		1%	971.08						
Added in 1913	262.28	3%	7.87	10,793.71	½%	1.31		972.39	6,450.26	18,216.36	8,668.83	9,547.53
Total	189,573.76			88,655.33				10,359.96	60,329.00	159,344.29	67,140.58	92,203.71
Less Land Sold 1913	780.00											
Total Investment 12/31/13	188,793.76											

EXHIBIT "P6."

BURLINGTON SEWERAGE COMPANY

Statement showing the classification of properties, according to the fixtures in use, and the comparison between the present rates for sewer service, and the rates in accordance with the proposed schedule of rates effective August 1, 1914.

ALL PROPERTIES

Total yearly revenue on the basis of new rates, for the fixtures now in use	$15,398.50
Total yearly revenue on the basis of old rates, for the fixtures now in use	8,840.50
Total number of connections—1253—increase	$6,558.00

Class	No.	Yearly Revenue			
		Old Rates	New Rates	Increase	Decrease
Dwellings					
1 Kitchen Sink	181	$1,086.00	$1,810.00	$724.00	
1 Yard Hydrant	37	222.00	370.00	148.00	
1 Water Closet	3	18.00	30.00	12.00	

30	20		10	
1 Wash Stand	1	6.00	10.00	4.00
2 Sinks in Kitchen	1	6.00	10.00	4.00
1 Kitchen Sink & 1 Bath Tub	54	324.00	540.00	216.00
1 Kitchen Sink & 1 Water Closet	90	540.00	900.00	360.00
1 Kitchen Sink & 1 Wash Stand	2	12.00	20.00	8.00
1 Kitchen Sink & 1 Slop Sink	91	546.00	910.00	364.00
1 Bath Tub & 1 Water Closet	2	12.00	20.00	8.00
1 Water Closet & 1 Wash Stand	1	6.00	10.00	4.00
2 Sinks in Kitchen & 1 Bath Tub	1	6.00	10.00	4.00
2 Sinks in Kitchen & 1 Water Closet	2	12.00	20.00	8.00
1 Kitchen Sink, 1 Bath Tub & 1 Water Closet	326	1,914.50	3,260.00	1,345.50
1 Kitchen Sink, 1 Bath Tub & 1 Wash Stand	1	6.00	10.00	4.00
1 Kitchen Sink, 1 Bath Tub & 1 Slop Sink	26	156.00	260.00	104.00
1 Kitchen Sink, 1 Yard Hydrant & 1 Sink	1	6.00	10.00	4.00
1 Kitchen Sink, 1 Water Closet, 1 Wash Stand	3	18.00	30.00	12.00
1 Kitchen Sink, 1 Water Closet, 1 Slop Sink	3	18.00	30.00	12.00
1 Kitchen Sink, 1 Wash Stand, 1 Slop Sink	1	6.00	10.00	4.00
1 Bath Tub, 1 Water Closet, 1 Wash Stand	1	6.00	10.00	4.00
2 Sinks in Kitchen, 1 Bath Tub & 1 Water Closet	5	32.50	55.00	22.50
1 Kitchen Sink, 2 Water Closets & 1 Wash Stand	2	12.00	22.00	10.00
1 Kitchen Sink, 1 Bath Tub & 2 Water Closets	4	28.00	50.00	22.00

1 Kitchen Sink, 1 Water Closet & 3 Wash Tubs	1	6.00	10.50	4.50
1 Bath Tub, 1 Water Closet & 2 Wash Stands	1	6.00	10.00	4.00
2 Sinks in Kitchen, 2 Water Closets & 2 Wash Stands	1	6.75	30.50	23.75
2 Sinks in Kitchen, 1 Bath Tub & 2 Water Closets	1	7.50	13.50	6.00
1 Kitchen Sink, 2 Water Closets & 2 Wash Stands	1	6.25	12.00	5.75
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Wash Stand	122	823.50	1,342.00	518.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Slop Sink	78	469.00	858.00	389.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Sink in Shed	1	6.00	11.00	5.00
1 Kitchen Sink, 1 Yard Hydrant, 1 Bath Tub & 1 Water Closet	1	8.00	15.00	7.00
1 Kitchen Sink, 1 Bath Tub, 1 Wash Stand & 1 Slop Sink,	1	6.00	10.00	4.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 2 Wash Stands	2	14.50	24.00	9.50
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets & 1 Wash Stand	11	84.25	148.50	64.25
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets & 1 Slop Sink,	2	14.00	27.00	13.00

1 Kitchen Sink, 1 Bath Tub, 2 Water Closets & 1 Sink in Shed	1	7.50	13.50	6.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 3 Wash Stands	1	7.75	13.00	5.25
1 Kitchen Sink, 2 Bath Tubs, 1 Water Closet & 1 Wash Stand	1	7.50	14.50	7.00
1 Kitchen Sink, 2 Bath Tubs, 2 Water Closets & 2 Wash Stands	1	10.00	17.00	7.00
2 Sinks in Kitchen, 1 Bath Tub, 1 Water Closet & 1 Wash Stand	7	50.75	84.00	33.25
2 Sinks in Kitchen, 1 Bath Tub, 1 Water Closet & 1 Slop Sink	1	8.75	15.50	6.75
2 Sinks in Kitchen, 1 Bath Tub, 2 Water Closets & 1 Wash Stand	7	57.75	101.50	43.75
3 Sinks in Kitchen, 1 Bath Tub, 2 Water Closets & 1 Urinal	1	9.50	17.00	7.50
3 Sinks in Kitchen, 3 Bath Tubs, 5 Water Closets & 4 Wash Stands	1	12.50	31.00	18.50
2 Bath Tubs, 2 Water Closets, 2 Wash Stands & 1 Pantry Sink	1	9.00	13.00	4.00

1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand & 1 Wash Tub	1	7.75	12.00	4.25
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand & 1 Pantry Sink	3	21.75	36.00	14.25
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand & 1 Slop Sink	15	135.00	240.00	105.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand & 2 Wash Tubs	5	38.00	65.00	27.00
1 Kitchen Sink, 2 Bath Tubs, 1 Water Closet, 1 Wash Stand & 1 Slop Sink	1	7.50	14.50	7.00
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Wash Stand & 1 Slop Sink	1	7.75	14.50	6.75
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Wash Stand & 1 Pantry Sink,	1	8.25	14.50	6.25
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Wash Stand & 2 Wash Tubs,	1	7.75	15.50	7.75
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 2 Wash Stands & 1 Wash Tub,	1	7.75	12.50	4.75
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 2 Wash Stands & 2 Wash Tubs,	2	19.00	33.00	14.00

30 20 10

1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 2 Wash Stands & 3 Wash Tubs,	1	9.75	17.50	7.75
1 Kitchen Sink, 1 Bath Tub, 3 Water Closets, 3 Wash Stands & 2 Wash Tubs,	1	10.75	20.00	9.25
1 Kitchen Sink, 2 Bath Tubs, 2 Water Closets, 3 Wash Stands & 3 Wash Tubs,	1	11.00	21.00	10.00
1 Kitchen Sink, 2 Bath Tubs, 2 Water Closets, 1 Wash Stand & 2 Wash Tubs,	1	9.50	18.00	8.50
2 Sinks in Kitchen, 1 Bath Tub, 1 Water Closet, 1 Wash Stand & 1 Slop Sink,	1	7.25	13.00	5.75
2 Sinks in Kitchen, 1 Bath Tub, 2 Water Closets, 1 Wash Stand & 3 Wash Tubs,	1	9.75	17.50	7.75
2 Sinks in Kitchen, 2 Bath Tubs, 2 Water Closets, 1 Wash Stand & 3 Wash Tubs,	1	10.50	20.00	9.50
2 Sinks in Kitchen, 2 Bath Tubs, 2 Water Closets, 2 Wash Stands & 1 Pantry Sink,	1	10.00	19.00	9.00
2 Sinks in Kitchen, 3 Bath Tubs, 3 Water Closets, 3 Wash Stands & 4 Wash Tubs,	1	13.75	28.00	14.25
2 Sinks in Kitchen, 1 Bath Tub, 1 Water Closet (2 families), 1 Wash Stand & 2 Wash Tubs,	1	8.25	18.00	9.75

1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand, 3 Wash Tubs & 1 Foot Bath	1	9.50	15.00	5.50
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Wash Stand, 3 Wash Tubs & 1 Slop Sink,	1	9.25	17.50	8.25
1 Kitchen Sink, 4 Bath Tubs, 4 Water Closets, 4 Wash Stands, 2 Wash Tubs & 1 Pantry Sink,	1	15.00	31.00	16.00
Total,	1128	$7.032.50	$11,876.50	$4,844.00
Dwellings & Stores				
1 Kitchen Sink,	1	6.00	10.00	4.00
1 Kitchen Sink, 1 Bath Tub, 1 Wash Stand,	1	6.00	11.50	5.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, (All in Dwelling)	1	6.00	10.00	4.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Wash Stand	2	13.50	22.00	8.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Sink in Store,	1	6.50	14.00	7.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 2 Wash Stands,	1	7.25	15.00	7.75

1 Kitchen Sink, 1 Bath Tub, 2 Water Closets	1	7.00	14.00	7.00
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets & 1 Wash Stand,	2	17.00	30.00	13.00
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets & 2 Wash Stands,	1	10.00	19.00	9.00
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets & 2 Sinks in Drug Store,	1	13.50	23.00	9.50
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets 1 Sink @ Soda Fountain & 1 Sink in Prescription Department,	1	12.00	21.50	9.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand, I Sink in Shed & Ice Box	1	9.75	19.00	9.25
2 Sinks in Kitchen, 1 Bath Tub, 1 Water Closet & 1 Slop Sink,	1	6.50	15.00	8.50
2 Sinks in Kitchen, 1 Bath Tub, 2 Water Closets & 1 Wash Stand	1	8.25	19.00	10.75
2 Sinks in Kitchen, 1 Bath Tub, 2 Water Closets, 1 Wash Stand & 1 Sink at Soda Fountain,	1	7.30	19.50	12.20

2 Sinks in Kitchen, 1 Water Closet, 1 Wash Stand, 1 Drain in Ice Box, 1 Sink in Butcher Shop, 1 Sink on Second Floor, occupied by family,	1	13.75	22.00	8.25
2 Sinks in Kitchen, 1 Bath Tub, 7 Water Closets & 4 Wash Stands,	1	20.50	62.00	41.50
Total,	19	170.80	346.50	175.70
Dwellings & Offices				
2 Water Closets & 2 Wash Stands	1	6.00	11.50	5.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 2 Wash Stands,	2	15.00	30.00	15.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 2 Wash Stands & 1 Slop Sink,	1	7.25	16.00	8.75
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 2 Wash Stands & 1 Slop Sink,	1	9.25	20.50	11.25
1 Kitchen Sink, 1 Water Closet, 1 Wash Stand & 1 Drain Ice Box,	1	7.25	12.50	5.25
2 Sinks in Kitchen, 1 Bath Tub, 1 Water Closet, 2 Wash Stands, 1 Slop Sink,	1	7.75	20.00	12.25
Total,	7	52.50	110.50	58.00

30 20 10

Churches				
Water used to run motor for organ,	1	6.00	10.00	4.00
1 Water Closet & 1 Wash Stand,	1	6.00	10.00	4.00
1 Yard hydrant, 1 Wash Stand, 1 Urinal & water used to run motor for organ,	1	7.75	27.00	19.25
1 Kitchen Sink, 2 Water Cl osets, 2 Wash Stands & 1 Baptismal Pool,	1	11.25	36.00	24.75
Total,	4	31.00	83.00	52.00
Dwellings & Saloons				
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, & 1 Sink under bar,	1	10.00	18.00	8.00
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, & 1 Urinal,	1	9.50	20.00	10.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand, 1 Urinal, 1 Sink under bar,	1	10.75	29.00	18.25
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Urinal & 1 Sink under bar,	1	11.00	35.50	24.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Sink under bar & motor for running fan,	1	7.00	23.00	16.00

1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Sink under bar,	1	10.00	28.00	18.00
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets 1 Wash Stand & 2 Sinks under bar,	1	15.25	33.00	17.75
1 Kitchen Sink, 1 Bath Tub, 4 Water Closets, 1 Wash Stand, 1 Urinal & 1 Sink under bar	1	13.75	49.50	35.75
1 Kitchen Sink, 2 Water Closets, 2 Sinks under bar, 1 Water Closet in bar & 1 Slop Sink	1	15.00	33.50	18.50
Total,	9	102.25	269.50	167.25
Banks				
1 Water Closet & 1 Wash Stand,	1	6.00	10.00	4.00
2 Water Closets, 2 Wash Stands & 1 Urinal,	1	9.00	20.00	11.00
Total,	2	15.00	30.00	15.00
Dwellings & Milk Depot				
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Slop Sink,	1	6.00	15.00	9.00
1 Kitchen Sink, 1 Yard Hydrant, 1 Bath Tub, 1 Water Closet,	1	8.00	15.00	7.00

30	20		10	
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Wash Stand,	1	8.50	15.00	6.50
Total,	3	22.50	45.00	22.50
Banks & Offices				
5 Water Closets & 5 Wash Stands,	1	16.25	40.00	23.75
Clubs				
1 Kitchen Sink & 1 Water Closet,	1	6.00	18.00	12.00
1 Kitchen Sink, 1 Yard Hydrant, 1 Bath Tub, 2 Water Closets, 4 Wash Stands & 1 Wash Tub	1	12.25	22.50	10.25
2 Sinks in Kitchen, 2 Bath Tubs, 3 Water Closets, 3 Wash Stands & 1 Slop Sink,	1	11.25	53.00	42.00
Total,	3	29.50	93.50	64.25
Pool Room				
1 Water Closet & 1 Wash Stand,	1	6.00	18.00	12.00

Office Buildings				
2 Water Closets & 4 Wash Stands,	1	10.50	24.00	13.50
2 Water Closets & 8 Wash Stands,	1	25.00	40.00	15.00
5 Water Closets & 8 Wash Stands,	1	18.50	52.00	33.50
Total,	3	54.00	116.00	62.00
Stores				
1 Wash Stand,	4	24.00	40.00	16.00
1 Wash Stand & 1 Water Closet	1	6.00	10.00	4.00
1 Sink at Soda Fountain & 1 Sink at Prescription Department,	1	6.00	10.00	4.00
1 Water Closet & 2 Wash Stands,	2	12.00	24.00	12.00
Total,	8	48.00	84.00	36.00
Dwelling, Saloon & Restaurant				
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Urinal & 1 additional Sink,	1	18.00	38.00	20.00

Lodge Rooms				
1 Kitchen Sink & 1 Water Closet,	1	6.00	18.00	12.00
1 Kitchen Sink, 1 Bath Tub & 1 Water Closet,	1	6.00	20.50	14.50
1 Kitchen Sink, 1 Water Closet & 1 Wash Stand,	1	6.00	22.00	16.00
2 Kitchen Sinks, 1 Bath Tub, 4 Water Closets, 4 Wash Stands & 3 Urinals,	1	14.00	75.50	61.50
Total,	4	32.00	136.00	104.00
Hotels				
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Wash Stand, 1 Spigot in Laundry & 1 Trough under bar,	1	22.25	37.50	15.25
2 Sinks in Kitchen, 2 Bath Tubs, 8 Water Closets, 5 Wash Stands, 1 Urinal & 1 Sink under bar,	1	55.00	96.00	41.00
Total,	2	77.25	133.50	56.25
Dwelling & Restaurant				
1 Kitchen Sink, 1 Yard Hydrant, 1 Bath Tub, 1 Water Closet & Sink under lunch counter	1	11.50	19.00	7.50

Dwelling & Bakery				
1 Kitchen Sink,	1	6.00	10.00	4.00
Halls				
1 Kitchen Sink,	1	6.00	10.00	4.00
2 Water Closets & 1 Wash Stand,	1	6.00	23.00	17.00
Total,	2	12.00	33.00	21.00
Factories				
1 Sink & 1 Water Closet,	1	6.00	10.00	4.00
1 Water Closet & 1 Wash Stand	1	6.00	15.00	9.00
1 Water Closet & 3 Wash Stands,	1	6.00	10.00	4.00
2 Sinks, 1 Water Closet & 1 Wash Stand,	1	8.25	10.00	1.75
2 Water Closets & 4 Wash Stands,	1	10.50	24.00	13.50
4 Water Closets, 4 Wash Stands & 1 Urinal,	1	15.50	150.00	134.50
5 Water Closets, 6 Wash Stands & 1 Exhaust for boilers,	1	18.75	45.00	26.25
7 Water Closets, 16 Wash Stands & 2 Urinals,	1	34.50	45.00	10.50
5 Water Closets, 5 Wash Stands, 1 Urinal & Tub for soaking leather,	1	28.25	230.00	201.75

30	20		10		
1 Bath Tub, 13 Water Closets, 8 Wash Stands, 2 Urinals and tub for soaking leather,	1	58.00	230.00	172.00	
13 Water Closets, 1 Wash Stand & 4 Sinks,	1	400.00	200.00		200.00
Net Increase $377.25—Total,	11	591.75	696.00	577.25	200.00
Boat Houses					
1 Water Closet, 1 Wash Stand & 1 Shower Bath	1	6.00	28.00	22.00	
1 Bath Tub, 2 Water Closets, 1 Urinal & 1 Shower Bath,	1	13.50	59.50	46.00	
Total,	2	19.50	87.50	68.00	
Saloons					
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet & 1 Sink under bar,	1	7.00	10.00	3.00	
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 1 Wash Stand & I Urinal,	1	13.50	39.50	26.00	
2 Sinks in Kitchen, 2 Water Closets & 2 Sinks under bar,	1	12.00	33.00	21.00	
Total,	3	32.50	82.50	50.00	

Livery Stables				
1 Water Closet	1	6.00	10.00	4.00
1 Wash Stand & drain for washing carriages,	1	15.00	23.00	8.00
Total,	2	21.00	33.00	12.00
Dwelling & Laundry				
1 Kitchen Sink, 1 Water Closet & 2 Wash Tubs,	1	6.00	22.50	16.50
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, 1 Wash Stand, 2 Wash Tubs & 1 Slop Sink,	1	7.75	27.00	19.25
Total,	2	13.75	49.50	35.75
Machine Shop				
1 Water Closet, 2 Wash Stands & 1 Slop Sink,	1	6.00	10.00	4.00
Bottling Establishment				
1 Sink,	1	6.00	10.00	4.00
1 Tub for washing bottles,	1	10.00	15.00	5.00
Total,	2	16.00	25.00	9.00

30	20		10	
Boarding House				
2 Sinks in Kitchen, 1 Bath Tub & 1 Water Closet,	1	6.50	11.00	4.50
Laundry				
2 Wash Tubs	1	6.00	15.00	9.00
Dwelling & Barber Shop				
1 Water Closet & 3 Wash Stands	1	6.00	12.50	6.50
2 Water Closets & 1 Wash Stand	1	6.00	13.00	7.00
1 Kitchen Sink, 1 Yard Hydrant, 1 Bath Tub 2 Water Closets, 1 Wash Stand, 2 Wash Tubs & 1 Slop Sink,	1	10.75	28.50	17.75
Total,	3	22.75	54.00	31.25
Railway Station				
2 Water Closets, 1 Wash Stand & 1 Urinal,	1	15.00	33.00	18.00
Hotel & Theatre				
1 Kitchen Sink, 2 Bath Tubs, 12 Water Closets, 14 Wash Stands, 2 Urinals & 2 Slop Sinks with Faucets,	1	41.50	125.00	83.50

Offices				
1 Water Closet & 1 Wash Stand	3	18.00	30.00	12.00
2 Water Closets & 2 Wash Stands,	1	6.00	16.00	10.00
Total,	4	24.00	46.00	22.00
Saloon & Garage				
1 Kitchen Sink, 1 Bath Tub, 1 Water Closet, & 1 Carriage Wash,	1	16.00	30.50	14.50
Dwelling & Power House				
1 Kitchen Sink, 1 Water Closet, 1 Wash Stand & Drain for Boiler,	1	50.00	50.00	
Dwelling, Drug Store, 2 Offices & Barber Shop				
1 Kitchen Sink, 1 Bath Tub, 2 Water Closets, 3 Wash Stands & 2 Sinks in Drug Store,	1	16.50	47.00	30.50
Garages				
1 Water Closet & 1 Wash Stand	1	6.00	18.00	12.00

30	20		10		
1 Water Closet, 1 Wash Stand & 1 Wash for Autos,	1	16.00	28.00	12.00	
Total,	2	22.00	46.00	24.00	
Home					
1 Kitchen Sink, 1 Bath Tub & 2 Water Closets	1	7.00	12.50	5.50	
Carriage Wash					
Wash for Carriages	2	12.00	20.00	8.00	
Dwelling & Dentist's Office					
1 Kitchen Sink, 2 Bath Tubs, 2 Water Closets & 2 Wash Stands,	1	9.00	24.00	15.00	
Distillery					
7 Sinks & 7 Water Closets	1	19.95	15.00		4.95
Boarding School					
18 Sinks in Kitchen, 22 Bath Tubs, 22 Water Closets, 8 Wash Stands, 3 Wash Tubs, 1 Washing Machine & 8 Shower Baths,	1	135.00	131.00		4.00

Municipal Buildings			
Schools			
8 Water Closets, 2 Wash Stands & 1 Urinal	1	Free	Free
8 Water Closets, 3 Wash Stands & 1 Urinal	1	"	"
9 Water Closets, 4 Wash Stands & 3 Urinals	1	"	"
14 Water Closets, 4 Wash Stands & 1 Urinal	1	"	"
30 Water Closets 18 Wash Stands & 2 Urinals	1	"	"
Total,	5		
Fire Houses			
1 Water Closet & 1 Wash Stand,	2	Free	Free
1 Water Closet & 2 Wash Stands,	1	"	"
Total,	3		
City Hall			
4 Sinks in Kitchen, 13 Water Closets, 2 Wash Stands & 2 Urinals,	1	Free	Free

30 20 10

SUMMARY

Class	No.	Old Rates	New Rates	Increase	Decrease
Dwellings,	1128	$7,032.50	$11,876.50	$4,844.00	
Dwellings & Stores,	19	170.80	346.50	175.70	
Dwellings & Offices,	7	52.50	110.50	58.00	
Churches,	4	31.00	83.00	52.00	
Dwellings & Saloons,	9	102.25	269.50	167.25	
Banks,	2	15.00	30.00	15.00	
Dwellings & Milk Depot,	3	22.50	45.00	22.50	
Banks & Offices,	1	16.25	40.00	23.75	
Clubs,	3	29.50	93.50	64.25	
Pool Room,	1	6.00	18.00	12.00	
Office Buildings,	3	54.00	116.00	62.00	
Stores,	8	48.00	84.00	36.00	
Dwelling, Saloon & Restaurant,	1	18.00	38.00	20.00	
Lodge Rooms,	4	32.00	136.00	104.00	
Hotels,	2	77.25	133.50	56.25	
Dwelling & Restaurant,	1	11.50	19.00	7.50	
Dwelling & Bakery,	1	6.00	10.00	4.00	
Halls,	2	12.00	33.00	21.00	

Factories,	11	591.75	969.00	377.25	
Boat Houses,	2	19.50	87.50	68.00	
Saloons,	3	32.50	82.50	50.00	
Livery Stables,	2	21.00	33.00	12.00	
Dwellings & Laundries,	2	13.75	49.50	35.75	
Machine Shop,	1	6.00	10.00	4.00	
Bottling Establishment,	2	16.00	25.00	9.00	
Boarding House,	1	6.50	11.00	4.50	
Laundry,	1	6.00	15.00	9.00	
Dwelling & Barber Shop,	3	22.75	54.00	31.25	
Railway Station,	1	15.00	33.00	18.00	
Hotel & Theatre,	1	41.50	125.00	83.50	
Offices,	4	24.00	46.00	22.00	
Saloon & Garage,	1	16.00	30.50	14.50	
Dwelling & Power House,	1	50.00	50.00		
Dwelling, Drug Store, 2 Offices & Barber Shop,	1	16.50	47.00	30.50	
Garages,	2	22.00	46.00	24.00	
Home,	1	7.00	12.50	5.50	
Carriage Wash,	2	12.00	20.00	8.00	
Dwelling & Dentists's office,	1	9.00	24.00	15.00	
Distillery,	1	19.95	15.00		4.95

Boarding School,	1	135.00	131.00		4.00
Municipal Buildings, Schools 5, Fire Houses 3, City Hall 1,	9	Free	Free		
Total,	1253	$8,840.50	$15,398.50	$6,566.95	$8.95
Net Increase,				$6,558.00	

EXHIBIT "P7."

(Copy)

An Ordinance granting consent and permission to the incorporation of the Burlington Sewerage Company, by George Pfeiffer, Jr., of Camden, New Jersey, Stanley W. Rusk, of Haddonfield, New Jersey, William H. Boardman, of Philadelphia, Pennsylvania, Nathan Haines, of Burlington, New Jersey, Thomas H. Birch, of Burlington, New Jersey, Charles Harmer, of Burlington, New Jersey, and John W. Davis, of Burlington, new Jersey, together with the terms and condition or conditions upon which such consent has been granted for the purpose of constructing, maintaining and operating a sewerage system within the said City of Burlington.

Whereas, there has been presented to the Common Council of the City of Burlington, petitions requesting the granting of the hereinafter mentioned consent, which petitions are signed by the owners of real estate in the said City of Burlington, to the extent of at least one-half of the number of persons who in the last preceding municipal assessment of taxes have been assessed as the owners of the real estate in all that portion of the said City of Burlington, designated as within the limits of the hereinafter recited proposed sewerage system on the maps and specifications of the same.

Be It Ordained And Enacted by the inhabitants of the City of Burlington, in Common Council assembled, and it is hereby enacted by the authority of the same.

Sec. 1. That consent and permission is hereby given to the incorporation of George Pfeiffer, Jr., of Camden, New Jersey, Stanley W. Rusk, of Haddonfield, New Jersey, William H. Boardman, of Philadelphia, Pennsylvania, Nathan Haines, of Burlington, New Jersey, Charles Harmer, of Burlington, New Jersey, Thomas H. Birch, of Burlington New Jersey, and John W. Davis, of Burlington, N. J., and their associates, into a corporation under the act entitled "An Act for the construction, maintenance and operation of systems of sewerage in any municipality in this state." Approved June thirteenth, 1898, and the several supplements thereto, to be known as the Burlington Sewerage Company.

Sec. 2 That the said company when so incorporated in pursuance of the provision of the above entitled act, shall have the permission and consent of the said The Inhabitants of the City of Burlington, to construct, maintain and operate a system of sewerage within the limits of the City of Burlington, as designated on the maps and specifications filed with and made a part of said petition in section A mentioned, and permission to lay pipes and conduits, and erect the necessary sewerage disposal works and such other plant as may be required to maintain and operate the same under the following conditions, to wit:

a. That the said Burlington Sewerage Company, its successors and assigns, shall exercise due care and diligence in the use of all streets, lanes, alleys, and other public places, and shall cause no unnecessary obstruction to public travel in, upon or over the same or any part thereof, and shall not unnecessarily interfere with any other pipes or conduits now in said streets; and it shall use all reasonable precautions against accident or damage to person or property while engaged in laying sewers authorized by this ordinance, and shall cause all excavations and openings in said streets, or obstructions therein, to be properly lighted or guarded at night, and in the event of excavations being made, shall restore the streets, lanes, alleys and public places so excavated, to their former condition as nearly as may be without unnecessary delay, said time to be determined by a majority of the street committee of said council, and shall indemnify and save harmless the said city of Burlington from any liability, for any accident or injury to person or property that may occur in consequence of the construction of said system of sewerage, or any part thereof during the process of constructing the same.

b. Sewers shall be of the best quality salt glazed terra cotta pipe, truly cylindrical and laid upon a true gradient, with joints made tight by first class cement mortar, or, they shall be made of first class hand-burned brick laid in first class cement mortar, or of iron or steel, as the requirements of the locality may demand.

c. Man-holes shall be placed over the sewers, not over six hundred (600) feet apart and covered with approved cast iron covers, strong enough to sustain the greatest and heaviest traffic.

d. No sewer pipe shall be less than eight (8) inches in diameter, and all sewers shall be large enough to provide for the easy flow of all sewage. Adequate disposal works, shall be provided for the treatment and removal of sewage by approved sanitary methods, and in such manner that the effluent water shall be rendered innocuous either by filtration or chemical treatment, or by both, as conditions may require.

e. The said Burlington Sewerage Company, its successors and assigns shall furnish free of charge to the said city such sewer service as may be required for the City Hall, Fire Houses and all other municipal offices and school houses during the period for which this ordinance may be operative, but nothing in the above requirement shall be construed to mean that the said Burlington Sewerage Company, its successors and assigns, shall be liable for the expense of making the necessary connections, which expense shall be borne and paid by said city. And in consideration of, and for the above required free sewer service for the City Hall, Fire Houses, school house and other city offices, and in further consideration of the payment of fifty dollars annually, the said Burlington Sewerage Company, its successors and assigns shall have the right, and the said right is hereby conceded for the period in which this ordinance may be operative, to connect with any and all water pipes or mains owned by the said City for the purpose of flushing the said sewer system by means of flush tanks in place, or otherwise, and the water required for this purpose shall be furnished by the said City to the said Burlington Sewerage Company, its successors and assigns free of charge during the period in which this Ordinance may be operative, if said supply can be obtained by said City free of cost from the authorities in charge of the public water supply in said city; provided however, that should the said water supply authorities make charge for the use of said water, the said city shall in consideration of the said service and payment pay such charge to said water supply authorities, so that the use of said water shall be furnished to the said company for the said service and annual payment.

f. That the said Burlington Sewerage Company, its successors and assigns, are hereby authorized to charge not in excess of the following annual rates for sewerage service, which rates may be collected semi-annually in advance; provided, that said company shall not be compelled to establish a lower rate for a single building of less than six dollars.

SCHEDULE OF RATES
DWELLING HOUSES, PER ANNUM.

Water closet	2.50	each additional one	1.00
Urinal	1.50	" " "	.38
Bath tub	2.00	" " "	.75
Kitchen or other sink	1.50	" " "	.50
Stationary wash basin	.75	" " "	.50
Hydrant or cellar drain	2.00	" " "	1.00
2 stationary wash tubs	1.00	" " "	.50

STORES, PUBLIC BUILDINGS, FACTORIES, ETC. PER ANNUM.

Each Water Closet Basin	2.50
Each Sanitary Wash Basin	.75
Each Bath tub	2.00
Each Kitchen or other sink	2.50
Each Hydrant or Cellar Drain	2.00

HOTELS, LAUNDRIES, BREWERIES, LIVERY STABLES, SLAUGHTER HOUSES, special rates.

g. The main office of the company shall be established and maintained in the City of Burlington.

h. The said company shall in the construction of the said plant employ laborers resident in the City of Burlington so far as feasible.

i. If the said City shall by its pumping plant pump the sewage to be disposed of by said sewerage plant, or furnish the steam necessary to do said pumping, which it will do if such service be requested by said company, the said company shall pay to the said city for the said service as follows—the sum of five hundred dollars annually for the first five years, the sum of seven hundred and fifty dollars annually for the next five years, the sum of one thousand dollars annually thereafter.

Sec. 3. That at any time after the expiration of one year from the date of the completion of the contemplated sewerage system, the said city shall have the right to purchase the said system of sewers upon notice to be given by the City to the said Company, its successors or assigns. The price to be paid for said system by the said city shall be ascertained and determined as follows: the city of Burlington through its proper officials, shall appoint two appraisers, one of whom shall be an expert civil engineer, and the said company, its successors and assigns, shall also appoint two appraisers, one of whom shall be an expert civil engineer, and the said appraisers thus chosen shall appoint a fifth appraiser, and none of the said appraisers shall be a resident of the City of Burlington or a stockholder or bondholder of the corporation then owning the sewerage system, or in any way interested therein. The five appraisers thus chosen shall constitute a commission to determine the money value of the said system of sewers, and the award made by the said commission shall include, as a part of the valuation of the property the net earning capacity of the said system, and the City of Burlington shall within six months after the above named commission shall have made its award pay the amount so awarded in cash, or at the option of said city, in the bonds of said city, bearing four per cent. per annum interest at the market value. Provided however, that the price to be paid by the said city shall not exceed the cost price of said sewerage plank by more than twenty-five per cent. thereof; and should the valuation fixed by said appraisers exceed the said cost price by more than twenty-five per cent., the said purchase price is hereby fixed at the said original cost price, plus twenty-five per cent. thereof.

Sec. 4. The preliminary surveys and other engineering work of the said sewer system shall be commenced within three months after this ordinance shall have taken effect, and after the said incorporation has been had as herein provided and after such consents and approvals of such contemplated construction have been had as is required by the statutes of the state of New Jersey and as now existing, or which may be enacted while this ordinance and said conditions are being passed and complied with, and the construction shall begin within six months from said date; and the entire system shall be completed within two years from the date that this ordinance takes effect.

Sec. 5. That the expense of publishing and recording this ordinance shall be paid by said Burlington Sewerage Company.

Sec. 6. And be it enacted this ordinance shall take effect immediately.

I hereby certify that the above is a true copy of an ordinance passed by the Common Council of the City of Burlington on Tuesday evening March 12th, 1901.

(Signed) J. Frank Clime,
City Clerk.

EXHIBIT "P8."

(Copy)

An Ordinance granting consent and permission to the Burlington Sewerage Company to construct maintain and operate a Sewerage System within the City of Burlington, and granting privilege and permission to said Company and its assigns to open the streets, lanes and alleys and lay therein pipes and conduits to be used in said system.

Whereas: The Common Council of the City of Burlington on the 15th day of March 1901 passed an Ordinance entitled "An Ordinance granting consent and permission to the incorporation of the Burlington Sewerage Company by George Pfeiffer, Jr., of Camden, N. J., Stanley W. Rusk of Haddonfield, N. J., William H. Boardman of Philadelphia, Pa., Nathan Haines of Burlington, N. J., Thomas H. Birch of Burlington, N. J., Charles Harmer of Burlington, N. J., and John W. Davis of Burlington, N. J., together with the terms and condition or conditions upon which such consent has been granted for the purpose of constructing, maintaining and operating a Sewerage System within the said City of Burlington." in and by which said Ordinance the terms and condition or conditions upon which consent of said council was granted for the purpose of constructing, operating and maintaining a Sewerage System within the said City of Burlington as by reference to said Ordinance will appear; And,

Whereas: Subsequent to the passage of said Ordinance the incorporators named therein have formed an organization or incorporation under the Act of the Legislature of New Jersey, entitled, "An Act for the construction, maintenance and operation of systems of sewerage in any municipality in this state," approved June 13th, 1898: And

Whereas: There has been submitted to the State Board of Health and to this Common Council a map and specifications of the proposed system of sewerage, which said map and specifications have been approved by the said State Board of Health, and are by the passage of this Ordinance approved by this Common Council.

Be it ordained and enacted by the inhabitants of the City of Burlington in Common Council assembled, and it is hereby enacted by the authority of the same.

Section 1. That consent and permission is hereby given to the Burlington Sewerage Company its successors and assigns to construct, maintain and operate a Sewerage System within the limits of the City of Burlington as shown by said map and specifications filed this day with this Ordinance in the office of the Clerk of said City subject to the terms and condition or conditions expressed set forth and mentioned in said Ordinance.

Section 2. That approval of the said map and specifications this day submitted is hereby given.

Section 3. That said Company its successors and assigns be and they are hereby authorized and empowered to lay their pipes and conduits beneath the public roads, streets, avenues and alleys within the said City of Burlington provided that the said pipes and conduits shall be laid at least three feet below the surface of the roads, streets, avenues and alleys, and shall not in any wise unnecessarily obstruct or interfere with public travel or damage to public or private property.

Section 4. That the said corporation the said Burlington Sewerage Company, its successors or assigns shall have permission to open such public roads, streets, avenues and alleys as may be necessary for the purpose aforesaid, replacing the said road-way and surface in as good condition as the same now is; that such openings shall be under the supervision and control of the Street Committee of the Common Council, and that whenever it is necessary to disturb any paved street or portion thereof for the purpose of laying said pipes or conduits that every precaution shall be taken to re-place said paved street in as complete condition as the same was before it was opened, and for this purpose the said Company shall enter into bond to the Inhabitants of the City of Burlington, in the sum of five thousand dollars, with proper security to be approved by the Finance Committee of this Council, to well and sufficiently indemnify and save harmless the said City from all loss or damage caused by the construction of said sewer system as well as conditioned for replacing said street surface, and the paved and macadamized road-ways in as good condition as the same are at the time this ordinance goes into effect,

Section 5. That the Common Council are authorized and empowered to employ an inspector to supervise and inspect the work of opening and closing said streets, whose compensation shall be paid by the said Sewerage Company.

Section 6. This Ordinance and every part and provision thereof, is passed and granted, subject to the terms and conditions set forth in the ordinance to which reference has heretofore been made, to wit: the ordinance approved March fifteenth, 1901.

Section 7. This ordinance shall take effect immediately.

Approved April 13th, 1901.

Charles Y. Flanders, Mayor.

Attest (Signed) J. Frank Clime, City Clerk.

EXHIBIT "P9."

BURLINGTON SEWERAGE COMPANY

SCHEDULE OF RATES

Effective August 1st, 1914

For Dwelling Houses

Fixtures		Annual Rate
Kitchen Sink		$5.00
Each Additional Sink		1.00
Water Closets	Each	2.50
Urinals	"	2.50
Bath Tubs	"	2.50
Shower Baths	"	2.50
Wash Stands	"	1.00
Laundry Tubs	"	1.00
Yard Hydrants	"	5.00

For Stores And Offices

Fixtures		Annual Rate
Sinks or Wash Stands	Each	$4.00
Water Closets	"	4.00
Urinals	"	4.00

For Halls, Public Buildings, Moving Picture Halls, Hotels And Saloons

Fixtures	Annual Rate
First Sink or Wash Stand	$8.00
Each Additional Sink or Wash Stand	4.00
First Water Closet	10.00
Each Additional Water Closet	5.00
First Urinal	10.00
Each Additional Urinal	5.00

For Factories

For Each Employee—per year	$1.00

Minimum Charge

An annual minimum charge of $10.00 will be made for each sewer connection in event the annual rate for the fixtures in use do not amount to that sum.

Charge For Original Connection to Sewer Main

A charge of $5.00 will be made by the Company for the original connection with the sewer main, which charge must be paid at the time application is made for the connection.

Charge For Re-Connection To Sewer Main

In case the sewer connection is cut off from any property either on the written order of the owner or for any other cause, the Company shall make the connection again only on the written order of the owner and on the payment of $10.00 for making said connection; the permit (if any be required) to open the street to be secured or paid for by the owner.

RULES AND REGULATIONS

Effective August 1, 1914

Section 1. All sewer rates are payable yearly in advance at the office of the Sewerage Company on the first day of August each year, and if not paid within sixty days from date of bill, the Sewerage Company shall have the right to cut off the connection with the sewer without further notice, but no such cutting off shall deprive the Sewerage Company of the right, before the connection is again made, to demand and require payment of all sewer rents or other charges herein agreed to be paid, to the expiration of the contract.

Section 2. No roof or surface water shall be allowed to drain into the sewer pipes of the Sewerage Company.

Section 3. The Sewerage Company shall have the right, by its employees, to have access at all reasonable times to all parts of any premises connected with the said sewerage system for the purpose of examining and inspecting the sewer connections and fixtures draining into sewer.

Section 4. The sewer connection will be cut off from any premises without charge on the written order of the owner of said premises; but the cutting off of the sewer connection for any cause shall not impair the validity of the contract then existing between the owner and the Sewerage Company for the payment of rates for the current year.

Section 5. Property owners shall keep all drain pipes leading to the sewerage mains in good order and condition; and if not so kept, the Company shall have the right to cut off the service, and shall not be required to connect again until said drain pipes are put in order.

EXHIBIT "O1."

Appraisal of the Property
of the
Burlington Sewerage Company
showing the
Cost of Reproduction, Amount of Depreciation
and
Present Value
as of
October 6th, 1914.

Howard J. Webster
Engineer for the City of Burlington

Harrison Building,
Phila., Penna.

Sheet No. 1.

Valuation Summary
of the
Burlington Sewerage Company.

Acc't No.	Page	Subject	Cost to Reproduce	Depreciated Amt.	Present Value
1	2	Land	1,851.66		1,851.66
2	3	Buildings	2,080.85	458.90	1,621.95
3	4	Collecting System.	62,308.36	9969.34	52,339.02
4	6	Mech. Equipment	3,322.75	587.13	2,735.62
5	8	(Pump Well (Septic Tank (& Piping.	10,489.63	4195.85	6,293.78
6	11	Material and Stores.	400.00		400.00
7	12	Tools	575.00	116.67	458.33
8	13	Office Equip.	275.00	55.00	220.00
			$81,303.25	$15,382.89	$65,920.36
		For legal and other expenses incidental to organization. 1% of cost to reproduce	813.03		813.03
		Cost to reproduce and present value as of October 6th, 1914	$82,116.28		$66,733.39

Company—Burlington Sewerage Company,
Sheet No. 2.

Subject—Land

Account No. 1.

Site of disposal works, based upon existing values of real estate in the vicinity.

16.2 acres @ $100.00 per acre	$1,620.00	
Overhead charges 14.3% including legal fees, brokerage and interest on same @ 6% for one year	231.66	
Cost to reproduce and present value		$1,851.66

Company—Burlington Sewerage Company,
Sheet No. 3.

Subject—Building.

Account No. 2.

Brick building known as pumpin station	$1,300.00	
Overhead charges 25.45%	330.85	
		$1,630.85
Barn, frame structure	$450.00	

Summary Account No. 2.

Subject	Net Cost	Overhead	Cost to Reproduce
Pumping station	1,300.00	25.45	1,630.85
Barn.			450.00

% Depreciation	Deprec. Amount	Present Value
(x) 24%	391.40	1239.45
(y) 15%	67.50	382.50

(x) Depreciation based upon life of 50 years and age of 12 years.

(y) (Age 12 years) General condition does not warrant a factor of depreciation greater than 15%.

Company—Burlington Sewerage Company,

Sheet No. 4.

Subject—Collecting System.

Account No. 3.

Terra Cotta Pipe:		
1222′ 4″ pipe @ .297	362.93	
194′ 5″ pipe @ .327	63.44	
32506′ 8″ pipe 0-6′ deep @ .404	13,132.42	
10286′ 8″ pipe 6-8′ deep @ .564	5,801.30	
725′ 8″ pipe 8-10′ deep @ .705	511.13	
582′ 10″ pipe 0-6′ deep @ .537	312.53	
175′ 10″ pipe 6-8′ deep @ .656	114.80	
686′ 10″ pipe 8-10′ deep @ .802	550.17	
180′ 10″ pipe 10-12′ deep 1.025	184.50	
33′ 12″ pipe 0-6′ deep @ .611	20.16	
1800′ 12″ pipe 6-8′ deep @ .729	1312.20	
1123′ 12″ pipe 8-10′ deep @ .876	983.75	
625′ 12″ pipe 10-12′ deep 1.097	685.63	
321′ 15″ pipe 6-8′ deep @ .935	300.14	
728′ 15″ pipe 8-10′ deep 1.041	757.85	
403′ 18″ pipe 8-10′ deep 1.326	534.38	
50′ 18″ pipe 10-12′ deep 1.559	77.95	
663′ 24″ pipe 0-6′ deep 1.576	1044.89	
3238′ 24″ pipe 6-8′ deep 1.672	5413.94	
1566′ 24″ pipe 8-10′ deep 1.878	2940.95	
25′ 24″ pipe 10-12′ deep 2.191	54.78	35,159.84
Cast Iron Pipe:		
891′ 8″ C.I. pipe 1.02	908.82	
885′ 10″ C.I. pipe 1.26	1115.10	
78′ 12″ C.I. pipe 1.60	124.80	
54′ 22″ C.I. pipe 2.90	156.60	
55.58′ 24″ C.I. pipe 3.80	211.20	2,516.52
"Y" Branches.		
4—5″ Y branches. .288	1.15	

2887—8″ Y Branches.	.378	1071.08	
112—10″ Y. Branches.	.527	59.02	
230—12″ Y. Branches.	.644	148.12	
78—15″ Y branches.	.851	66.38	
22—18″ Y branches.	1.237	27.11	
296—24″ Y branches.	2.030	600.88	1,973.74

Company—Burlington Sewerage Company,
Sheet No. 5.

Subject—Collecting System.

Account No. 4.
(Continued)

Manholes:

No.	Type	Avg. Depth	Cost per Ft.	Cover	Cost Each	Total Cost	
150	Plain & Inters.	6′	3.60	12.00	33.60	5,040.00	
4	Drop	10′	4.00	12.00	52.00	208.00	5,248.00

Timber:

100,000 ft. B.M. Sheathing left in trench @ 30.00	3,000.00	
27,120 ft. B.M. timber in foundations @ 30.00	813.60	3,813.60

Repaving Over Trench:

12,570 sq. ft. asphalt block (y) @ .05	628.50	
7,680 sq. ft. shale brick @ .06	460.80	
10,323 sq. ft. Macadam @ .03	309.69	
657 sq. ft. Cobble @ .05	32.85	1,431.84
Net cost		$50,143.54

Summary Account #3.

Subject	Net Cost	Overhead	Cost to Reproduce
Collecting System.	50,143.54	24.26%	62,308.36
% Depreciation	Deprec. Amount		Present Value
16% (x)	9,969.34		52,339.02

(x) Depreciation based upon life of 75 years with age of 12 years.

(y) The price given per sq. ft. for repaving over trench includes over lap and the cost of cutting through.

Company—Burlington Sewerage Company,

Sheet No. 6.

Subject—Mechanical Equipment.

Account No. 4.

2—21 H. P. Otto gas Engines F.O.B. Burlington, N. J. @ 625.00		1,250.00
2—Engine Foundations.	50.00	100.00
Hauling.	100.00	100.00
1—6″ centrifugal pump.	125.00	125.00
1—5″ centrifugal pump	100.00	100.00
1—2½″ gear-driven circulating pump	50.00	50.00
2—pump foundations.	25.00	50.00
Hauling and erecting pumps.	50.00	50.00
Pump connections, valves, primers, etc		500.00
2—Magnetos.	10.00	20.00
Dynamo	25.00	25.00
6—Edison cells	4.00	24.00
3—Spark coils	2.00	6.00
7″ 2 ply leather belt 23′ long	35.00	35.00
10″ 2 ply leather belt, 27′ long	15.00	15.00
Sims oil filter, Size O.	15.00	15.00
Stove.	2.50	2.50
Copper oil guards and trays.	10.00	10.00
2—Anti fluctuators.	12.50	25.00
1 piece platinum	14.00	14.00
Galvanized iron railing.	25.00	25.00
2—#3 Banner oil lamps.	2.00	4.00

250′—1½″ rubber lined fire hose
50.00 50.00
3—60 gallon galv. gasoline tanks
5.00 15.00

Net Cost $2,645.50

Company—Burlington Sewerage Company.
Sheet No. 7.
Subject—Mechanical Equipment.
Account No. 4.
(Continued)

Summary Account No. 4.

Subject	Net Cost	Overhead	Cost to Reproduce
Mechanical Equipment	2,645.50	25.60	3,322.75

Scrap Value	% Deprec.	Deprec. Amount.	Present Value.
500.	*20.8	587.13	2,735.62

* Rate of depreciation based upon a life of 25 years with age of 12 years. "Floy" is used as an authority for the life of gas engines, being 15 years. As many portions of the equipment will have a life exceeding this, a fair average life is assumed to be 25 years.

Company—Burlington Sewerage Company.
Sheet No. 8
Subject—Pump Well, Septic Tank, Sewage Field and Piping for Same.
Account No. 5.

Pump Well:
90 cu. yds. excavation .60 54.00
5 cu. yds. concrete 9.00 45.00
(Including form in place)
18,000 bricks Delivered 8.75 157.50
30 bbls. cement Delivered 1.50 45.00

12 cu. yds. sand 1.00	12.00	
Laying 18000 bricks, per 1000 6.00	108.00	
Ladder, 18′ long (per ft. in place) .50	9.00	
Wooden platform and iron screens 250.00	250.00	
Well curb 12′ 2″ diam x 20′ high 130.00	130.00	
Pumping during construction 100.00	100.00	910.50
Sewage Field:		
2322 cu. yds. earth excavation and grading .30	696.60	
911 cu. yds. earth embankment .35	318.85	
361 cu. yds. broken stone 2.50	902.50	
49 cu. yds. stone, slag and cinder barrier 2.25	110.25	
77 cu. yds. brick and concrete barrier 12.00	924.00	
6117′—6″ drain tile .16	978.72	
1800′—4″ drain tile .13	234.00	
7720′—B. M.—Y. P. in ditch 30.00	231.60	4,396.52
Septic Tank:		
266′ cu. yds. excavation .30	79.80	
714′ cu. yds. embankment .35	249.90	
80′ cu. yds. concrete 9.00	720.00	

Company—Burlington Sewerage Company

Sheet No. 9

Subject—Pump Well, Septic Tank, Sewerage Field and Piping for Same.

Account No. 5.
(continued)

52000 bricks @ 8.75	455.00	
80 bbls. cement @ 1.50	120.00	
35 cu. yds. sand @ 1.00	35.00	

Laying 52000 bricks @ 6.00	312.00	
612′—8″ C. I. pipe, with specials and valves, laid complete @ 1.00	612.00	
25′—12″ C. I. pipe with specials and valves, laid complete @ 1.60	40.00	2,632.70
2—Brick chambers 20.00	40.00	
Cast Iron Specials:		
1—12″ x 12″ x 8″ Y		
4—12″ x 12″ x 8″ tees		
1—12″ x 12″ x 10″ T.		
1—12″ ¼ bend		
2—12″ plugs.		
2—10″ ¼ bends		
1—8″ ⅛ bend.		
3831 lbs. castings in place @ .03	114.93	
5—8″ valves @ 16.00	80.00	
400′—12″ terra cotta drain pipe 0-6′ deep .30	120.00	354.93
Net Cost		$8,285.65

Summary Account No. 5.

Subject	Net Cost	Overhead	Cost to Reproduce
Pump Well			
Septic Tank			
Sewage Field	8,285.65	26.60	10,489.63

% Depreciation	Deprec. Amount	Present Value
40.00%	4,185.85	6,293.78

Company—Burlington Sewerage Company, Sheet No. 10.

Subject—Pump Well, Septic Tank, Sewage Field and Piping for Same.

Account No. 5.
(Continued.)

(x) Depreciation is based upon a life of 30 years with an age of 12 years. Although the existing plant may be capable of satisfactorily performing its duties at present, and for some years in the future, the method now employed is one that is rapidly passing out of use. In view of the rapid advancement in the art of sewage disposal it is reasonable to assume that the present plant, as now in use, will have ceased to exist, in its present form, at the end of twenty years.

Company—Burlington Sewerage Company.

Sheet No. 11

Subject—Materials and Stores.

Account No. 6

Material and stores on hand at date of appraisal	$400.00
Cost to reproduce and present value	$400.00

Company—Burlington Sewerage Company

Sheet No. 12.

Subject—Tools.

Account No. 7.

Tools on hand, including farm tools and horse, at date of appraisal.

Tools	$350.00
Horse (Present value)	225.00
Cost to reproduce	$575.00

Summary Account No. 7.

Subject	Net Cost	% Depreciation	Depreciation	Present Value.
Tools	350.00	33 1/3	116.67	233.33
Horse	225.00			225.00
	$575.00			$458.33

Company—Burlington Sewerage Company,

Sheet No. 13.

Subject—Office Equipment.

Account No. 8

Office equipment on hand at date of appraisal.
Cost to reproduce $275.00

Summary Account No. 8.

Subject	Cost to Reproduce	% Depreciation	Deprec. Amt.	Present Value.
Office Equip.	275.00	20%	55.00	220.00

EXHIBIT "O2."

Estimated Cost
of
Reproducing
the
Burlington Sewerage System
October 5th. 1914.
H. M. Herbert, M. Am. Soc. C. E.
Consulting Engineer.

H. M. Herbert, M. Am. Soc. C. E.
Civil and Consulting Engineer
15 West Maple Avenue
Bound Brook, N. J.
Reports Made, Plans Furnished and
Construction Superintended.
Railroads, Tunnels, Bridges,
Docks, Masonry, Foundations,
Water Works and Sanitary Sewerage

Bound Brook, N. J.
October 5th. 1914

The Mayor and Council.
City of Burlington, New Jersey

Gentlemen:—

At the request of your Committee I have, with Mr. Horace J. Webster, made an examination of the sewerage system and disposal plant owned and operated by the Burlington Sewerage Company, with a view to ascertaining the cost of reproducing the said system and disposal plant at the present time.

The City had no plans or data of this work and I had to obtain same from the Sewerage Company. Assuming that these are correct, I have used them for estimating purposes.

The present cost of material (except cast iron pipe) is about the same as it was when the work was done in 1901 and 1902. The cost of labor being slightly higher now.

Owing to the limited time I have been employed on the work, it was impossible for me to make any accurate measurements of the flow of sewage. At the present time the infiltration of ground water is light. The disposal beds have recently been put in fair order and the effluent therefrom is apparently good.

The following is the estimated cost of reproducing the entire plant and appurtenances.

Respectfully submitted,
H. M. Herbert
Consulting Engineer.

Burlington Sewerage Company

Appraisal of the Cost of the Plant

October 3rd, 1914.

1. *Real Estate*—	
16.2 acres land at Disposal Plant at $100.00	$1,620.00
2. *Collecting System*—	
1222′ 4″ pipe at .30	366.60
194′ 5″ pipe at .40	77.60
32506′ 8″ pipe 0-6′ deep at .55	17,878.30
10286′ 8″ pipe 6-8′ deep at .67	6,891.62

725′ 8″ pipe 8-10′ deep at .86	623.50
582′ 10″ pipe 0-6′ deep at .63	366.66
175′ 10″ pipe 6-8′ deep at .75	131.25
686′ 10″ pipe 8-10′ deep at .95	651.70
180′ 10″ pipe 10-12′ deep at 1.23	231.40
33′ 12″ pipe 0-6′ deep at .71	23.43
1800′ 12″ pipe 6-8 deep at .83	1,494.00
1123′ 12″ pipe 8-10 deep at 1.03	1,156.69
625′ 12″ pipe 10-12′ deep at 1.32	825.00
321′ 15″ pipe 6-8′ deep at 1.05	337.05
728′ 15″ pipe 8-10′ deep at 1.21	880.88
403′ 18″ pipe 8-10′ deep at 1.47	592.41
50′ 18″ pipe 10-12′ deep at 1.77	88.50
663′ 24″ pipe 0-6′ deep at 1.65	1,093.95
3238′ 24″ pipe 6-8′ deep at 1.88	6,087.44
1566′ 24″ pipe 8-10′ deep at 2.08	3,257.28
25′ 24″ pipe 10-12 deep at 2.38	59.50
891′ 8″ cast-iron pipe at 1.00	891.00
885′ 10″ cast-iron pipe at 1.30	1,150.50
78′ 12″ cast-iron pipe at 1.70	132.60
54′ 20″ cast-iron pipe at 3.50	189.00
55.58′ 24″ cast-iron pipe at 4.00	222.32
4—5″ Y branches at 1.00	4.00
2887—8″ Y branches at .85	2,453.95
112—10″ Y branches at 1.05	117.60
230—12″ Y branches at 1.23	282.90
78—15″ Y branches at 1.75	136.50
22—18″ Y branches at 2.45	53.90
296—24″ Y branches at 4.30	1,272.80
4—drop manholes 10′ deep and under at 68.00	272.00
53—intersection manholes 10′ deep and under at 65.00	3,445.00
97—plain manholes 10′ deep and under at 46.00	4,462.00
100,000 ft. B. M. sheathing left in trench at 40.00	4,000.00

27,120 ft. D. M. timber in foundations at 40.00	1,084.80
	$63,285.43

3. *Pump Well—*

90 cu. yds. excavation at .50	45.00
5 cu. yds. concrete at 8.00	40.00
18000 Bricks at 10.00	180.00
30 bbls. cement at 1.50	45.00
12 cu. yds. sand at 1.00	12.00
Laying 18000 bricks at 6.00	108.00
Ladder, 18′ long at .50	9.00
Wooden platform and iron screens	200.00
Well curb 12′ 2″ diam. x 20′ high	100.00
Pumping during construction	90.00
	$829.00

4. *Pumping Station—*

Pumping Station	$1,500.00

5. *Pumps—Engines—and Accessories in Pumping Station—*

2—21 H. P. Otto gas engines at 650.00	1,300.00
2—engine foundations at 64.00	128.00
Hauling and erecting	150.00
1—6″ Alexander contrifugal pump	200.00
1—5″ Morris centrifugal pump	200.00
1—2½″ gear-driven circulating pump	50.00

2—Pump foundations at 50.00	100.00
Hauling and erecting	75.00
Pump connections, valves, primers, etc.	450.00
2—Magnetos at 15.00	30.00
Dynamo	30.00
6—Edison cells at 4.00	24.00
3—Spark coils at 2.50	7.50
7″—2-ply leather belt, 23′ long at 1.75	40.25
10″—2-ply leather belt, 27′ long at 2.00	54.00
Sims oil filter, Size 0	15.00
Stove	3.00
Copper oil-guards and trays	15.00
2—Anti-fluctuators at 15.00	30.00
1—piece platinum	14.00
Galvanized iron railing	25.00
Eight-day clock	3.00
2—#3 Banner oil lamps at 2.50	5.00
250′—1½″ rubber-lined fire hose at .25	62.50
3—60 gallon galv. gasoline tanks at 5.00	15.00
2—Brick chambers at 15.00	30.00
Work bench	3.00
	$3,058.25

6. *Septic Tank*—

266 cu. yds. excavation at .30	79.80
714 cu. yds. embankment at .30	214.20
80 cu. yds. concrete at 8.00	640.00
52000 bricks at 10.00	520.00
80 bbls. cement at 1.50	120.00
35 cu. yds. sand at 1.00	35.00
Laying 52000 bricks at 6.00	192.00
612′—8″ C. I. pipe, with specials and valves, laid complete at 1.00	612.00

25′—12″ C. I. pipe with specials and valves, laid complete at 1.70	42.50
lbs. Special Castings	
632 1—12″ x 12″ x 8″ Y	
2008 4—12″ x 12″ x 8″ tees	
519 1—12″ x 12″ x 10″ tee	
366 1—12″ ¼ bend	
100 2—12″ plugs	
556 2—10″ ¼ bends	
150 1—8″ ⅛ bend	
4331 4331# at .03	129.93
5—8″ valves at 18.50	92.50
400′—12″ terra-cotta drain pipe 0-6′ deep at .66	264.00
	$2,941.93

7. *Broad Surface Irrigation Plant*—

2322 cu. yds. earth excavation and grading at .30	696.60
911 cu. yds. earth embankment at .30	273.30
361 cu. yds. broken stone at 2.50	902.50
49 cu. yds. stone, slag and cinder, barrier at 2.50	122.50
77 cu. yds. brick and concrete carrier at 12.00	924.00
6117′—6″ drain tile laid at .25	1,529.25
1800′—4″ drain tile laid at .20	360.00
7720′ B. M. Y. P. in ditch at 50.00	385.00
	$5,193.15

8. *Resurfacing Streets*—

12570 sq. ft. asphalt blocks at .12	1,508.40
7680 sq. ft. shale bricks at .08	614.40
10323 sq. ft. macadam at .03	309.69
657 sq. ft. cobble at .03	19.71
	$2,452.20

9. *Materials and Equipment on Hand*—

5″ Morris centrifugal pump	200.00
4″ Gould centrifugal pump	150.00
Hand pressure-pump	5.00
10″ x 12″ pulley)	
12″ x 15″ pulley)	15.00
12″ x 12″ pulley)	
51 gallons gas engine cylinder oil at .40	20.40
27 gallons machine oil at .32	8.64
2 gallons muriatic acid at .25	.50
80 gallons gasoline at .14	11.20
55 gallons coal oil at .09	4.95
8 lbs. Polarine grease at .10	.80
2 galv. oil storage tanks at 5.00	10.00
250′—1½″ old rubber hose	5.00
2 pairs rubber boots at 4.25	8.50
80 lbs. cotton waste at .08	6.40
2¾ lbs. 7/16″ ring packing	2.48
50 lbs.—8 penny nails at .03	1.50
25 lbs. 10 penny nails at .03	.75
25 lbs. jute at .03	.75
1600 lbs. hard coal at 6.75	5.40
Scrap iron	2.50
158′—8″ terra-cotta pipe at .16½	26.07
2′ 12″ terra-cotta pipe at .30	.60
2′ 24″ terra-cotta pipe at .97½	1.95

26′—5″ terra-cotta pipe at .12	3.12
13′—5″ closed horseshoe tiling at .04	.52
45′—4″ horseshoe tiling at .03	1.35
31—8″ x 6″ terra-cotta Ys at .66	20.46
112—6″ stoppers at .05	5.60
70′—4″ wrought-iron pipe at .34	23.80
16′—2½″ wrought-iron pipe at .18	2.88
1—4″ elbow, screw	.30
4—4″ sockets, screw at .25	1.00
1—4″ 45° bend, screw	.36
1—8″ 45° bend, screw	2.13
2—4″ flanges, screw at .60	1.20
2—6″ flanges, screw at 1.00	2.00
1—8″ flanges, screw	1.30
1—6″ to 5″ flange reducer	3.15
2—10″ foot-valves at 14.50	29.00
Pipe fittings, ¼″ to 4″	5.00
	$591.56

10. *Tools on Hand*—

Work bench and tools	25.00
400′ sewer cleaning rods, and tools	110.00
18″ pipe wrench	1.75
14″ pipe wrench	1.50
2 monkey-wrenches at .50	1.00
1 set engine wrenches	2.00
4 wood saws at 1.00	4.00
1 hack saw	.60
3 hammers	2.25
2 hatchets	1.50
2 axes	1.50
4 rakes	1.50
1 tamping iron	.50

1 grubbing hoe	.40
5 forks	3.00
1 hoe	.60
2 wheelbarrows	4.00
3 cold chisels	.75
2 pairs pliers	1.00
3 lanterns	1.50
2 buckets	.50
1 5 gallon oil can	1.00
1 Star drill	1.00
1 pair grass clippers	1.00
$\frac{5}{8}''$ & $\frac{3}{4}''$ iron taps	.75
1 set stock and dies, $\frac{1}{4}''$ to $1''$, right hand	4.50
1 set Armstrong dies, $\frac{1}{8}''$ to $1''$, left hand	4.50
1 belt clamp	3.50
18 shovels, long handles	13.50
7 picks	4.20
1 broom	1.00
1 24″ asbestos pouring ring	6.00
1 8″ asbestos pouring ring	2.00
1 pipe vise, $\frac{1}{4}''$ to $2\frac{1}{2}''$	.75
1 tripod	15.00
	\$223.55

11. *Office Equipment*—

Oak roll top desk	29.00
Flat top desk	25.00
Letter file cabinet, 24 drawers	25.00
Letter press and cabinet	15.00
8 vertical letter files	10.00
Safe	25.00
Letter file, 5 drawers	10.00
Smith typewriter	50.00

Electric fan	12.50
Water cooler	2.50
Cuspidor	1.00
Metal clock	1.50
Inkstand	1.00
Desk chair	7.50
2 chairs	5.00
Waste paper basket	.50
Glass bottles, testing	3.00
Stationary, blanks, etc.	25.00
Window shades	7.00
Linoleum	16.50
50 ft. metallic tape	1.50
	$273.50

12. *Barn, Farming Implements, etc.*—

Barn	450.00
Horse	250.00
Cart	45.00
Plough and cultivator	9.00
Hose-carriage	25.00
Grindstone	2.25
3 Scythe blades	2.50
1 set cart harness	20.00
1 set plough harness	3.00
Stable bucket	1.00
½ ton #2 hay	9.00
Watering can	.50
Lawn-mower	15.00
	$832.25

DEPRECIATION

System built 1902. Time 12 years

Collecting System	
12% on $63,285.43	7,594.25
Disposal Plant	
Pump Well, 12% on $829.00	99.48
Pumping Station, 12% on $1,500.00	180.00
Pumps, Engines, etc., 50% on $3,058.25	1,529.13
Septic Tank, 12% on 2,941.93	353.03
Filter Beds, 12% on $5,193.15	623.18
	$10,379.07

SUMMARY.

1. Real Estate	$1,620.00
2. Collecting System	63,285.43
3. Pumpwell	829.00
4. Pumping Station	1,500.00
5. Pumps, Engines, ect.	3,058.25
6. Septic Tank	2,941.93
7. Broad Surface Irrigation Plant	5,193.15
8. Resurfacing Streets	2,452.20
9. Material on Hand	591.56
10 Tools	223.55
11. Office Equipment	273.50
12. Barn and Contents	832.25
	$82,800.82
Engineering & Inspection, 7%	5,796.00
	88,596.82
Organization Expenses, 3%	2,657.90
	91,254.72
Interest During Construction 6 months at 6%	2,737.64
	$ 93,992.36
Depreciation	10,379.07
	$83,613.29

OPINION.

(Filed Feb. 7, 1918)

NEW JERSEY SUPREME COURT.

NOVEMBER TERM.

BURLINGTON SEWERAGE CO., vs. CITY OF BURLINGTON.	OPINION.

Per Curiam:

This case is controlled by the opinion in Collingswood Sewerage Co. vs. Borough of Collingswood. The order is set aside and the case remitted in order that there may be proper findings. No costs will be allowed.

RULE.

NEW JERSEY SUPREME COURT.

BURLINGTON SEWERAGE COMPANY, *Prosecutor,* vs. THE BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY, AND THE CITY OF BURLINGTON, *Respondents.*	ON CERTIORARI. RULE.

This cause having regularly come on to be heard at the November Term of this court, upon return of the writ of certiorari allowed herein, in the presence of Gilbert Collins and J. Fithian Tatem, for the prosecutor, L. Edward Herrmann, for the Board of Public Utility Commissioners of the State of New Jersey, and Ernest Watts and V. Claude Palmer, for the City of Burlington, respondent, and the Court having inspected and examined the proceedings of the Board of Public Utility Commissioners returned with the writ of certiorari in this cause; the reasons filed by the prosecutor; the arguments of counsel, and having duly considered the same:

It is ordered and adjudged that the action of the Board of Public Utility Commissioners, pursuant to reports dated March 22nd, 1916, and March 21st, 1917, wherein the application of the Burlington Sewerage Company for permission to increase rates was refused, be and the same are hereby set aside and the cause remitted, in order that there may be proper findings, without costs to either party.

Rule entered April , 1918.

On motion of

Attorney for Prosecutor.

NOTICE AND GROUNDS OF APPEAL.

NEW JERSEY SUPREME COURT.

BURLINGTON SEWERAGE CO., *Respondent*, vs. BOARD OF PUBLIC UTILITY COMMISSIONERS OF THE STATE OF NEW JERSEY, AND THE CITY OF BURLINGTON, *Appellants*.	NOTICE AND GROUNDS OF APPEAL.

To J. Fithian Tatem, Esq., Attorney of Respondent:

Take Notice that the City of Burlington appeals to the New Jersey Court of Errors and Appeals to be relieved from the whole of the judgment entered in this cause on the following grounds:

1. The Supreme Court set aside the order and proceedings of the Board of Public Utility Commissioners of the State of New Jersey, dated March 22nd, 1916, March 21st, 1917, and April 4th, 1917, refusing the application of the Burlington Sewerage Company for permission to establish a new schedule of rates, whereas by the law of the land, the proceedings of the Board of Public Utility Commissioners refusing such application should have been affirmed.

(a) Because the Board of Public Utility Commissioners is without lawful jurisdiction either to increase rates or to grant permission to file a new schedule of rates, beyond the maximum provided in the ordinance.

(b) Because the Board of Public Utility Commissioners has no power to fix rates without regard to the ordinances and contracts of the municipality.

(c) Because the legislature of the State of New Jersey prior to the adoption of Chapter 195 of the Laws of 1911 granted to the City of Burlington the power to fix the rates to be exacted by the Burlington Sewerage Company by inviolable contract.

(d) Because permission to use the streets and public places of the City of Burlington was granted by ordinance in accordance with Chapter 210 of the Laws of 1898.

(e) Because the City of Burlington was expressly authorized by statute to fix the maximum rates to be charged for service to be rendered by the Burlington Sewerage Company and the acceptance of the franchises concluded a contract between the company and the municipality, which the Board of Public Utility Commissioners has no power to set aside or disregard.

(f) Because the rates fixed by ordinance are just, reasonable and sufficient.

(g) Because the rates provided in the ordinance enable the company to furnish safe, adequate and proper service, and to keep and maintain its property and equipment in proper condition.

2. The aforesaid judgment of the Supreme Court is in divers other respects irregular, illegal, oppressive and unjust.

V. Claude Palmer,
Ernest Watts,
Attorneys of Appellants.

[Endorsed]

Due and legal service admitted.
J. Fithian Tatem,
Attorney of Respondent.